

wildaboutmanchester **Biodiversity Strategy** 2005 draft

Executive Summary

Introduction

The word biodiversity comes from the phrase ‘biological diversity’. In its simplest term biodiversity means the whole variety of life on Earth. It includes all plants and animals, their habitats and the factors that link them to each other and their surroundings. It is not restricted to rare or threatened species and habitats but includes the whole of the natural world from the commonplace to the critically endangered.

We all have a part to play in safeguarding the Earth's biodiversity. Therefore action needs to be taken, at both a local and global level, before our biodiversity disappears for good. The benefits of biodiversity are endless, but include:

- Learning about and enjoying the wildlife of Manchester. This makes an important contribution to our quality of life, health and spiritual well being.
- Plants, animals and habitats enrich our everyday lives as they produce the necessary ingredients for all life to exist.
- Without conserving biodiversity, we will pass to our successors a planet that is markedly poorer than the one we were privileged to inherit. Therefore we have a duty and a role to play to ensure that the Earth and its environment are protected for generations to come.
- Conserving biodiversity creates new employment from park wardens to habitat surveyors.
- Increased biodiversity can raise environmental awareness in local communities, as well as improving environmental credentials of public and private sector organisations.
- There are ethical grounds for conservation, as many people believe that every species is of value in its own right.
- Conserving and promoting biodiversity promotes the availability of natural sustainable resources.

In the UK it was identified that a strategic approach was needed to halt the loss of biodiversity. Therefore in 1994 the UK Biodiversity Action Plan was produced which detailed the UK's commitment to biodiversity and how it should be delivered. The Greater Manchester Biodiversity Action Plan (2003) followed on which focused the aims of the UK Biodiversity Action Plan at a Greater Manchester level.

From the Greater Manchester Biodiversity Action Plan (GMBAP) it became apparent that there was a need for a strategy to focus at the city of Manchester level, detailing the habitats and species present along with identifying the specific priorities for Manchester.

The flow chart below outlines how the Manchester Biodiversity Strategy fits in with the national biodiversity framework. It is important for a Manchester specific document to be produced as it outlines the cities commitment to progress biodiversity conservation locally, and also focuses on what is important and what are the priorities for biodiversity in Manchester.

1994 “Biodiversity: the UK Action Plan”

This details the UK’s commitment to conserving biodiversity and how nature conservation is to be delivered.

1999 “Wild about the North West - A Biodiversity Audit”

Produced by a partnership of organisations who make up the Regional Biodiversity Steering Group for North West England. This document outlines the habitats and species of conservation concern in the North West region.

2000 “Part I - The Greater Manchester Biodiversity Audit”

Published by the Greater Manchester Ecology Unit. This is a collation of information detailing habitats and species recorded in the Greater Manchester area. It also includes habitat and species statements that give some broad background to those BAP habitats and species occurring in the area.

2003 “Part II - The Greater Manchester Biodiversity Action Plan”

Published by a partnership of organisations and individuals. The Plan is a document that sets out how we are going to conserve habitats and species in Greater Manchester.

2004 “Manchester Biodiversity Strategy”

The major threat to species in Manchester is loss of habitats; altering management to protect habitats will improve species abundance and diversity. Since species and habitats are affected by pollution they can also form a means of charting our progress in cleaning up the environment. Biological indicators of pollution can be a useful, cost effective means of monitoring our progress.

The Manchester Biodiversity Strategy will serve as a focus for inspiring the people of Manchester to become more responsible towards their local environment. As human’s activities can damage the environment and result in the loss of wildlife, we need to work hard to protect, conserve and enhance it. We also need to make sure that there is wildlife in the city for future generations to enjoy. Our wildlife will be enhanced in a sustainable environment in which our multi-cultural society lives and thrives. Wildlife provides opportunities to relax, learn an interest in nature, and to enjoy the outdoors. Manchester will be a poorer place without its flora and fauna.

The Biodiversity Strategy will also contribute to the sustainable development of Manchester and the protection of our local biodiversity resource. The City of Manchester will, through this strategy, make its contribution to the regional and national biodiversity resource.

Aims and Objectives of the Strategy

Manchester’s priorities for biodiversity should reach beyond Sites of Special Scientific Interest, Sites of Biological Importance, and Local Nature Reserves and include common habitats and species as well as those that are rare.

The aim of the Manchester Biodiversity Strategy is to:
Conserve, protect and enhance biodiversity in the City for current and future generations

The key objectives are to:

- 1** To create a full species and habitat audit to establish a baseline of biodiversity in the city.
- 2** To use a best practice approach when managing for biodiversity.
- 3** Promote biodiversity in Manchester.
- 4** Promote biodiversity through environmental education.
- 5** Integrate biodiversity into the wider sustainable development agenda.

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Wet Woodland
Lowland Heathland
Reedbed
Unimproved Neutral Grassland
(includes lowland meadows)
Marshy Grassland
Managed Greenspace
Canals
Ponds and Lodges

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Linnet
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Bullfinch
Song thrush
Floating water plantain
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Terrapin
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Feral pigeon

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1. Introduction

1.1 What is biodiversity?

The word biodiversity was first used by the ecologist E. O. Wilson and comes from the phrase 'biological diversity'. In its simplest terms biodiversity means the whole variety of life on Earth.

It includes all plants and animals, their habitats and the factors that link them to each other and their surroundings. It is not restricted to rare or threatened species and habitats but includes the whole of the natural world from the commonplace to the critically endangered.

There are three distinct levels of biodiversity:

- **Genetic**
 - Variation between individuals of the same species e.g. the tree and house sparrow.
- **Species**
 - The number, types, and distribution of species within their habitat(s).
- **Ecosystem & habitats**
 - The variety of habitats and communities of different species that interlink with each other.

Although each level is equally important, this strategy will mainly focus on the species and habitats of Manchester.

Biodiversity is the richness and variety of wildlife and habitats on earth. Even in the twenty-first century the range of biodiversity is extraordinary. Biodiversity is not just restricted to rural environments, but occurs also in urban areas. The words Manchester and biodiversity may not appear synonymous but in urban habitats such as city parks and other open spaces there can be an enormous number of individual species. There is data about the species and habitats in Manchester which will be used to determine this strategy's overall direction.

1.2 Why should biodiversity be protected?

There are environmental, quality of life, health and moral reasons for protecting biodiversity.

The benefits of biodiversity are endless, but include:

- Learning about and enjoying the wildlife of Manchester. This makes an important contribution to our quality of life, health and spiritual well being.
- Plants, animals and habitats enrich our everyday lives as they produce the necessary ingredients for all life to exist.
- Without conserving biodiversity, we will pass to our successors a planet that is markedly poorer than the one we were privileged to inherit. Therefore we have a duty and a role to play to ensure that the Earth and its environment are protected for generations to come.
- Conserving biodiversity creates new employment from park wardens to habitat surveyors.
- Increased biodiversity can raise environmental awareness in local communities, as well as improving environmental credentials of public and private sector organisations.
- There are ethical grounds for conservation, as many people believe that every species is of value in its own right.
- Conserving and promoting biodiversity promotes the availability of natural sustainable resources.

Unfortunately negative changes in biodiversity have already happened.

Species that have become extinct in the UK since 1900 include:

Many branched stonewort (1915),
endemic to UK so globally extinct

Peach leaved bellflower (1949)

Summer lady's tresses orchid (1959)

Irish saxifrage (1960)

Interrupted brome (1970),
endemic to UK so globally extinct

Exploding bombardier beetle (1928)

Dainty damselfly (1953)

Aspen leaf beetle (1959)

Burbot [a fish] (1972)

Ivell's sea anemone (1983),
globally extinct

Mouse eared bat (1990)

Essex emerald moth (1991)

In December 2003 the Department for Environment, Food and Rural Affairs (DEFRA) published a report called 'Working with the grain of nature: a biodiversity strategy for England'. The report suggests that wild bird populations in the UK have begun to stabilise after 20 years' decline, with the population status of bird species 13% higher than it was in 1970.

An example of this can be seen from the town and garden bird population, which based on nine common garden species (including the robin, blackbird, blue tit and greenfinch) has seen an increase of 10% in their numbers since 1979.

This is obviously encouraging news as the wild bird populations are considered good indicators of the broad state of biodiversity as they occupy a wide range of habitats and tend to be near the top of the food chain.

However there are still species in decline.

The sparrow and starling populations have fallen by 60% across the UK since 1979.

Biodiversity is vulnerable to change and the influencing factors on biodiversity need to be determined. If we know the factors that influence biodiversity then we will be able to devise practical action to protect and improve species numbers and habitats in Manchester.

1.3 UK commitment to biodiversity

At the Earth Summit in 1992, the UK was one of more than one hundred and fifty signatories to the Convention on Biological Diversity, a document outlining the international commitment and co-operation to protect the variety of life on earth - biodiversity.

In January 1994, the UK government produced "Biodiversity: the UK Action Plan", as part of its commitment to the Convention.

The Action Plan includes a list of broad targets for the government and its agencies, in partnership with others to:

- a** Conserve and where practicable enhance wildlife species and wildlife habitats.
- b** Develop public awareness and understanding of biodiversity.
- c** Contribute to the conservation of biodiversity on a European and Global scale.

The following chart outlines how the Manchester Biodiversity Strategy fits in with the national biodiversity framework. It is important for a Manchester specific document to be produced as it outlines the cities commitment to progress biodiversity conservation locally, and also focuses on what is important and what are the priorities for biodiversity in Manchester.



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2. Baseline Study of Habitats and Species

2.1 Introduction

The introduction to this strategy has identified that we need to know the range of biodiversity and its influences in Manchester. This brings us to our first dilemma. There are habitats and species that are potentially threatened with extinction which maybe of limited visual impact. There are other species such as the badger that are not threatened, but could be of interest in sparking a commitment to biodiversity. Finally there are species such as Canada geese, which people value, but are actually harmful to native species and habitats.

The strategy needs to cover all three types of species and habitats - those that need protecting as they are threatened, those that maybe of interest to the public and those that are potentially harmful to native species and habitats and where people need to be more aware of their harm to the eco-systems.

Species and habitats that are considered of conservation importance (ie they are threatened or potentially threatened) are detailed in the UK Biodiversity Action Plan (UKBAP), last updated in 2002. Some of these priority species can be found in Manchester.

In addition to the habitats and species diversity within Manchester there is information arising from special site designations such as Sites of Special Scientific Interest (SSSIs). These sites give an indication of the value of biodiversity in Manchester.

2.2 Manchester Priority Habitat Survey

In 2001, Manchester City Council commissioned the Lancashire Wildlife Trust to undertake a Phase One Habitat Survey of the City, using nationally agreed habitat classification. The surveying involved site visits to identify and map the priority habitats present.

From this survey it is evident that Manchester has a diversity of habitats that can support a wide range of flora and fauna. Many semi-natural habitats still remain throughout Manchester, such as semi-natural broadleaved woodland in areas such as Boggart Hole Clough and Cotteril Clough. This data enables us to accurately map the priority habitats in Manchester (see table 1).

Details about these types of habitats, their importance in supporting species, and their location and issues affecting their conservation are given in Appendix 1.

Table 1: Priority Habitats in Manchester

Manchester Priority Habitat	Best examples in Manchester of Priority Habitats
Acid grassland	Bailey's Wood Alconbury Flushes Blackley Forest
Ancient and/or species-rich hedgerows	Stenner Lane near Fletcher Moss Sunbank Lane
Wet woodlands	Nan Nook Wood Stenner Woods Blackley Forest
Lowland broadleaved woodland	Baileys Wood Rosehill Wood Heaton Park Cotteril Clough
Lowland heathland	Alconbury Flushes Moston Fairway Boggart Hole Clough Blackley Forest
Lowland meadows	Chorlton Ees
Unimproved neutral grassland	Chorlton Water Park Castle Hill Farm nr Manchester Airport
Marshy grassland	Broadhurst Clough Moston Fairway
Managed greenspace	All Manchester parks
Reedbed	Chorlton Water Park Chorlton Ees Stenner Woods Blackley Forest Harpurhey Reservoirs Clayton Vale
Canals	Rochdale Canal Ashton Canal Bridgewater Canal
Ponds & Lodges	Near to the Manchester Airport runway and adjacent to Cotteril Clough

2.3 Manchester Priority Species

UK Priority Species are defined in 'UK Biodiversity Action Plans' as either:

- globally threatened or rapidly declining in the UK (population numbers fallen by more than 50% in the last 25 years)
- endemic (species originated and only found in the UK)
- under a high degree of international threat
- covered by relevant Conventions, Directives and legislation

Unlike habitats there have been no detailed surveys undertaken and the information available is based on informal surveys undertaken by park wardens and local conservation groups. Table 2 lists the priority species in Manchester. Appendix 2 gives details about the habitats which support these species, the type of legal protection covering these species and the issues which threaten their continued existence in Manchester.

Obviously the species data collection has not followed any nationally recognised methodology, the range of species is likely to be reasonably accurate, but the data on numbers of species cannot be used with any assurance. This is because the data was collected over differing time frames which that double counting could have occurred. In addition the sample size is small which adds to inaccuracies. However, our species abundance is perhaps greater than might be expected with water voles and floating water plantain.

Table 2: The current priority species that occur in Manchester.

Species which occur in Manchester	Legal Protection for the species
Great crested newt	European protected species
Water vole	UK Protected species
Brown hare	UK Protected species
Pipistrelle bat	All species of bats are European protected species
Skylark	
Linnet	
Reed bunting	
Spotted fly-catcher	General protection under Wildlife and Countryside Act 1981 (as amended)
Tree sparrow	
Grey partridge	
Bullfinch	
Song thrush	
Floating water plantain	European protected species
Grass-wrack pondweed	Currently not protected by any legislation

Other UK species that are of conservation concern are listed below (Greater Manchester Biodiversity Audit (2000)). These species are only currently of conservation concern as their population loss is not as large as the species listed above. However, conservation work should also involve these species to stabilise and ultimately increase their numbers.

Serotine bat	Common Frog
Hedgehog	Smooth newt
Badger	Slow worm
Daubenton's bat	Adder
Whiskered bat	A species of hoverfly - Eumerus ornatus
Leisler's bat	A species of Mud snail - Lymnea glabra
Brown long-eared bat	A species of Fungus - Haploporus odoratus
Common shrew	Bluebell
Common toad	

2.4 Issues Affecting Priority Habitats and Species

Appendices 1 and 2 give details of factors that adversely affect priority habitats and species. The many of the same issues affect both species and habitats, these can be summarised (in no order of importance or effect) as:

Habitats

- Invasive species.
- Recreational pressure eg motorbiking.
- Pollution.
- Neglect and poor management.
- Use of herbicides.
- Fragmentation of habitats.
- Agricultural intensification.
- Loss of habitat through development.
- Poor development design.

Species

- Loss and fragmentation of habitats.
- Pollution.
- Predation.
- Reduction of food source, particularly through use of pesticides and herbicides.
- Changes in agricultural practises.

These two lists of issues show the interrelationship between habitats and species. This emphasises the need to have a holistic approach to conservation within Manchester. The major threat to species in Manchester is loss of habitats; altering to protect habitats will improve species abundance. Since species and habitats are affected by pollution they can also form a means of charting our progress in cleaning up the environment. Biological indicators of pollution can be a useful, cost effective means of monitoring our progress.

2.5 Problem species

Next to habitat loss, the introduction or spread of non-native species is the main cause of species extinction as many non-native species will outcompete the native ones. The species listed in Table 3 are considered to be of concern in Manchester because of the threat they pose to native habitats or species. Appendix 3 details each species.

Table 3: Problem species in Manchester

	Why are they a problem?
Himalayan Balsam (<i>Impatiens glandulifera</i>)	Highly invasive - suppresses the local flora and fauna.
Japanese Knotweed (<i>Fallopia japonica</i>)	Highly invasive - suppresses the local flora and fauna.
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	Highly invasive - suppresses the local flora and fauna.
Rhododendron (<i>Rhododendron ponticum</i> .)	Highly invasive - suppresses the local flora and fauna.
Australian Swamp Stonecrop (<i>Crassula helmsii</i>)	Highly invasive - suppresses the local aquatic flora and fauna.
Grey Squirrel (<i>Sciurus carolinensis</i>)	One of the main reasons why the red squirrel population has declined (competition for food).
American Mink (<i>Mustela vison</i>)	Predator to water vole and water birds.
Canada Goose (<i>Branta Canadensis</i>)	Damage their local environment through feeding and breeding and eutrophication.
Terrapins (<i>Chrysemys scripta elegans</i>)	Causes decline on amphibian numbers and waterfowl chicks.
Herring gulls (<i>Larus argentatus</i>)	Competition with other species for food, damage to buildings and fouling in open space.
Feral pigeons (<i>Columba livia feral</i>)	Competition with other species for food, damage to buildings and fouling in open space.

Their populations are flourishing in many cases as these species are opportunists and can adapt very quickly to their local environment. The public also encourages species such as geese and squirrels as they often feed them.

Furthermore many of these species have been introduced into the country and because their natural predators are absent become highly invasive eg American Mink.

Managing the existence and impacts of problem species can be complex as people can enjoy feeding these species. In addition, some religions value the ability to feed wild birds as part of their religious practises.

2.6 Control of Invasive Species

Three of the most significant invasive plant species in the UK are Himalayan Balsam, Japanese Knotweed and Giant Hogweed. Giant Hogweed is removed when it is found as it presents a risk to health (its sap makes skin sensitive to ultra violet light and can cause painful blistering and severe irritation).

Action is taken in the case of Japanese knotweed and Himalayan balsam when they present a risk to surrounding habitat.

Total eradication would seem, in the long term, the best way forward. However these species are found extensively throughout Manchester and eradication would be impracticable.

Private landowners are required to ensure these species do not spread there is no legal remedy to require landowners to remove them from their land. Therefore even if the species were removed from Council owned land, they may still be present on adjacent private land and could invade Council sites.

Current legislation for the control of invasive species in the UK includes the Wildlife and Countryside Act 1981 which restricts the release of Japanese Knotweed and Giant Hogweed, making it an offence to plant them or cause them to grow in the wild. Under the Environmental Protection 1990, Japanese knotweed is classed as controlled waste and must be disposed of safely at an Environment Agency licensed landfilled site.

The Council and some other landowners do undertake proactive measures to manage these species. In relation to housing and developments, specialist treatment is undertaken to eradicate Japanese knotweed as they could damage building structures.

2.7 Special sites in Manchester

There are a number of designations in the UK that give sites of special biodiversity importance an added degree of protection. In Manchester there are a number of these special sites.

Most importantly is the designation of Sites of Special Scientific Interest (SSSI). There is currently one SSSI in Manchester, Cotteril Clough, which is an excellent example of ancient woodland with an outstanding ground flora. There are 35 sites of biological importance (SBIs), see table 4. SSSIs are national designated sites while SBIs are locally designated.

Table 4: Sites of Biological Importance in Manchester

Site Name	Grade
Ashton Canal (West)	A
Bridle Road Wood & Pond	A
Chorlton Water Park	A
Cotteril Clough	A
Heaton Park Reservoir (East)	A
Marl Pits near Cotteril Clough	A
Railway Sidings at Failsworth	A
Road Cutting at Castle Hill	A
Rochdale Canal (Stott's Lane - Ducie Street Basin)	A
Sunbank Wood	A
Well & Double Woods	A
Blackcarr Wood & Baguley Bottoms	B
Blackley Forest & Heaton Vale Reservoirs	B
Boardman Brook	B
Chorlton Ees	B
Fletcher Moss	B
Gib Lane Wood	B
Hardy Farm	B
Hooksbank Wood	B
Loonts Lake	B
Nan Nook Wood	B
Reservoirs at Harpurhey	B
Bailey's Wood	C
Big Wood	C
Boggart Hole Clough	C
Bowker Vale Reservoirs	C
Brookdale Clough (West)	C
Clayton Vale	C
Flushes near Alconbury Walk	C
Lakeside Woodland, Heaton Park	C
Ponds near Manchester Airport Runway	C
Rose Hill Wood	C
Round Wood	C
Wood near Chapel Lane	C
Woodland near Heaton Hall	C

Grade A

- assumes a presumption against development, that the habitat is one of the best representation of that habitat type within the region and the species present are one or more of the regionally rare species.

Grade B

- identifies biological importance that can be used as a secondary reason against planning permission. The biological importance can be a habitat that is a good representative of the type in the sub-region and district level, also one or more species of rarity.

Grade C

- is a site that on some biological grounds would provide a secondary reason against planning permission, whilst the habitat type and relevant species form a value that is of more than local importance.

There are seven Green Flag parks - Chorlton Park, Fletcher Moss Gardens in Didsbury, Chorlton Water Park, Boggart Hole Clough, Debdale Park, Old Moat Park and Crumpsall Park. The award is given for parks where management takes account for best ecological practise.

Chorlton Water Park is also a Local Nature Reserve. English Nature has awarded this designation, as the site has nature conservation as its main objective.

2.8 Baseline Study Conclusions

Despite having a habitat survey, species data is not yet quantified and this is a weakness within existing management frameworks for biodiversity in Manchester, preventing the setting of targets and measurement of actions. Therefore a key objective for the strategy has to be the undertaking of a formal species audit.

The baseline study shows the wealth of species and habitats within Manchester. We have species that can capture people's imagination, such as the water vole, and our strategy should concentrate on species specific action which should encourage local people to become more involved in their natural environment.

With large areas of our surrounding countryside becoming developed, the wild spaces in Manchester have become safe and valuable areas for the region's wildlife. There is a wide variety of species and habitats in Manchester.

The baseline study also shows that there are a number of pressures which are affecting nearly all species and habitats in Manchester these include:

- Development pressure.
- Pesticide use.
- Inappropriate management practices.
- Competition by non native species.
- Fragmentation of Habitats.
- Fly tipping and pollution.
- Appropriate recreational use e.g. motorbiking.

The Manchester Biodiversity Strategy has to aim to tackle these pressures.

It can be concluded from the study that the variety of habitats and species are interdependent and need a holistic approach to biodiversity in Manchester to increase opportunities for species to move between habitats and through wildlife corridors.

The study shows that some habitats should be more actively protected and enhanced, as the species dependent on these habitats are in decline. Reed beds and hedgerows need to be actively protected and enhanced in order to protect species like the reed bunting, great crested newt and the tree sparrow.

3. Policy and Legislative Context

3.1 Introduction

This section seeks to outline the existing policy with regards to biodiversity in Manchester and the legislative controls available to protect species and habitats. This information will help to identify gaps in controls as well as opportunities to enhance the effectiveness of future actions.

3.2 Planning Policy

Biodiversity conservation is promoted in the following Planning Policy Guidance (PPG) notes:

- PPG2 Greenbelts.
- PPG9 Nature Conservation.
- PPG11 Regional Planning.
- PPG12 Development Plans.
- PPG17 Planning for Open Space, Sport and Recreation.

Currently a Planning Policy Statement 9 (PPS9) has been developed to replace PPG9, Nature Conservation published in October 1994 that is currently out for consultation. This draft sets out the Government's broad policy objectives in relation to biodiversity and geological conservation in England, and its proposed planning policies that will help deliver these objectives. It includes the broad aim that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible.

Obligations and targets with regard to biodiversity conservation within these policies are incorporated at a local level into Unitary Development Plans (UDPs). The GMBAP strengthens the commitments made within local planning policy by setting out in greater detail the actions needed to conserve and enhance biodiversity. This helps identify the issues concerned with development encroaching on the biodiversity interest of an area as well as ways in which the planning process can positively contribute to biodiversity targets in Manchester.

3.3 Local Policy and Action for biodiversity

Various plans and strategies within Manchester City Council outline a commitment to conserving biodiversity.

These include:

- The Unitary Development Plan for the City of Manchester.
- The Manchester Community Strategy 2002-2012.
- Manchester Waterways Strategy.
- Parks For All Seasons - a parks strategy for Manchester.
- Manchester Leisure Greenspace Management Strategy.

The incorporation of biodiversity considerations into these documents will help to meet Manchester City Council's duties towards conserving and enhancing biodiversity by looking at the holistic approach to nature conservation with open and green space management.

However, practical action and sustainable maintenance is also needed if conservation and enhancement is to be achieved.

3.4 Unitary Development Plan

The UDP outlines Manchester City Councils' commitment to protect and improve the environment and includes three policies for Environmental Improvement and Protection:

1. measures to reduce and prevent pollution.
2. measures to protect the environment over and above pollution considerations.
3. measures to improve the environment.

All three policies can affect Manchester's biodiversity, both directly or indirectly and are summarised below.

Pollution

The Council wishes to foster a cleaner and less polluted City. This involves action on a range of fronts:

- Substantially reducing levels of air pollution, where the main problems arise from vehicle fumes.
- Cleaning up the city's rivers and canals.
- Carefully controlling waste disposal, encouraging waste recycling and reducing litter.
- Carefully controlling "noisy" developments.
- Promoting energy conservation and environmentally friendly buildings and construction.

Environmental protection

The Council will give environmental protection a high priority. Over and above the measures set out to reduce and prevent pollution, the Council's objectives are:

- Safeguarding the Green Belt.
- Protecting important wildlife habitats.
- Providing good quality agricultural land.

- Preventing, wherever possible, the loss of trees.
- Seeking to retain buildings and areas of architectural and/or historic interest.
- Protecting ancient monuments and sites of architectural interest.
- Maintaining environmental quality in residential areas by carefully controlling development.
- Carefully controlling development involving hazardous installations or "bad neighbour" industrial uses.
- Protecting outdoor sporting and recreational open spaces.

Environmental improvement

The Council's priorities for environmental improvement in the UDP are:

- Creating a network of safe and attractive major linear recreational open spaces by linking and making better use of river valleys, canals, disused railways, and other areas of open space.
- Promoting measures which will lead to a safer environment for all people who live in and use the City.
- Promoting improvements aimed at providing better conditions for disabled people.
- Improving housing areas especially reducing the impact of traffic and dealing with poor quality open space.
- Reclaiming derelict land.
- Upgrading the appearance of major road and rail routes.
- Further enhancing the environment of the City Centre with particular emphasis on improving conditions for pedestrians.
- Enhancing conservation areas and designating further conservation areas.
- Make shopping centres safer and more attractive.
- Upgrading the City's parks and other recreational areas.

3.5 The Manchester Community Strategy 2002-2012

This Strategy sets out a number of objectives about achieving a more sustainable environment.

■ **Investing in children, families and young people**

In many cases high density housing means that managed green space is the first point of contact with nature that people have. This green space is an opportunity for residents and families to benefit socially and educationally.

■ **Housing and Sustainable Communities**

Managing the biodiversity of green spaces will raise the quality of the local environment and help to support the economic value of the area.

■ **Making Manchester Safe**

Nature conservation should not just seek to focus on the biodiversity of Manchester but should also seek to increase the use of the natural environment by local people thereby increasing site surveillance and enhancing community safety; a practise used in the Green Flag management process.

■ **Health Inequalities**

Manchester has some of the most challenging health problems in the UK; biodiversity can encourage the development of healthier outdoor activities and reduce pollution.

■ **Enhancing the cultural base of Manchester**

Well managed and attractive open space can provide the local residents with a communal meeting point and encourage community interaction. Furthermore, there is exciting potential for the linkage, exploration and promotion of the interaction between biodiversity and heritage in Manchester, for example through ancient woodlands and hedgerows, or lodges created during Manchester's textile era. Protection and enhancement of such features to achieve improved biodiversity will contribute to the preservation of heritage sites and the city's historical identity, further linking people with places and forging strong cultural connections.

3.6 Manchester Waterways Strategy 2003

The waterways of Manchester are a major asset for the city and provide significant opportunities to raise the profile of the city through a range of complimentary regeneration initiatives. Manchester's rivers, tributaries and canals are in varying condition and of contrasting characters, from urban to semi-rural. A study was commissioned to examine the existing condition and future role of waterways in the regeneration of the city.

The Strategy was developed in the context of a changing policy background. Statutory legislation such as the European Water Framework Directive aims to encourage member states to improve water quality and provide river basin management plans by 2015, and will be the major policy driver for river management over the next 20 years.

3.7 Parks for All Seasons - A Parks Strategy for Manchester 2003

The Parks Strategy identifies the following priority actions in relation to urban countryside, sustainability and environmental impact, which embrace biodiversity management:

- Review systems for recording wildlife in Manchester through appropriate partnerships. Develop wildlife and conservation strategies.
- Habitat Management Plans for relevant parks and open spaces.
- Adoption of a Local Authority Eco-Management and Audit Scheme, and evaluation against national and local sustainable development indicators.
- Close partnership working, with the integration of other environmental strategies and policies.
- Incorporate the principles, policies and guidelines of a woodlands strategy into park management plans.
- Attract further funding to complete survey of trees and woodland.
- Development of links with appropriate voluntary groups and investigation into accessing environmental grants.
- Development of a strategy for the interpretation and education use of the environmental resource.

3.8 Manchester Leisure Greenspace Management Strategy 2003

This strategic framework provides site-by-site baseline information on landscape and habitat types for all recreational sites, and prescriptive guidance to the development of site-specific management strategies and action plans for these landscape and habitat types.

The framework therefore includes a summary audit of existing habitat and landscape elements throughout the whole of the Manchester Leisure resource including woodland, summary options for change, and an initial Woodland Strategy with broad guidance for the production of woodland management plans.

A programme of production of site-specific management plans is underway which incorporates these landscape and habitat management objectives and prescriptions, including site specific and generic woodland management planning.

3.9 Legislation relating to biodiversity and its relevance to Manchester

- The Wildlife & Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principle mechanism for the legislative protection of wildlife in Great Britain.

It offers protection to:

1. Birds

It is illegal to intentionally kill, injure or take any wild bird (apart from a few quarry or pest species listed in Schedule 2 of the Act) or to take, damage or destroy the nest (whilst being built or in use) or eggs. It is also an offence to possess wild birds (dead or alive) or their eggs. Species listed on Schedule 1 receive additional protection from deliberate disturbance during the breeding season

2. Animals

It is illegal to kill, injure, capture or possess the species listed on Schedule 5 (see below). It is also an offence to damage their habitats or carry out any trade in the species.

Adder	All species of bat
Barberry Carpet Moth	Black-veined Moth
Bottle-nosed dolphin	Burbot
Carthusian Snail	Chequered Skipper butterfly
Common dolphin	Common frog
Common Otter	Common toad
Essex Emerald Moth	Fen raft spider
Field Cricket	Glutinous Snail
Grass snake	Great Crested Newt
Harbour Porpoise	Heath Fritillary Butterfly
Ladybird spider	Large Blue butterfly
Mole Cricket	Natterjack toad
New Forest Burnet Moth	Norfolk Aeshna dragonfly
Palmate Newt	Rainbow Leaf beetle
Red squirrel	Reddish Buff Moth
Sand lizard	Sandbowll Snail
Slow-worm	Smooth Newt
Smooth snake	Swallowtail butterfly
Viviparous lizard	Wart-biter grasshopper

This Act enables statutory sites, Sites of Special Scientific Interest (SSSIs), to be designated and prohibits the release or planting of non-native species into the wild. For example, it is an offence under this act to plant or cause Japanese knotweed to grow in the wild.

■ The Countryside and Rights of Way Act 2000 (CROW Act)

The Countryside and Rights of Way Act 2000 improves the procedures associated with the notification, protection and management of SSSIs and places a statutory duty on public bodies to further the conservation and enhancement of SSSIs. This Act also provides a statutory basis for biodiversity conservation.

Part III of the Act, Nature conservation and wildlife enhancement, gives greater powers for English Nature and the Police to conserve biodiversity and protect wildlife and sites of special scientific interest (SSSIs).

The Countryside and Rights of Way Act also stipulates that local biodiversity action plans are amongst the elements local authorities should build upon when preparing Community Strategies. The role of biodiversity is further recognised by the Local Government Act 2000 in which local authorities are required to include biodiversity in their Community Strategies for economic, social and environmental well being.

■ EC Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EC)

The Directive promotes the maintenance of biodiversity. It prioritises the conservation of habitats and species, which are endangered, vulnerable, rare or endemic. They are protected from killing, disturbance, destruction of eggs and damage to breeding sites and resting-places.

■ Tree Preservation Orders (TPOs)

TPOs are set up to protect trees that make a significant impact on their local surroundings. This is particularly important where trees are in immediate danger. The order makes it an offence to cut down, top, lop, uproot, wilfully damage or wilfully destroy a tree without the planning authority's permission.

■ Greater Manchester Police

Greater Manchester Police have wildlife liaison officers whose role focuses on wildlife protection, providing specialist information about wildlife law, and assisting in the prosecution of any wildlife related crime such as shooting, trapping or baiting which is a serious issue in many of Manchester's open spaces.

3.10 Funding Opportunities

Biodiversity projects benefit from a wide range of Government funding each year.

The Forestry Authorities' Woodland Grant scheme provides improvement grants to woodland management schemes that enhance biodiversity. English Nature's Wildspaces schemes supports the delivery of environmental improvements on Local Nature Reserves, whereas the Greening Greater Manchester Fund has specific criteria relating to biodiversity (see table 5).

There are also potential links to be explored within the private sector which could include sponsorship and the establishment of section 106 agreements.

Table 5: Examples of funding for biodiversity available to community groups, conservation groups & local authorities

Organisation	Name of funding	Summary of funding
British Trust for Conservation Volunteers	Peoples & Places	Grant programme for the creation and renovation of green spaces.
Countryside Agency	Doorstep Greens	Grants available to provide new areas of public open space close to people's homes that could be enjoyed permanently by the local community.
English Nature	Wildspace	Helping local communities to create more LNRs and making the ones we have even better by improving the quality of the local environment.
Esmee Fairbairn Foundation	Environment Grants	Grants towards the promotion of sustainable development. Main priorities include the preservation of the countryside & wildlife.
Forestry Commission	Woodland Grant Scheme	Aims to encourage the creation of new woodlands and the management of existing woodlands
Groundwork North West	Greening Greater Manchester	Small scale grants available to fund biodiversity projects.
Heritage Lottery Fund	Heritage Lottery Fund	With focus on biodiversity, grants are available to buy, conserve and manage land of importance for its scenery, history, wildlife, cultural or local value to make vital contributions to nature conservation.
Royal Society for Nature Conservation	Powergen Environment Fund	Grants to fund strategic projects to deliver Biodiversity Action Plans.
Shell Better Britain Campaign	Community Projects Fund	Grants for projects that show both community and environmental benefit.

4. Current work in Manchester to Improve Biodiversity

4.1 Introduction

Manchester City Council and other external organisations are already managing and conserving biodiversity. The following represent some examples of biodiversity good practice.

4.2 Manchester Leisure

Working on nearly 150 parks, open spaces and playing fields across the whole of the City, Manchester Leisure provide for a whole range of outdoor recreational opportunities. Area management teams provided grounds maintenance support while over thirty ward specific Wardens provide environmental educational support as well as delivering many other sports and health related events and activities.

Biodiversity benefits include:

- Manchester now has five parks of a green flag standard.
- Development of strong community links through the establishment of Friends Groups.
- Nest box construction events and educational monitoring of use, such as programmes of bird, bat and owl box building across many of the city's parks and open spaces.
- Introduction of differential mowing regimes to create wildflower areas.
- Bulb and wildflower planting events city wide.
- Reduction in use of chemical weed control, and increase in use of non-residual weedkillers and organic methods eg, using recycled wood chippings.
- Reduction in peat usage.

4.3 Environmental Strategy and Campaigns Team

The Environmental Strategy Team are involved in a number of key environmental strategies across the city; waterways, sustainable development and biodiversity. The main roles of the team is to advise on and facilitate numerous environmental projects each year.

In 2004 a number of biodiversity themed projects were carried out including:

- Pond clearance at Harpurhey SBI. Over eighty bags of rubbish were collected from in and around the two ponds. Even a car and two washing machines were also removed from the pond. Aquatic plants were planted and selective woodland thinning also took place.
- Biodiversity at Sandhills, Collyhurst. Over thirty nest boxes were built and put up in the wooded areas and wildflower seeds and bulbs were planted.
- Bug safari at Heaton Park. Pupils at Victoria Avenue Primary School helped with an insect survey in Heaton Park.
- Wildabout... Walking leaflets with the Booth centre. Six leaflets have been designed and researched by a group of homeless people detailing biodiversity information on six of Manchesters SBIs. These leaflet will help to raise the profile of each site and raise the benefits of eco-tourism in Manchester.

A exciting project is being developed for 2005. BATCHS (Biodiversity Action To Conserve Habitats and Species) will involve the schools of Manchester adopting a particular species or habitat and help to conserve and enhance it. For example a school might want to adopt the bat and put bat boxes up in the school grounds and plant a variety of different plants that would attract the bats. BATCHS would also aid the collection of the species data.

4.4 Mersey Valley Countryside Warden Service

The Warden Service has been established since 1978 to manage large areas of urban countryside in Manchester and Trafford along the Mersey belt. It has a national reputation for innovation and expertise. The specialist team of wardens provide management, interpretation and education to this important recreation and nature conservational resource. Current Biodiversity work across the river valley includes:

- Sustainable woodland management (thinning cycles, wood product recycling, natural regeneration).
- Native planting.
- Leaving standing deadwood and fallen timber on site where appropriate to encourage insects.
- Wild flower meadow creation and management.
- Hedge planting and management.
- Innovative habitat creation schemes .e.g slow worm/snake sanctuary.
- Reedbed planting and management.
- Pond creation and regeneration.
- Fishery management.

4.5 Red Rose Forest

Red Rose Forest is one of twelve community Forests across England and Wales charged with developing an accessible, diverse and well wooded landscape across the project area. Red Rose Forest has as one of their key objectives, the enhancement of biodiversity across Greater Manchester.

Good practice includes:

- Promoting sustainable woodland management.
- Encouraging take up of Forestry Authority grants to enhance biodiversity.
- Leaving standing deadwood where appropriate.
- Favouring of indigenous hardwoods where appropriate.
- Removal of dominant species like sycamore.
- Replanting with species of local provenance.
- Introductions of woodland wildflowers when and where appropriate.
- Promotion of accessible urban green space through “Green Streets” and “Green Tips” which can also act as wildlife corridors.
- Raising the awareness of biodiversity through events and activities.

4.6 HMG Paints, Collyhurst

The private sector are also involved in biodiversity improvement. In Collyhurst, HMG Paints have undertaken environmental improvements including pond creation and woodland planting. In New Era woods, HMG worked in partnership with the Environment Agency and Red Rose Forest to reclaim a former area of hardstanding and turn it into a great place for people and wildlife by establishing a purpose built wildlife pond and planting hundreds of new trees. The project has been visited by a number of schools and colleges.

4.7 City and Guilds NVQ Environmental Conservation level 2 training

In partnership with City College Manchester and the Manchester Leisure department, training is available to increase the skills and knowledge of biodiversity and nature conservation within Manchester Leisure's Parks Warden service. This course is also available for external students.

5. Good Practise examples for Biodiversity in the UK

Nature and Community development: Castle Manor estate in Sheffield

The Sheffield Wildlife Trust is making nature conservation central to the social and environmental regeneration of the most deprived wards in the city. Using £10 million of partnership funding from the Manor & Castle Development Trust, 22 green estate projects will be implemented over 8 years.

Nature In Your Neighbourhood project in Peterborough

The project, run by the Cambridgeshire and Peterborough Biodiversity Partnership aims to implement the cities Biodiversity Action Plan by enabling and encouraging local communities to become actively involved in their environment. The project offers advice and technical expertise with creating management plans, help with preparing grants bids and managing funds, help with organising community consultation, training and events, and greater access to the partnership organisations.

MapMate in Hampshire and Isle of Wight

Hampshire and Isle of Wight Wildlife Trust now has access to over a million wildlife records, thanks to the growing popularity of the MapMate database in the county. MapMate is a database for storing and analysing species records. It is estimated that over 100 people are using the database, making it a real success in getting people involved in recording biodiversity.

Lower Tees Valley in Middlesbrough

The Wildflower Ark project in Middlesbrough has been set up to grow trees and plants of local genetic stock to supply to conservation organisations in the Lower Tees Valley for use in their habitat creation schemes.

Environmental education in Leicester

A number of Leicester schools have developed nature areas within their grounds which not only enhance biodiversity, but serve as an inspiring teacher resource and outdoor classrooms. School grounds can be particularly barren landscapes so habitat creation, such as natural hedge planting and unmown meadow areas, can significantly enrich the surroundings for pupils and local residents alike.

Green roofs and black redstarts in London

Concerns at the loss of breeding black redstarts in parts of inner London has led to a range of initiatives that may eventually lead to a renaissance of green roofs- those with vegetation or other habitats built onto them. The London Borough of Lewisham has adopted a green roofs policy in their UDP and the Lewisham Biodiversity Partnership has drafted a Green Roof Action Plan.

6. Aims and Objectives

6.1 Key Opportunities

As part of the development of our strategic approach to Biodiversity the key factors identified so far in this document have been summarised in terms of strengths, weaknesses, opportunities and threats.

Strengths

- A developing and diverse landscape.
- Internationally, nationally and locally important species.
- Experience and examples of good practice.
- Continued development of site-specific management plans for parks and river valleys.
- Formalised NVQ level training undertaken by Park Wardens in Ecosystems and Conservation.

Weaknesses

- Lack of species baseline information.
- Limited biodiversity awareness.
- Legacy of Industrial revolution and pollution.
- Fragmentation of habitats.

Opportunities

- Development of supportive strategies e.g. Manchester Waterways Strategy.
- Links to business and area regeneration schemes.
- Positive funding climate.
- Bioremediation.
- Use of information technology to make key information available.

Threats

- Un-coordinated approach.
- Inappropriate development.
- Inconsistent land management.
- Global warming.
- Pesticide & herbicide use.

6.2 Discussion of key opportunities

Manchester has a diverse and changing landscape. It is dissected by a network of river valleys which act as wildlife corridors, and has some of the oldest formal parkland in the country. Topographically the landscape changes from the flat floodplains of the Mersey belt to the higher ground and acid grasslands of north Manchester. The Phase 1 habitat survey provides good data as regards habitat distribution, but more focussed and detailed information is still required in relation to species abundance and distribution.

Evidence from the best value survey of 2003 shows that 16% residents in Manchester value access to nature as a key factor in their quality of life. Subjective evidence shows that biodiversity adds to well being however there are other factors, which have a more direct effect on quality of life. Factors such as access to employment, good quality housing and community safety are all more important to local people.

This does not mean that biodiversity is not important but it does mean that biodiversity cannot prejudice the regeneration of Manchester. Regeneration can at times have a negative impact on biodiversity. Floating water plantain can be affected by increased water traffic. Therefore the renaissance of Manchester's waterways could affect this species. In these cases translocation needs to be undertaken to ensure that the development can proceed. With other more common species a policy of biodiversity replacement may be applicable, although the hierarchy will always to protect on site wherever possible.

Using bioremediation (the use of certain plants as a filtering mechanism) techniques has a proven ecological and environmental benefit. It can help reduce the pollution problem often associated with landfill and wastewater. Reedbeds for instance, have been used for many years as natural filters to reduce the impact of heavy metals leaching into watercourses from landfill. They are also a priority habitat, providing cover for target species like the reed bunting and great crested newt.

Building vibrant sustainable communities means involving people in all aspects of development, including biodiversity. Consultation, awareness raising and participation could lead to a greater understanding of the City's natural resource. Environmental improvements can also engender respect for the environment and provide an important link between people and places. Increased site use and more active local involvement will provide more opportunity for monitoring landscape change and species numbers through events and activities.

Large regeneration schemes such as New East Manchester and the North Manchester strategic framework will reshape communities and their environment. Biodiversity can be integrated into these development plans. In turn, through a number of different funding sources, Biodiversity can be a means of leveraging more funds into regeneration.

The majority of present biodiversity management within the city is uncoordinated and inconsistently or sporadically monitored, with moderate consideration given to biodiversity issues within long term management planning for open spaces in Manchester. This represents a significant challenge for the City. Consistent and appropriate management practices and regimes are needed which maximise biodiversity potential. New strategic initiatives like the Manchester Leisure Greenspace Management Strategy are seeking to address this through the undertaking of a systematic approach to site appraisal and management, with the aim of continually improving efficient, appropriate and sustainable management of parks and recreational open spaces citywide.

One of the main objectives for this strategy will be to set up a species database. Currently there isn't a central source where population numbers can be extracted which leaves it very difficult to assess any increase or decrease in species numbers. This database will allow Manchester to monitor its own priority species, as records will be collated from community groups, schools and colleges, local conservation groups, park wardens and the general public.

6.3 Special projects

Species audit

One of the greatest and most exciting challenges from the biodiversity strategy will be carrying out the species audit of Manchester. Presently only individual groups or organisations record species numbers and there is no central point from which community groups or schools can obtain such data.

Forthcoming projects such as promotional campaigns, garden surveys and school grounds surveys will provide up to date species information across Manchester which will be accessible to all via websites and reports. It will then be possible to find out the population of bullfinches seen in Gorton for example, or discover that Manchester could have nationally important numbers of bats. These figures would also greatly contribute to UK Biodiversity Action Plan targets by outlining the progress for halting the loss of biodiversity by 2010.

Biodiversity Hotspot Awards

The Biodiversity Hotspot awards will focus on small areas of Manchester that are not of SBI (Sites of Biological Importance) or LNR (Local Nature Reserve) status, but are nevertheless very important for local biodiversity. Many community groups, friends of groups, schools and businesses spend a great deal of time carrying out practical conservation work to improve local areas and this should be recognised and celebrated.

All sites recommended will be visited and assessed by using the four criteria below and if suitable, successful sites will be awarded Biodiversity Hotspot status and featured on the Manchester City Council website.

1. Naturalness
2. Diversity
3. Community involvement
4. Sustainability

A small award will also be given to the group to help further their achievements in looking after Manchesters wildlife. The awards will include wildflower seeds, nest boxes, trees or aquatic plants.

6.4 Aims and Objectives

There are a range of benefits that can accrue locally from a biodiverse environment. However, there are also ranges of pressures that potentially threaten this biodiversity and hence positive intervention is required to conserve, protect and enhance Manchester biodiversity in the city.

The Manchester Biodiversity Strategy will serve as a focus for inspiring the people of Manchester to become more responsible towards the environment in which wildlife and we live.

Our wildlife will be enhanced in a sustainable environment in which our multi-cultural society lives. Wildlife provides opportunities to relax, learn, enjoy the outdoors and to develop interests. Manchester will be a poorer place without its flora and fauna.

The Biodiversity Strategy will contribute to the sustainable development of Manchester and the protection of our local biodiversity resource. The ~City of Manchester will, through this strategy, make its contribution to the regional and national biodiversity resource.

As human's activities can damage the environment and result in the loss of wildlife, we need to work hard to protect, conserve and enhance it. We also need to make sure that there is wildlife in the city for future generations to enjoy.

6.5 Manchester's Commitment to Biodiversity Conservation

As a City, Manchester recognises the importance placed on biodiversity and its role in delivering urban renaissance. The conservation and enhancement of our natural resource is a key factor in the building and delivery of safe and sustainable communities.

The primary aim and key objectives take into account the current local and regional context as regards biodiversity.

Manchester aims to:

Conserve, protect and enhance biodiversity in the City for current and future generations

The key objectives are to:

1. To create a full species audit to establish a baseline of biodiversity in the city.
2. To use a best practice approach when managing for biodiversity.
3. Promote biodiversity in Manchester.
4. Promote biodiversity through environmental education.
5. Integrate biodiversity into the wider sustainable development agenda.

Objective 1

To create a full species and habitat audit to establish a baseline of biodiversity in the city.

A full and systematic species audit is necessary in order to establish a baseline of biodiversity in the City.

Priority Actions

- Dataset creation and mapping of all habitats and species across Manchester.
- Involvement of communities, schools and partners in the collation of this information.

Objective 2

To use a best practice approach when managing for biodiversity. Site Management, monitoring and review procedures are not currently in place and need to be identified and agreed to by all partners.

Priority Actions

- To integrate biodiversity into site specific management plans.
- To retain or increase the number & quality of SSSI, SBI, LNR, Green Flag sites and UK-MAB Urban Wildlife Award for Excellence sites.
- To enhance existing and increase the number of wildlife corridors.
- To reduce pesticide usage.
- To reduce peat usage.
- To reduce the impact of non native and problem species where possible.
- To ensure that biodiversity is taken into account when prioritising action for flytipping surveillance and enforcement.

Objective 3

To promote biodiversity in Manchester

Promotion will lead to a greater sense of ownership as regards the City's natural resource. The Strategy provides a significant opportunity to show the importance of biodiversity across all sectors of society:

Priority Actions

- To promote biodiversity through all partner organisations in the public private and voluntary sector.
- To raise the profile of Manchester's major natural attractions by increased publicity.
- To encourage the formation of friends of & community groups and increase the involvement of local people in biodiversity.
- To promote wildlife-friendly gardening in Manchester.
- To fully utilise media opportunities - websites, television, radio, press.
- To promote the benefits of eco tourism across the city.

Objective 4

Promote biodiversity as an environmental education resource

This objective will increase knowledge and develop awareness and understanding of biodiversity, and should be done through all aspects of education. The revision of the National Curriculum in 2000 raised the profile of the environment and sustainable development in education.

This represents a significant opportunity to engage at all levels, from primary and secondary to special needs and further education.

Priority Actions

- To raise biodiversity awareness through national curriculum studies.
- To promote the creation of wildlife gardens in schools.
- To facilitate school ground wildlife surveys.
- To build capacity and increase practical skills in a range of conservation related activities.
- To integrate biodiversity awareness and practical management skills into training and development programmes for employees working in land management.
- To work with higher education sector to develop species audit regime.

Objective 5

To ensure that Biodiversity is integrated into the wider sustainable development agenda

As well as incorporating biodiversity into new build, opportunities will arise to secure funding for biodiversity related projects.

Priority Actions

- To encourage elements of biodiversity, good practice and sustainability into all new developments.
- To encourage developers to identify ecological impacts of proposals through the revised Development Guide.
- To ensure that sites and species of special biodiversity interest (as listed in this strategy) do not suffer any overall negative impact from development.
- To seek protection against inappropriate development through the planning process.
- To maximise the opportunities for improving biodiversity by the introduction of new funding.

7. Action Plan Summary Tables

The action plan summary tables outline the targets and milestones to achieve the objectives of the Manchester Biodiversity Strategy. These actions will also contribute to the aims of the Greater Manchester Biodiversity Action Plan and the UK Biodiversity Action Plan.

ALL - All partners

MCC - Manchester City Council

ES & C - Environmental Strategy & Campaigns

ML - Manchester Leisure

MPL - Manchester Planning

MVWS - Mersey Valley Wardens Service

GWK - Groundwork Manchester

IRK - Irk Valley Project

MVP - Medlock Valley Project

GMBP - Greater Manchester Biodiversity Project

RRF - Red Rose Forest

Objective 1 To create a full species and habitat audit to establish a baseline of biodiversity in the city

Action	Lead agency	Agencies involved	Targets and milestones					
			2005	2006	2007	2008	2009	
Produce a database and map of the habitats in Manchester	ES & C	GMBP	Phase 1 survey to be digitised in GIS format and made available on the internet.					
		MVWS	Digital mapping of all the Mersey Valley sites.	Digital mapping of all the Mersey Valley sites.				
		MVP	Mapping the habitats of the Medlock.	Mapping the habitats of the Medlock.				
Obtain the number of species found in Manchester	ES & C	ALL	Surveys to be carried out.	Surveys to be carried out.	Creation of a species population database and made available on the internet.			
			Species numbers obtained from other agencies.	Species numbers obtained from other agencies.				
		GWK	Ecological surveys of key sites.	Ecological surveys of key sites.				
		MVWS	Monthly species surveys on sites.	Monthly species surveys on sites.	Monthly species surveys on sites.	Monthly species surveys on sites.	Monthly species surveys on sites.	
		MVP	Species site surveys.	Species site surveys.				
Produce a series of biological pollution indicators.	MCC	Universities		Recording system set.	Indicators monitored and controlled.	Indicators monitored and controlled.	Indicators monitored and controlled.	

Objective 2 To use a best practice approach when managing for biodiversity

Action	Lead agency	Agencies involved	Targets and milestones				
			2005	2006	2007	2008	2009
To ensure biodiversity is managed sensitively in Manchesters parks and open spaces	ES & C	ML	The incorporation of biodiversity action plans into parks and open space management.	The incorporation of biodiversity action plans into parks and open space management.	The incorporation of biodiversity action plans into parks and open space management.	Biodiversity Action Plans in all parks and open space management.	
		GWK	Biodiversity issues incorporated into site management plans.				
		IRK MVP	Biodiversity issues incorporated into site management plans.	Biodiversity issues incorporated into site management plans.	Biodiversity issues incorporated into site management plans.	Biodiversity issues incorporated into site management plans.	Biodiversity issues incorporated into site management plans.
To ensure that local biodiversity priorities receive protection	ES & C	ALL	Implement 3 action plans on local priority species.	Implement 3 action plans on local priority species.	Implement 3 action plans on local priority species.	Implement 3 action plans on local priority species.	Implement 3 action plans on local priority species.
To reduce the amount of pesticides used in Manchester	MCC	ALL	Issue a citywide pesticide policy.	Ensure that annually at least 2 landowners reduce their use of pesticides.	Ensure that annually at least 2 landowners reduce their use of pesticides.	Ensure that annually at least 2 landowners reduce their use of pesticides.	Ensure that annually at least 2 landowners reduce their use of pesticides.
		MWWS	Ensure that annually at least 2 landowners reduce their use of pesticides.	Reduction in the usage of pesticides & using onlyones ecommended by the Soil Association.	Reduction in the usage of pesticides & using onlyones ecommended by the Soil Association.	Reduction in the usage of pesticides & using onlyones ecommended by the Soil Association.	Reduction in the usage of pesticides & using onlyones ecommended by the Soil Association.
To reduce the amount of peat used by the City Council and external departments	MCC	ALL				Launch a reduction of peat campaign as part of the Environmental Strategy & Campaigns programme of events.	
		MWWS					

Objective 2 Continued

Action	Lead agency	Agencies involved	Targets and milestones				
			2005	2006	2007	2008	2009
Implement an awareness raising campaign of problem species	ES & C			Launch an event on species as part of the 100 days to a clean city campaign.			
	MWWS		Specific practical events on removing invasive species.	Specific practical events on removing invasive species.	Specific practical events on removing invasive species.	Specific practical events on removing invasive species.	Specific practical events on removing invasive species.
Better protection given to the species and habitats	MCC		Creation and development of site surveillance scheme.				
	ES & C MP		Develop the Harpurphey remediation scheme.				
	RRF		Securing biodiversity benefits on the non-wooded parts of the Community Forest where opportunities are presented by new development.	Securing biodiversity benefits on the non-wooded parts of the Community Forest where opportunities are presented by new development.	Securing biodiversity benefits on the non-wooded parts of the Community Forest where opportunities are presented by new development.	Securing biodiversity benefits on the non-wooded parts of the Community Forest where opportunities are presented by new development.	Securing biodiversity benefits on the non-wooded parts of the Community Forest where opportunities are presented by new development.

Objective 3 Promote biodiversity in Manchester

Action	Lead agency	Agencies involved	Targets and milestones				
			2005	2006	2007	2008	2009
Raise the awareness of the biodiversity in Manchester	ES & C	ALL	What is biodiversity? Week.	Wild about biodiversity week.	Wild about biodiversity week.	Wild about biodiversity week.	Wild about biodiversity week.
			Creation of a Manchester biodiversity webpage.	Wild about interpretation boards in parks and open spaces.	The creation of a biodiversity trail across Manchester.	Biodiversity focused campaigns.	Biodiversity focused campaigns.
	MWWS		Public & private events focusing on biodiversity.	Public & private events focusing on biodiversity.	Public & private events focusing on biodiversity.	Public & private events focusing on biodiversity.	Public & private events focusing on biodiversity.
Encourage the people of Manchester to look after the city's biodiversity	ES & C	ALL	Garden Wildlife Surveys.	Garden Wildlife Surveys.	Allotments and cemeteries surveys.	Garden Wildlife Surveys.	Garden Wildlife Surveys.
			WANTED Posters -have you seen these species?		Garden Wildlife Surveys.	Wildlife community events.	Wildlife community events.
Encourage wildlife friendly gardening	ES & C	ALL	Biodiversity linked Manchester in Bloom.	Wild about gardening leaflets and interpretation.			
Encourage the community to look after the city's biodiversity	MCC				Increase from 16% to 26% residents who value access to nature as important to their quality of life.		
	ES & C		Biodiversity hotspots designated.	Biodiversity hotspots designated.	Biodiversity hotspots designated.	Biodiversity hotspots designated.	Biodiversity hotspots designated.
	GWK MWWS		Formation of Friends of group.				

Objective 4 Promote biodiversity through environmental education

Action	Lead agency	Agencies involved	Targets and milestones				
			2005	2006	2007	2008	2009
Encourage schools to actively contribute to the protection of biodiversity	ES & C		Provide schools with information packs regarding BATCHS. Creation of biodiversity work sheets linked to the national curriculum. Run projects such as bug safaris and pond dipping.	Promote the creation of wildlife gardens in schools through BATCHS. School ground wildlife surveys. Run projects such as bug safaris and pond dipping.	Implement BATCHS. Facilitate 24 school based events.	Implement BATCHS. Facilitate 24 school based events. Develop 50 active school grounds projects eg creation of ponds, wildflower and tree planting, and wild areas.	Implement BATCHS. Facilitate 24 school based events.
	MMWS		School visits with talks and practical projects on biodiversity.	School visits with talks and practical projects on biodiversity.	School visits with talks and practical projects on biodiversity.	School visits with talks and practical projects on biodiversity.	
Encourage external partners to contribute to the protection of through training	ES & C	ALL	Biodiversity & Land Management Training courses.	Non-native species workshops.	Protected species workshop.	Run two workshops.	Run two workshops.
Encourage the universities to actively contribute to the biodiversity	ES & C Universities		Biodiversity site surveys of four sites in Manchester.	Non-native species workshops.	Protected species workshop.	Run two workshops.	Run two workshops.

Objective 5 Integrate biodiversity into the wider sustainable development agenda

Action	Lead agency	Agencies involved	Targets and milestones				
			2005	2006	2007	2008	2009
Inclusion of biodiversity into the review of the Local Development Plan and other key strategies	ES & C MPL		Contribute to biodiversity planning policies in the Local Development Plan.	Ensure that biodiversity is incorporated into the Local Development Plan.	Ensure that biodiversity is incorporated into key strategies.	Ensure that biodiversity is incorporated into key strategies.	Ensure that biodiversity is incorporated into key strategies.
To encourage environmentally friendly development	ES & C MPL		Influence design of major and minor developments in Manchester - eg Maine Road.		Creation of 5 green roof schemes.		
Promote the importance of biodiversity in the development process	ES & C MPL RRF		Produce a leaflet explaining the importance of biodiversity to new development.	Ensure that biodiversity is incorporated into the sustainable design guide.	Review the current level of planning gain achieved to promote biodiversity and determine how any improvement in the level of commitment can be achieved.	Review the current level of planning gain achieved to promote biodiversity and determine how any improvement in the level of commitment can be achieved.	Review the current level of planning gain achieved to promote biodiversity and determine how any improvement in the level of commitment can be achieved.
Investigate funding to support projects such as BATCHS, brownfield site development and community training in biodiversity	ES & C RRF		Promote Greening Greater Manchester. Assisting CA:SH grants applications to increase biodiversity.	Promote Greening Greater Manchester. Assisting CA:SH grants applications to increase biodiversity.	Apply for funding where and when necessary.	Apply for funding where and when necessary.	Apply for funding where and when necessary.
			Ensure Forest partners are aware of and claiming their full entitlement of grant funding.				

APPENDIX 1

Priority Habitat Audit

Lowland broadleaved woodland

What are lowland broadleaved woodlands?

The term lowland broadleaved woodland refers to ancient semi-natural woodlands, semi-natural secondary woodlands and plantations.

Ancient woodlands are regarded as the most important of the three woodland types as they have a long continuous woodland history and often have rich, diverse plant and invertebrate communities as a result. Ancient semi-natural woods are those where there has been continuous woodland cover prior to 1600.

Semi-natural secondary woods are those where woodland has grown up after the land has been used for something else e.g. quarrying, agriculture and industry.

Plantations are those sites where trees have been deliberately planted, often for amenity, recreation or as landscaping. Plantation woodlands are usually considered to be less important in ecological terms than ancient or secondary woodlands.

Why are lowland broadleaved woodlands important?

Lowland broadleaved woodland is a priority habitat in the UK and Greater Manchester Biodiversity Action Plans.

Their importance is derived from the lack of woodland cover that now exists in the UK as a result of clearance of the land for agriculture and development. This has resulted in the current woodland resource being fragmented and isolated amongst tracts of agricultural land or urban development. Lowland broadleaved woods in Manchester are generally fragmented, isolated and in an unfavourable, although stable condition. This means that compared to more extensive and less disturbed woods, natural woodland ecosystem functions are often disturbed resulting in a reduction in the species diversity and communities that are potentially able to exist.

Locations in Manchester

The majority of woodlands in the Greater Manchester area are semi-natural secondary or plantation woodlands although ancient woodlands do still exist, often associated with steep sided cloughs or in the south of the city amongst largely agricultural land. Important examples of ancient semi-natural woodland exist such as at Cotteril Clough in Halebank, which is a nationally important site for its ancient woodland.

Semi-natural woodland is evenly distributed to the north and south of the city. In the south around the airport and Wythenshawe are smaller isolated bodies of mature oak woodland. Some of these woodlands have good structure and diverse ground flora.

Issues affecting lowland broadleaved woodlands:

- Presence of some non-native invasive species eg: Japanese Knotweed.
- Recreational pressure: motorbiking, off road cycling.
- Illegal tipping, fires, vandalism.
- Lack of conservation management by landowners.
- Presence of grey squirrels leading to tree damage.

Plate 1: lowland broadleaved woodlands



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Acid Grassland

What are acid grasslands?

Acid grasslands usually occur on nutrient poor soils (less than pH 5.5) over acidic rocks such as sand and gravel, or on post-industrial sites such as spoil heaps, disused quarries and railway embankments and are generally poor in plant nutrients.

Lowland dry acid grassland occurs on free draining soils and is typically composed of plant species such as wavy hair-grass, fescues and bent grasses. Large expanses of acid grassland, uniform in character, also occur in the uplands. These sites often support a limited range of plant species, sometimes as a result of past management practices. Acid grasslands can arise following the loss of heathland communities.

Why are acid grasslands important?

Acid grassland is a priority habitat in the Greater Manchester Biodiversity Action Plans, with lowland dry acid grassland a UK priority habitat.

Although there are no precise figures available on the rate of loss of acid grassland, this habitat has undergone substantial decline in the 20th century largely due to agricultural intensification, succession and loss to social and economic development.

Lowland dry acid grassland is important for invertebrates with many of these species being specialist species of acid grassland and which do not occur in other types of grassland. The open parched acid grasslands on sandy soils in particular, can support a considerable number of ground-dwelling and burrowing invertebrates such as solitary bees.

Locations in Manchester

Acid grassland is extensive in the uplands of North West England, but is rare in lowland situations, where it has often been subject to agricultural improvement or development. Within Manchester it is generally fragmented and restricted to the North of the city, at sites such as Blackley Forest.

Issues affecting acid grasslands:

- Loss to development.
- Forestry planting.
- Recreational pressure including activities such as mountain biking.
- Atmospheric pollution and climate change.
- Agricultural intensification.

Plate 2: Acid grassland



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Ancient and/or species-rich hedgerows

What are Ancient and/or species-rich hedgerows?

Ancient hedgerows support the greatest diversity of plants and animals of all hedgerows. They are defined as those that were in existence before the Enclosure Acts of 1840. Species-rich hedgerows may be taken as those that contain 4 or more native woody species.

Hedges are also considered to act as wildlife corridors or stepping stones, providing links between semi-natural habitats in often hostile landscapes, such as agricultural land or urban areas where little semi-natural habitat may remain.

Why are Ancient and/or species-rich hedgerows important?

Species-richness of hedgerows has been linked to their age. The older the hedgerow, the more woody species you tend to find within them. These will have established naturally over time. However, more recently planted hedgerows are also important as England has suffered a 21% net loss of hedgerow length between 1984 and 1990. They are a primary habitat for at least 47 species of conservation concern in the UK, including 13 globally threatened or rapidly declining ones, more than for most other key habitats. They are especially important for butterflies and moths, farmland birds, and bats.

Indeed, hedgerows are the most significant wildlife habitat over large stretches of lowland UK and are essential refuge for a great many woodland and farmland plants and animals. Over 600 plant species, 1500 insects, 65 birds and 20 mammals have been recorded at some time living in hedgerows.

Locations in Manchester

Species-rich hedges are a UKBAP Priority Habitat, and occur in various locations around Manchester. Some of these have been recently planted as part of habitat creation schemes. Others, for example along Stenner Lane near Fletcher Moss in Didsbury, which has a diversity of woody species along its length and an interesting understorey, are older. Other species-rich hedges occur along Sunbank Lane in Ringway. These are some of the oldest hedgerows in the city.

Issues affecting Ancient and/or species-rich hedgerows:

- Neglect (no cutting or laying) leading to hedgerows changing into lines of trees and the development of gaps.
- Too frequent and badly timed cutting.
- Use of herbicides, pesticides and fertilisers.
- Increased grazing from livestock and rabbits.
- Removal for agricultural and development purposes.

Plate 3: Ancient and/or species-rich hedgerows



© Pat Waring

Wet Woodlands

What are wet woodlands?

Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams, in peaty hollows and often as an integral part of lowland broadleaved woodland. These woodlands occur on a range of soil types including nutrient-rich mineral and acid, nutrient-poor organic ones.

They tend not to be managed, but some may be coppiced, or at least have been coppiced in the past.

Why are wet woodlands important?

Wet woodland is a UK Biodiversity Action Plan priority habitat.

It combines elements of many other ecosystems and as such is important to a diverse range of flora and fauna, including a number of priority species including reed bunting (UK Priority species found in Manchester), weevils, craneflies, and the netted carpet moth. Willow trees themselves support rich assemblages of invertebrates more than all other tree species except for the oak.

Although found throughout the UK, wet woodlands are generally small in size and moderate to large wet woods are extremely rare. Dead wood within the sites can be frequent, and its association with water provides specialised habitats not found in dry woodland types.

Locations in Manchester

A good example of Willow-Carr Woodland is at Stenner Woods in Fletcher Moss Gardens in Didsbury, whilst Nan Nook Wood in Wythenshawe contains an area of Alder-Carr Woodland. The Carr Woodlands occur as part of larger woodland bodies with the ground flora being generally more diverse than the adjoining areas.

Issues affecting wet woodlands

- Clearance and conversion to other land-uses.
- Lowering of water-tables through drainage or water abstraction.
- Poor water quality from eutrophication, industrial effluents or rubbish dumping.
- Invasion by non-native invasive species.
- Disease, particularly phytophthora.

Plate 4: Wet woodlands



© Pat Waring

Lowland heathland

What are lowland heathlands?

Lowland heath occurs below an altitude of 300m on low sandstone hills and glacial and wind blown sand deposits. The habitat is characterised by a predominance of dwarf shrubs, almost always with heather as the dominant species, with bilberry and bell heather occasionally present.

Dry dwarf shrub heath and wet dwarf shrub heath both occur in Manchester, although in very small isolated habitats.

Why are lowland heathlands important?

Lowland heathlands, along with many other priority habitats, are irreplaceable, and must be managed to maintain their special character.

Heathland is a UK BAP Priority Habitat and listed in the EC Habitat Directive and is very rare and threatened in Manchester. The UK has an important proportion (about 20%) of the international total of this habitat.

Many people value its appearance and its location as quiet refuges.

Locations in Manchester

Dry heath is situated near Baileys Wood in Charlestown, in fragments near Alconbury Flushes and Boggart Hole Clough in Blackley, and at Moston Fairway. Wet heathland is extremely rare in the whole of Greater Manchester. There is an isolated fragment near Alkrington Woods Nature Reserve on the edge of Nutbank Common near Blackley.

Issues affecting lowland heathlands

- Encroachment of trees and scrub.
- Nutrient enrichment from pollution and agricultural practises.
- Fragmentation and disturbance from development.
- Agricultural improvement.
- Uncontrolled burning.

Plate 5: Lowland heathlands



© Pat Waring

Reedbeds

What are reedbeds?

Reedbeds are wetlands dominated by stands of common reed *Phragmites australis* in which the water table is at or above ground level for most of the year. They incorporate areas of open water and ditches, and small areas of wet grassland and wet woodlands. Although common reed predominates in a true reedbed, there may also be large stands of other wetland plants such as reed canary grass, bullrush and yellow iris.

The high water table and the dominance of reed mean that these habitats are relatively poor in other plant species, but they may support high populations of fauna.

In the North West most reedbeds are unmanaged, but a few are cut for thatching reed or nature conservation purposes.

Why are reedbeds important?

Reedbeds are a UK Key Habitat and is an UKBAP Priority Habitat. Furthermore alkaline fens and calcareous fens are listed on Annex 1 of the EC Habitats and Species Directive.

Reedbeds are amongst the most important habitats for birds in the UK and when extensive, can support a distinctive breeding bird group; which includes the UK Priority species Bittern and Reed Bunting. Reedbeds also provide roosting and feeding sites for a number of birds and support a distinctive invertebrate fauna.

Reedbeds are now being artificially created to act as natural filters, helping to remove sewage and industrial waste from waterbodies.

Locations in Manchester

Reedbeds are very scarce in Manchester, although a healthy area is present at Clayton Vale in Newton Heath and Chorlton Ees and have been recently introduced at Chorlton Water Park LNR.

Issues affecting reedbeds

- Loss of area by excessive water extraction.
- Lack of appropriate management of existing reedbeds.
- Pollution of waters feeding into reedbeds.
- Fragmentation of the habitat.
- Land reclamation through landfill.

Plate 6: Reedbeds



© Pat Waring

Unimproved neutral grassland (includes lowland meadows)

What are unimproved neutral grasslands?

Neutral grasslands are found on moist mineral soils with a pH of between 5 and 6.5. They do not normally occur on soils that combine extremes of acidity or alkalinity with extremes of wetness or dryness. The majority of the neutral grassland found in the UK is now species-poor "improved" grassland that has been modified by extensive use of fertilisers, reseeding and drainage. Therefore agriculturally unimproved grasslands are of the highest conservation value.

Lowland meadows are found in a small number of farms where traditional management practices have been retained. Management characteristically entails low-level inputs of farmyard manure and aftermath grazing, where the post cutting summer regrowth is grazed off.

In non-agricultural settings, such grasslands are less frequent but additional examples may be found in recreational sites, churchyards, roadside verges, post-industrial sites and a variety of other localities.

Why are unimproved neutral grasslands important?

Two types of neutral grassland are listed in Annex 1 of the Habitats Directive; lowland hay meadow and mountain hay meadow. Upland hay meadows and lowland meadows are also both UK Priority Habitats.

Commonly dominated by up to 6 or 7 types of grass, it may also contain meadow species such as tufted vetch, red clover, buttercup and common ragwort. These areas can provide good habitat for invertebrates and mammals and a rich food source for birds. Their value for wildlife can be improved through different grassland management regimes.

Locations in Manchester:

Good examples occur near to Manchester Airport at Castle Mill Farm and at Highfield Country Park.

Neutral grassland also occurs in parks such as Heaton Park and Chorlton Water Park where the grasslands may be dominated by vigorous species such as cocksfoot, yorkshire fog and false oat grass. These grasslands are agriculturally unimproved, but are often botanically species poor due to the cuttings not being taken off.

Issues affecting unimproved neutral grassland

- Agricultural improvement, e.g. drainage, ploughing, and conversion to arable.
- Decline in the perceived agricultural value of species-rich pasture and hay.
- Abandonment leading to overgrowth, bracken and shrub encroachment.
- Application of fertiliser, herbicides and other pesticides.
- Intensive mowing regimes.
- Non-clearance of arisings.

Plate 7: Unimproved neutral grassland



© Pat Waring

Marshy grassland

What are Marshy Grasslands?

Marshy grassland occurs on predominately level areas and is generally found on permanently damp soils or land with impeded drainage.

This is a wet habitat covering a range of categories including purple moor, rush and sedge grasses. Associated plants may include meadowsweet, ragged robin, lady's smock, marsh marigold and marsh orchid species. This habitat is generally very good for wildlife, supporting a range of invertebrates such as craneflies and birds such as snipe.

Why are Marshy Grasslands important?

There is concern for this habitat's conservation in Greater Manchester.

Although the wider definition of marshy grassland described in this Action Plan is not covered specifically by a national BAP, it is of local concern, and included in the GMBAP.

Locations in Manchester

Fragments of this habitat occur around Manchester with Moston Fairway and Broadhurst Clough in Moston having good examples and are valuable wildlife resources within the city. This important habitat is threatened by scrub colonisation and inappropriate tree planting as at Broadhurst Clough where the areas hydrology will be affected and succession to dry land will occur.

Issues affecting marshy grassland

- Agricultural intensification e.g. drainage, cultivation and fertiliser applications.
- Inappropriate management.
- Agricultural abandonment.
- Fragmentation and disturbance for development.
- Planting or the natural succession of tree species.

Plate 8: Marshy grassland



© Manchester City Council

Managed greenspace

What is managed greenspace?

This category includes amenity grassland (i.e. intensively managed and regularly mown grassland), private gardens, allotments, majority of parkland, planted shrubberies, playing fields, golf courses, grounds of buildings, churchyards and cemeteries. Their proximity to schools and housing also make them an ideal resource for learning about the natural world. All these areas are managed to some degree, but can still support important species of insects and birds, including UK Priority species song thrush and linnet.

The City of Manchester has nearly 20% of the total area of amenity grassland in Greater Manchester. In addition to the grassland that dominates these sites, remnants of a diverse range of semi-natural habitats including woods, scrub or ponds are often found within their boundaries or next to them.

Why are managed greenspace important?

Managed greenspace is important to global biodiversity as it offers an important refuge for many plants and animals living within an urban environment.

UK Biodiversity Action Plan Priority habitats and species are often found within the boundaries of managed greenspace sites including lowland dry acid grassland, lowland mixed broadleaved woodland, lowland heathland, great crested newts and water voles.

Locations in Manchester

Manchester boasts more than 35 parks, and many gardens and open spaces. Many form links within river valley catchments such as from the Mersey Valley in the south of the City to the Medlock Valley in the East and the Irk Valley in the north.

Gardens are a major urban wildlife habitat, with the largest present in the south of the city. Areas such as Whalley Range and Withington where amenity grassland is the major habitat, may provide the most valuable habitat for wildlife.

Issues affecting managed greenspace

- Unsympathetic management of greenspaces e.g. clearing of shrubs, filling in ponds, intensive mowing programmes.
- Reclamation or redevelopment of semi-natural land to a uniform and sterile landscape.
- Development encroachment onto greenspace.
- Vandalism, fly tipping.

Plate 9: Managed greenspace



© Manchester City Council

Canals

What are canals?

Canals such as water filled channels, cuttings, embankments and bridges have an important role to play in the conservation of biodiversity.

Many canals differ from natural watercourses because of their low water flow which enables the growth of scrub offshores, flower rich towpath verges and diverse emergent vegetation fringes.

Why are canals important?

Canals are a priority habitat in the UK and Greater Manchester Biodiversity Action Plan. Canals are generally of high conservation value often supporting a diverse flora and fauna and act as green corridors across Manchester. The walls of the canals offer niches for ferns and communities of mosses and liverworts.

The Rochdale Canal has been designated as a candidate Special Area of Conservation (cSAC) due to the occurrence of internationally significant populations of floating water plantain *Luronium natans*. Floating water plantain itself is listed on the Annexes II and IV of the EC Habitat Directive and Appendix I of the Bern Convention.

The Ashton and Rochdale canals are both designated Sites of Biological Interest (SBI). Their designation as SBI's reflects their importance as a conservation resource providing excellent habitat for plants, birds, invertebrates and fish. Short sections of the Bridgewater and Manchester ship canal are also present within the city boundary.

Locations in Manchester

The Rochdale Canal and Ashton Canal are SBIs. Both are very important for Manchester biodiversity.

Issues affecting canals

- Growth of non-native and native dominant species.
- Large scale developments such as marinas, or development next to canals removing the surrounding habitats.
- Boating use e.g. pollution, disturbance and damage.
- Fluctuation of water levels.
- Pollution.

Plate 10: Canals



© Manchester City Council

Ponds and Lodges

What are ponds and lodges?

Ponds are man-made or natural bodies of freshwater ranging 1m² to 2 hectare in area, which hold water for all or part of the year. They can be found in various locations including abandoned industrial sites, marl pits, brickworks, and well as in more natural locations in woodlands and farmland settings.

Lodges are man-made waterbodies, with most being created to hold water for industrial processes, such as for the textile industry. Many lodges consist of extensive areas of open water, with some areas of marginal vegetation within them.

Ponds and Lodges are a GMBAP priority habitat, but they can vary greatly in their actual value for wildlife. Ponds can suffer from pollution, inappropriate stocking of fish and gravitational runoff which decreases their diversity. Others support a diverse fauna and flora with good marginal vegetation and adjacent habitats such as swamp, rough and marshy grassland providing good habitat for amphibians, invertebrates and birds.

Why are ponds and lodges important?

The UKBAP Broad habitat "Standing Open Waters" covers ponds and lodges, and are a Greater Manchester Priority Habitat.

Ponds are found throughout the UK but there has been a significant decline in their numbers over the last century.

Some marl pits near the airport are breeding grounds for great crested newt, with the species themselves being protected under the Wildlife and Countryside Act and listed in the EC Habitat Directive Bern Convention and is a UKBAP and GMBAP Priority Species.

Locations in Manchester:

There are over 50 ponds spread around Manchester based in parks, nature reserves and other open spaces. Many of these have been created as a result of marl extraction, and occasionally for fishing and specifically for wildlife. There are also hundreds of garden and private ponds citywide, which provide excellent habitat for local wildlife

Some good examples are near the Manchester Airport runway, Heaton Park, Clayton Vale Country Park and Fog Lane Park in Burnage.

Issues affecting ponds and lodges

- Habitat loss due to development.
- Enrichment and pollution due to agricultural and industrial runoff.
- Introduction of non native and native invasive species.
- Poor and uncoordinated management eg drainage.

Plate 11: Ponds and lodges



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APPENDIX 2

Priority Species Audit

Great Crested Newts (*Triturus cristatus*)

The great crested newt is the largest of the three native newt species; the other two being the smooth and the plamate newt.

Great crested newts require both aquatic (wet) and terrestrial (dry) habitats to complete their life cycle. They rely on ponds for breeding and for the development of tadpoles. Terrestrial habitats such as grassland, marsh, reedbed and scrub are essential for the remainder of their life cycle and provide food, shelter and hibernation sites. Hedgerows, ditches and field margins are also important to allow the newts to move safely around their local environment.

Great crested newts need clean, preferably fish-free ponds or small reservoirs in which to breed. The most suitable ponds are over 50cm deep with well-developed aquatic vegetation. Larger ponds, where fish and waterfowl are more common, are generally avoided as predation is a major factor on population numbers.

Plate 12: Great crested newt



© Paul Hobson/Naturepl.com

Why are Great Crested Newts important?

The great crested newt is a native species and is a UKBAP & GMBAP Priority species.

The great crested newt is still quite widespread in Britain, but has suffered a decline in recent years with studies in the 1980s indicating a national rate of colony loss of approximately 2% every five years.

They are listed on Annexes II & IV of the EC Habitats Directive and Appendix II of the Bern Convention. It is protected under Schedule 2 of the Conservation (Natural habitats) Regulations 1994 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This means that the law protects great crested newts against trade, transport, possession, capture, injury, killing or disturbance. Furthermore their habitat also received legal protection from disturbance.

Issues affecting great crested newts

- Loss of ponds and lodges through development.
- Introduction of fish to waterbodies.
- Loss of ponds and lodges through natural vegetation changes.
- Loss of associated terrestrial habitats eg. hedgerows.
- Pollution.

Water Vole (*Arvicola terrestris*)

The water vole is a small mammal closely related to rats and mice, known to many as Ratty in Kenneth Grahame's book 'The Wind in the Willows'. They are easily recognised by its rounded face and body, and short ears that extend just beyond the fur. Water voles feed mainly on waterside vegetation of grasses, sedges, rushes and reeds.

They are most frequently found in densely vegetated banks of ditches, dykes, rivers and streams, generally where the current is slow and water is present throughout the year. Water voles usually live in a series of burrows dug into waterside banks, often comprising numerous chambers, tunnels and entrances. Occasionally they will weave a nest into the base of waterside vegetation.

The presence of water voles can usually be identified by latrines, food waste and burrows.

Plate 13: Water vole



© Mike Read/Naturepl.com

Why are water voles important?

The water vole receives limited protection by its inclusion on Schedule 5 of the Wildlife and Countryside Act 1981, which protects its habitat but not the species themselves - unless the animal is in its place of shelter. The water vole is also a priority species in the UK Biodiversity Action Plan.

Until 1960 several million water voles lived along streams and riverbanks, but they have suffered a serious long-term decline and have disappeared from nearly 90% of these sites.

Many of the habitats where water voles can be found are important in their own right. Habitats such as swamps and reedbeds are all UK priority habitats and are of high value in both a national and local context.

Issues affecting water voles

- Habitat loss and fragmentation.
- Mink predation.
- Poor water quality.
- Direct poisoning.

Brown hare (*Lepus europaeus*)

This widespread farmland mammal was probably introduced into the UK in Roman times as a source of food. The hares population has increased with the development of agriculture, and the increased availability of food.

Brown hares prefer extensive areas of open grassland, ideally areas with mixed arable and livestock farming and require tall vegetation as cover from predation, especially in their breeding season.

The brown hare is predominantly nocturnal, spending most of the day in small depressions in the grass. At night the hare ventures out, grazing on the young shoots of grasses and herbs as well as agricultural crops.

Plate 14: European brown hare



© Bernard Castelein/Naturepl.com

Why are brown hares important?

The brown hare is a priority species under the UK Biodiversity Action Plan.

Although widespread, its population has declined considerably since the 19th Century. A national survey in 1991 to 1993 estimated the UK population to be at least 817,500, only about 20% of the 1880 population.

Currently the species has minimal legal protection as it is still classed as a game species. They are still-hunted throughout their breeding season and are the only UK game species not to have a closed season, when hunting is prohibited.

Issues affecting brown hares

- Loss of grassland.
- Loss of habitat diversity in the agricultural landscape.
- Changes in planting and cropping regimes.
- Road fatalities.
- Predation from other species.

Pipistrelle bat (*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*)

The pipistrelle bat is the most abundant bat in the UK.

It is one of the smallest of bat species, measuring 3.5 to 5 cm long, and a wingspan of less than 30 cm. The ears are short and blunt and the same dark brown colour as its face. Its body is covered with fur, which is dark-brown, dark-orange or black on its back, and slightly paler on the underside.

Pipistrelles roost in trees and under external features, such as hanging tiles. They feed on flies along woodland edges, in open woodland, suburban gardens, marshes and over water. However due to these natural habitats being lost, the pipistrelle is using more 'man made' habitats such as houses, barns and bridges.

Plate 15: Pipistrelle bat



© Jim Hallett/Naturepl.com

Why are pipistrelle bats important?

The pipistrelle bat is listed as a UK Priority species, with all the other bat species of conservation concern. All species of bat are listed in the Greater Manchester Biodiversity Action Plan as priority species.

Bats are listed under Appendix II of The Bonn Convention, Appendix III of the Bern Convention and Annex IV of the EC Habitats Directive. In the UK this species is protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981, and Schedule 2 of the Conservation Regulations 1994.

The pipistrelle is thought to have undergone a significant decline in numbers this century. Estimates from the National Bat Colony Survey suggest a population decline of approximately 70% between 1978 and 1993.

A license is required to be able to handle bats and enter roost sites.

Issues affecting pipistrelle bats

- Reduction in insect prey abundance.
- Loss of insect-rich feeding habitats and flyways.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts.
- Deliberate exclusion from house roosts.

Skylark (*Turdus philomelos*)

The skylark is a small brown bird, somewhat larger than a sparrow but smaller than a starling. It is streaky brown on the back and white below with dark-brown streaking on the upper breast. A small crest is only visible when raised.

One of the most widespread birds of the British Isles, with over 2 million breeding pairs, the resident population is joined in winter by a significant proportion of the northern European population - possibly up to 25 million individuals.

Skylarks utilise a wide range of open habitats including arable farmland, saltmarsh, coastal grazing land and rough grazing in the uplands.

Plate 16: Skylark



© Pete Cairns/Naturepl.com

Why are skylarks important?

The skylark is listed as a UK Priority Species.

Although widespread, the UK breeding population of skylark on lowland farmland declined by 54% between 1969 and 1991. This is thought to be mainly down to the move to more intensive farming methods.

Until recently with the development of species action plans, little action has been taken to help the skylark. The British Trust for Ornithology census work has only recently highlighted its decline, although they are protected under the Wildlife and Countryside Act (1981), and listed under the EC Birds Directive.

Issues affecting skylarks

- Intensive management of arable fields.
- Increased trend to autumn-sown cereals.
- Conversion of lowland grassland to arable.
- Intensive management of grasslands.
- Early silage cutting (destroys nests and exposes predators).

Linnet (*Carduelis cannabina*)

Slightly smaller than a sparrow, this finch is a common and widespread species across the UK countryside. It uses weedy fields, hedgerows, gorse thickets, heathland and scrub. It may also inhabit orchards, heathland, saltmarshes, gardens and parks.

Their main food source is weed seeds, and, following changes in farming practices, they also feed on garden weeds in suburban gardens, while others feed on oil seed rape.

Males have deep brown backs and grey heads and during the breeding season they develop a striking pinkish-crimson crown and breast. Both sexes of linnet have white edges to their wings and tail.

Plate 17: Linnet



© David Kjaer/Naturepl.com

Why are Linnets important?

This species seems to be widespread but is declining across the whole of North West England. Based on the Common Bird Census, numbers declined by 56% on farmland between 1968 and 1991.

As such, the linnet is listed as a UK Priority species, and is also on the Red List of Birds of Conservation Concern.

They are also protected under the Wildlife and Countryside Act 1981, EC Birds Directive, and are listed on Appendix II of the Bern Convention.

Issues affecting Linnets

- Changes in agricultural practices.
- General reduction in farmland habitat diversity.
- The removal of hedges, gorse thickets and other unmanaged scrub.
- Increased hedge trimming and heavy grazing.

Reed bunting (*Emberiza schoeniclus*)

The reed bunting is a sparrow-sized bird with a long notched tail. Both sexes have reddish-brown upperparts with dark streaks, and pale creamy-white underparts with brown streaks.

They are year-round residents of Britain that live in reedbeds and other wetland habitats, as well as drier farmland locations such as overgrown ditches and hedgerows. They appear to also need scrub or similar vegetation, dry nest sites and low levels of environmental disturbance.

Their preferred food source is weed seed. Although they may occasionally visit garden feeders such as bird tables, during periods of winter or of extreme cold.

Plate 18: Reed bunting



© David Kjaer/Naturepl.com

Why are reed buntings important?

The species has been undergoing a substantial decline since the 1960s. British Trust for Ornithology surveys have shown that between 1970 and 1998 there was a 68% decline in their numbers.

The reed bunting is protected under the Wildlife and Countryside Act 1981, EC Birds Directive, on the red list of Birds of Conservation Concern and is listed on Appendix II of the Bern Convention. It is an offence to deliberately kill, capture, damage or destroy any breeding and nesting sites, or to disturb, take the eggs or trade in the species.

Issues affecting reed buntings

- Changes in agricultural practice, e.g. increased pesticides & fertilisers use.
- Switch from spring-sown to autumn-sown crop.
- More intensive use of grassland.
- General reduction in habitat diversity on farmlands.
- Deterioration of wet habitats (Loss of small ponds, poor river management)

Spotted flycatcher (*Muscicapa striata*)

The spotted flycatcher is an insectivorous summer migrant, feeding on flying insects such as flies, beetles, aphids and wasps, which breeds in open wooded habitats throughout the UK. Preferred habitats are mature broadleaved woodland (though it will also use mature conifers), hedgerows with mature trees, parkland and large gardens.

Adult are ashy-brown with a softly streaked white breast; the forehead is also streaked.

Nests are built in sheltered locations from twigs, moss and grass with a soft lining of hair, wool and feathers.

Plate 19: Spotted flycatcher



© Mike Wilkes/Naturepl.com

Why are spotted flycatchers important?

The spotted flycatchers are priority species under the UK Biodiversity Action Plan.

This species is protected under the Wildlife and Countryside Act 1981, is listed on Appendix II of the Berne Convention, and on Appendix II of the Bonn Convention. It is on also the red list of Birds of Conservation Concern as its population has been on Decline since the 1960s and records show a 62% decline in woodlands and a 70% decline on farmland.

Issues affecting spotted flycatchers

- Changes in agriculture e.g. increased pesticide use.
- Loss of nest sites.
- Weather effects e.g. global warming.

Tree Sparrow (*Passer montanus*)

Similar to the house sparrow, the tree sparrow was not recognised as a separate species until 1713. Both sexes look similar, with a brown head and neck, a clear black spot on white cheeks, and a white collar.

The tree sparrow inhabits open farmland with plenty of hedgerows, trees or small woodland patches. They can also be found in large gardens and disused quarries and on the edges of wetlands and open water such as reservoirs and gravel pits.

They feed mainly on plant matter, including seeds, buds, shoots, berries and flowers, but also eat grasshoppers, beetles and spiders when available.

Plate 20: Tree sparrow



© Mike Wilkes/Naturepl.com

Why are tree sparrows important?

Tree sparrows are listed as a Priority species in the UK Biodiversity Action Plan.

The UK population of the tree sparrow underwent a drastic decline of 95% between 1970 and 1998. The tree sparrow is protected under the Wildlife and Countryside Act 1981, and is on the red list of Birds of Conservation Concern and EC Birds Directive.

Issues affecting tree sparrows

- Changing agricultural practices, e.g. increased use of herbicides.
- Shift from spring-sown to autumn-sown crops (loss of winter stubble fields).
- Intensive management of grassland.
- General reduction of habitat diversity on farmland.
- Availability of nest sites may be a limiting factor.

Grey partridge (*Perdix perdix*)

A native farmland bird, it is a small-headed, round gamebird, with an orange face and throat, green bill, green bill and grey legs.

As well as farmlands, they can also be found on wasteland, and moors. Adults primarily feed on grasses, seeds and shoots, but will also eat insects during the breeding season.

Plate 21: Grey partridge



© Mike Wilkes/Naturepl.com

Why are grey partridges important?

Grey partridge was once the tenth most numerous bird in the UK. It used to be common on many farms, but numbers have declined seriously over the last 40 years. Between 1969 and 1990, the population fell by more than 50%.

The Grey partridge is a priority species in the UK Biodiversity Action Plan. It is also protected under the Game Act and listed on Annex III/I of the EC Bird Directive, Appendix III of the Bern Convention, and on the RSPBs Red List of Birds for Conservation Concern.

Issues affecting grey partridge

- Loss of nest sites (such as hedge bottoms) to farm intensification.
- Reduced food supplies through the use of pesticides and herbicides.
- Loss of winter stubble feeding grounds for overwintering birds.
- Vulnerability of nests to predators in farmland with poor cover.
- Nest destruction caused by early mowing and other farm operations.

Bullfinch (*Pyrrhula pyrrhula*)

The bullfinch is a fairly common and widespread resident species found in woodland, in orchards and on farmland, where it is closely associated with dense shrubs, scrub and untrimmed hedges and have a broad diet, consisting mainly of the seeds and berries of a variety of plants.

The bullfinch has a stubby bill, a black face and cap, a white bar on the black wings, and a white rump.

Amazingly, when bullfinches occurred in higher numbers they were considered to be pests of orchards due eating tree buds and can still be trapped under license in Kent.

Plate 22: Bullfinch



© Paul Hobson/Naturepl.com

Why are bullfinches important?

The bullfinch is a priority species in the UK Biodiversity Action Plan.

Between 1968 and 1991 there was a massive 75% decline in bullfinch numbers on farmland and a 47% decline in woodland in the same period.

It is protected under the Wildlife and Countryside Act 1981 and is on the Red List of the Birds of Conservation Concern.

Issues affecting bullfinches?

- Removal of farmland trees and hedgerows.
- Reduction in quality of remaining hedges due to frequent trimming.
- Loss of winter food sources through the use of herbicides.
- Loss of winter stubble fields.
- Trapping.

Song thrush (*Turdus philomelos*)

The song thrush is a common and widespread species, although it is declining throughout the UK.

The song thrush is slightly smaller than a blackbird, has brown upperparts and creamy underparts with brown spots.

Found in parks, small woodlands, hedgerows and gardens. They require trees and bushes with areas of open grassland and moist soil. The song thrushes diet is varied, although earthworms form a very important part of their diet.

Plate 23: Song thrush



© Pete Cairns/Naturepl.com

Why are song thrushes important?

The song thrushes population remained stable until the mid 1970s after which they declined steadily with an estimated reduction of 73% in farmland and 49% in woodland habitats, and is therefore listed as a priority species in the UK and Greater Manchester Biodiversity Action Plan.

They are also protected under the Wildlife and Countryside Act 1981 and listed on Appendix II of the Bern Convention.

Issues affecting song thrushes

- Changes in farming methods.
- Severe winter weather and dry soil conditions.
- Predation.
- Competition with blackbirds.
- Hunting in southern France.

Floating water plantain (*Luronium natans*)

Floating water plantain is a rare aquatic perennial plant that is only found in Europe.

In shallow water, it develops with floating oval leaves, and in deep water it has submerged rosettes of narrow leaves. The flowers usually occur singly, on long stems from the leaf joints, and are white with yellow spots at the base of the petals.

It occurs in a range of freshwater situations but thrives best in open areas with a moderate degree of disturbance, where the growth of emergent vegetation is held in check. Floating water plantain is found in deep lakes, ditches, rivers and canals.

Populations of this species fluctuate greatly in size, often increasing when water levels drop to expose the bottom or when dredging reduces other plant competition.

Plate 24: Floating water plantain



© Bob Gibbons/Natural Image

Why is floating water plantain important?

Floating water plantain is listed under the UK and Greater Manchester Biodiversity Action Plan.

It is also listed on Annexes II and IV of the Habitats Directive and Appendix I of the Bern Convention. It is protected under Schedule 4 of the Conservation (Natural Habitats, etc.) Regulations 1994 and Schedule 8 of the WCA 1981.

Issues affecting floating water plantain

- Re-opening of waterways.
- Large-scale developments.
- Water acidification.
- Increased nutrients added to its aquatic habitats (Eutrophication).
- Natural vegetation succession.

Grass-wrack pondweed (*Potamogeton compressus*)

Grass-wrack pondweed is a species of still or slow flowing, mesotrophic water and it has been recorded from rivers, canals, ox-bows, drainage ditches and lowland lakes.

Flowers and fruits are produced rather sparingly. New plants are generally formed from turions (reduced branches) that begin to develop in late June.

Why is grass-wrack pondweed important?

It has been in decline for a long period in Britain and is now a priority species in the UK Biodiversity Action Plan. In GB this species is now classified as Nationally Scarce. It receives general protection under the Wildlife and Countryside Act 1981.

Issues affecting grass-wrack pondweed

- Eutrophication of its aquatic habitats
- Neglect and drying out of canals and ditches
- Increase in pleasure boat traffic and associated disturbance and pollution

Plate 25: Grass-wrack pondweed



© Andrew N, Gagg/Photo Flora

APPENDIX 3

Problem Species Audit

Himalayan balsam (*Impatiens glandulifera*)

Himalayan balsam was introduced into Britain, as it is native to Western Himalaya. It is the tallest annual plant to grow in Britain (2-3m) and each plant can produce an average of 800 seeds.

It grows on river banks and streams, in marshy areas and in light shade and more open woodland and scrub.

The Problem

It is a highly invasive plant and can quickly dominate an area. This is because the plants grow very quickly and the fast density of it means that other plants cannot compete for space, light and nutrients, therefore suppressing the local flora and fauna.

The Control

The most effective way to control Himalayan balsam is believed to be by pulling the individual plants out by hand. This is obviously very labour and time intensive and would need to be done annually to prevent recolonisation.

Chemical control is the other option. The herbicide glyphosate is currently the most effective chemical control for the plant.

Plate 26: Himalayan balsam



© Bob Gibbons/Natural Image

Japanese knotweed (*Fallopia japonica*)

Japanese knotweed is a native of Japan, Taiwan and North China. It was introduced to Britain as a garden and fodder plant and is a perennial, which survives the winter as a rhizome. It can grow up to 3m by the summer.

Japanese knotweed grows on river banks, roadside verges, railway embankments, grasslands, derelict land and spoil heaps. It is also able to grow through man-made structures such as walls, tarmac and concrete.

The Problem

Japanese knotweed is regarded as the most invasive plant in Britain. It forms dense thickets of growth, which suppress other plant species resulting in the loss of wildlife habitats.

The Control

Getting rid of Japanese knotweed is not easy. Non-chemical control (through cutting) is very labour intensive and never completely effective as the rhizomes are not always removed. Digging the plant out may also spread broken rhizomes. Chemical control, through the herbicide glyphosate is currently the most effective chemical control of the plant.

Plate 27: Japanese knotweed



© Bob Gibbons/Natural Image

Giant Hogweed (*Heracleum mantegazzianum*)

Giant hogweed is a native from the mountains between Russia and Turkey. It is a perennial plant which can reach 5m high and has leaves up to 1m across.

It occurs mainly along riverbanks but can also be found on roadside verges, waste ground and agricultural land.

The Problem

Giant hogweed is a highly invasive plant and can form dense colonies over a number of years which suppresses the local flora and fauna. It also poses a significant risk to human health. The sap from broken stems or from the leaf bristles can cause severe irritation, swelling and painful blistering to human skin when contact is made in direct sunlight.

The Control

Manual control should always be considered as the first option, although it is very labour intensive requiring frequent visits during the growing season. The most important objective is to prevent flowering and seeding in plants. Grazing from cattle, sheep, pigs and goats is another option. The herbicide glyphosate is the chemical option for removal, although written permission from the Environment Agency is required.

Plate 28: Giant Hogweed



© Bob Gibbons/Natural Image

Rhododendron (*Rhododendron ponticum*)

Rhododendron is an evergreen shrub and native of Southern Europe and Western Asia. It was introduced into Britain as a garden plant. It has since become naturalised in woodland and on heathland, particularly on sandy or peaty soils.

The Problem

Rhododendron is a highly invasive plant that can form dense stands if left unchecked. It can quickly out compete other woodland species by shading over any light.

Whilst it can provide a form of shelter for many animal species, it provides virtually no food as it is full of poisonous chemicals.

The Control

Rhododendron is difficult and very costly to manage. The root system is so large that cutting would result only in rapid re-growth. The use of herbicide is also difficult as the leaves are coated with wax, making it hard for the herbicide to penetrate the plant. A combination of control methods is therefore required. Larger plants need to be cut down and herbicide painted on to their stumps.

Plate 29: Rhododendron



© Bob Gibbons/Natural Image

Australian swamp stonecrop (Potamogeton compereus)

Australian swamp stonecrop is native to Australia and New Zealand. It was introduced into Britain through activities such as water gardening, fishing and is still used as an 'oxygenating plant' for ponds.

It is found in the wild in ponds and lakes.

The Problem

The highly invasive nature of the plant and its ability to survive in a wide range of conditions means it is quickly able to dominate aquatic areas, out competing native species.

The Control

Manual methods of control by cutting or clearing generally fail because it is impossible to remove all fragments from the site.

The best method is believed to be excluding light. The site where it is found should be covered with material such as black polythene or old carpet, for up to ten weeks. Alternatively, spot treatment with the herbicide glyphosate can be used.

Plate 30: Australian swamp stonecrop



© Bob Gibbons/Natural Image

Grey Squirrel (Sciurus carolinensis)

The grey squirrel was introduced from America and its population is currently estimated to be over 2.5 million and rising. It inhabits broadleaved and mixed woodlands and are also found in parks and gardens.

The Problem

The presence of grey squirrel is one of the main reasons why there has been a sharp decline in the native red squirrel. They can cause significant damage to trees by bark stripping and also can damage homes if they enter lofts and roofs.

The Control

It is neither practical nor desirable to remove all grey squirrels as they now form part of our wildlife and many people enjoy their presence. The only currently legal methods of control are by shooting and live-cage trapping.

Plate 31: Grey squirrel



© Colin Varndell/Naturepl.com

American Mink (*Mustela vison*)

The American mink is native to North America and is a recent introduction to Britain having escaped from fur farms. It has now become established along many watercourses.

The Problem

One of the major factors for the decline in water vole populations is due to the American mink. The mink can chase the vole in the water and even follow them into their burrows to attack them. Mink can also affect local fish and bird populations.

The Control

Local control at vulnerable sites may be desirable, but would need to be intensive and continuous given its ability to recolonise area. The legal ways of killing or taking mink are by an authorised person using a cage and spring trap or by shooting.

Plate 32: American mink



© Lynn M. Stone/Naturepl.com

Canada Goose (*Branta Canadensis*)

The Canada goose is native to North America and was first introduced to Britain for ornamental purposes. They can now be found on lakes, rivers, canals, marshes, reservoirs, gavel pits sometimes arable land.

The Problem

Canada geese can cause severe damage to agricultural crops and can also damage the vegetation of other sites such as parks and wildlife areas by both their feeding and fouling. They can be very aggressive birds to both native wildfowl and people, especially when breeding.

The Control

Eradicating the Canada goose from Britain would be impossible.

Shooting as a control method is very controversial, especially in urban areas. The most successful ways of control are therefore to decrease the breeding success of the birds. Ways to achieve this are to replace the eggs with plastic ones or pick the eggs.

Plate 33: Canada goose



© William Osborn/Naturepl.com

Red-eared terrapin (*Chrysemys scripta elegans*)

The red-eared terrapin is a native to North America and is one of the world's most commonly traded reptiles.

The Problem

Many terrapins sold in this country are imported when they are the size of a 50p coin. However, they can grow to a size of the dinner plate and require specialist care. Many people find they are unable to look after their pets properly so release them in the wild. The impact of released terrapins on native wildlife is not fully known, but it is believed they can cause a decline in amphibian numbers and waterfowl chicks.

The Control

Recapturing the red-eared terrapin is currently the only way to control its population.

Plate 34: Red-eared terrapin



© Lisa Price

Herring gull (*Larus argentatus argenteus*)

Herring gulls breed mainly around Britain's coasts, although this versatile species can also be found in a range of habitats, including cliffs, beaches, small islands, inland sites and even buildings. They also exploit rubbish dumps, particularly during winter.

The Problem

The herring gull is a supreme opportunist and scavenger, feeding on discarded fish offal, refuse, bird chicks, mammals, eggs, worms and other invertebrates. This causes a decline in the number of animal species. They can become very aggressive to other birds, especially in the breeding season. When inland, they can also rip open rubbish and refuse bins to find food, spilling the contents.

The control

They have suffered moderate declines in population over the past 25 years and over half of their UK breeding population is confined to fewer than ten sites. They receive general protection under the Wildlife and Countryside Act 1981, but can be trapped, shot or their eggs and nests destroyed under the terms of General Licences issued by government.

Plate 35: Herring gull



© Bob Gibbons/Natural Image

Feral pigeon (*Columba livia*)

Feral pigeons are very common and widespread and have adopted ledges on buildings and other structures in our towns and cities to inhabit.

The Problem

Whilst any people give pleasure from interacting with the pigeons, the presence of a large number of birds in small spaces brings many different problems. The fouling from the birds can damage buildings and open spaces. The droppings also cause slip hazards. Pigeons are also very competitive, and will outcompete smaller birds for food.

The Control

The removal or reduction of the pigeons food supply is the only viable method that would result in a reduction in the numbers of pigeons. This of course is also the most humane way.

Plate 36: Feral pigeon



© Paul Pugh/Cellcreative

Glossary

Biodiversity	Variety of animal and plants.
Conservation	The protection of plants and animals.
Coppicing	Traditional management of cutting down trees and shrubs near ground level, allowing the species to regrow from the stump and re-cutting at intervals of one or more decades to provide long straight poles.
Ecology	The relationships between the air, land, water, animals, plants, etc.,
Ecosystem	All the living things in an area and the way they affect each other and the environment.
Endemic	species originated and only found in the UK.
Eutrophication	The enrichment of water with nutrients that increase plant growth.
Fauna	Animals.
Flora	Plants.
Habitat	The natural surroundings in which an animal or plant usually lives.
Invertebrate	Animal without a backbone.
Mesotrophic	Waters having a moderate productivity resulting from their nutrient loads.
Physiographical	The physical make up of the feature of an area eg its geology.
Species	A set of animals or plants in which the members have similar characteristics, to each other and can breed with each other.
Succession	The progression of an area from sparse and/or singular species present to a mix of species not typical to that habitat.
Sustainable	Causing little or no damage to the environment and therefore able to continue for a long time.
Topographical	The physical appearance and shape of the natural features of an area.

Abbreviations

BAP	Biodiversity Action Plan.
BTO	British Trust for Ornithology.
DEFRA	Department of Environment, Farming and Rural Affairs.
GMBAP	Greater Manchester Biodiversity Action Plan.
LNR	Local Nature Reserve.
PPG	Planning Policy Guidance.
PPS	Planning Policy Statement.
SBI	Sites of Biological Importance.
SSSI	Sites of Special Scientific Interest.
UDP	Unitary Development Plan.
UKBAP	United Kingdom Biodiversity Action Plan.