

BRISTOL  
**BIODIVERSITY**  
**ACTION PLAN**  
For People and Wildlife



## Conserving and enhancing the diversity of Bristol's habitats and species for the benefit of wildlife and enjoyment of local people.

**Bristol** is one of the greenest cities in the country, with more green space than most other major UK cities. It also supports a huge wealth of biodiversity – everything from rare plants found in the Avon Gorge to foxes, skylarks and water voles.

Bristol's wildlife and wild places help bring the experience of the natural world to many people. Such contact with nature is inspiring and promotes good physical and mental health. Listening to bird song or seeing the seasons change is relaxing and a welcome contrast to the hustle and bustle of city life. Taking part in a wildlife project can increase people's confidence and pride in an area. There is no question that biodiversity makes our city a more enjoyable and interesting place to live.

Everyone should have the chance to enjoy and benefit from nature, but biodiversity is vulnerable to habitat loss, neglect, development, pollution and other pressures. Nationally even some of our common species, such as the house sparrow, are in decline. The effects of climate change are as yet unknown.

We all have a responsibility to protect, conserve and enhance Bristol's precious biodiversity for the benefit of both wildlife and people. This document sets out actions and activities to help us achieve this. We need to work together now to make a difference and ensure that these actions and activities are achieved – whilst partner organisations will be doing their bit, each of us enjoys the benefits of biodiversity and each one of us has a role to play in its protection. We hope everyone in Bristol will get involved in carrying forward this important plan.





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# INTRODUCTION



# THE BRISTOL BIODIVERSITY ACTION PLAN



The Bristol Biodiversity Action Plan (BAP) provides the over-arching framework for habitat and species conservation in Bristol. Importantly, it also recognises the benefits of wildlife to people and helps to identify ways to better promote, and engage people in, biodiversity conservation in the city.

It has been produced by the Bristol Biodiversity Partnership and is aimed at all those organisations, businesses, groups and individuals which are either working to protect and enhance biodiversity in the city, or who may impact on it in some way.

## AIMS

### The Bristol Biodiversity Action Plan aims to:

- Provide a strategic overview for biodiversity conservation in Bristol
- Highlight priority habitats and species that are of particular value in Bristol, both within the national and local context
- Highlight threats and issues affecting these priority habitats and species, together with objectives, targets and actions to address them
- Encourage a common approach to biodiversity conservation and sharing of best practice
- Encourage education and community action and involvement as a key part of the biodiversity process
- Promote biodiversity conservation as an essential element of sustainable development
- Promote the importance of Bristol's biodiversity at a local, regional and national level
- Develop Bristol as a centre of excellence for urban biodiversity conservation

The Bristol BAP proposes actions over an initial 5 year period, which will be reviewed and updated at the end of this period.



### What is biodiversity?

**Biodiversity is the variety of life on Earth** – the myriad of plants and animals and the places where they live. It includes whales, sparrows and butterflies, and rainforest, meadows, coral reefs and rivers.

**Please note** the words biodiversity and wildlife are used interchangeably throughout the text of this BAP.





The Bristol Biodiversity Partnership was formed in September 2005 with the setting up of the partnership steering group. The list of partners is not exclusive and new partners are both welcomed and encouraged.

## The Bristol Biodiversity Partnership will:

- Oversee the production and implementation of the Bristol Biodiversity Action Plan
- Champion and promote Bristol's biodiversity and its distinctiveness
- Seek opportunities for joint projects and partnership working
- Facilitate sharing of best-practice and skills
- Support and provide inspiration for local conservation projects, events and activities
- Monitor biodiversity and biodiversity action in Bristol
- Report back annually on its achievements
- Feed into regional and national BAP processes as appropriate

“ Bristol supports a huge wealth of biodiversity – everything from rare plants found in the Avon Gorge to foxes, skylarks and water voles ”

# THE BRISTOL BIODIVERSITY PARTNERSHIP

BIODIVERSITY PARTNERS	ABBREVIATIONS
Avon Biodiversity Partnership	ABP
Avon Frome Partnership	AFP
Avon Gorge and Downs Wildlife Project	AGDWP
Avon Wildlife Trust	AWT
Bristol City Council	BCC
Bristol Living Rivers Project	BLRP
Bristol Museums, Galleries and Archives	BMGA
Bristol Natural History Consortium	BNHC
Bristol Naturalists' Society	BNS
Bristol Ornithologists Club	BOC
Bristol Regional Environmental Records Centre	BRERC
Bristol Zoo Gardens	BZG
Environment Agency	EA
Forest of Avon	FOA
Forestry Commission	FC
Natural England	NE
Southville Association	SA





## CHAPTER 1

# SETTING THE SCENE





## SETTING THE SCENE

### Biodiversity Planning: the context

#### International – The Earth Summit

In 1992 the UK was one of over 150 countries that signed up to the Convention of Biological Diversity at the Earth Summit in Rio de Janeiro. This convention importantly required countries to develop national strategies for the conservation of biological diversity and sustainable use of biological resources. The convention was drawn up in recognition of significant declines in wildlife across the globe.

#### National – The UK's Biodiversity Programme

To demonstrate its commitment to the convention, the UK government published the UK Biodiversity Action Plan in 1994, followed by 45 UK Habitat and 391 UK Species Action Plans in 1999.

This was followed in England by the production of the England Biodiversity Strategy, 'Working with the Grain of Nature' in 2002, which is being implemented through the England Biodiversity Group.

#### Regional – The South West BAP

The South West Regional Biodiversity Partnership was set up in 1994 and oversees the implementation of the South West Biodiversity Implementation Plan (SWBIP). The SWBIP aims to: help meet biodiversity targets in the South West; ensure regional strategic plans incorporate biodiversity issues; and provide a strategic framework for local biodiversity partnerships.

#### Local – The Avon BAP

The Avon Biodiversity Partnership was set up in 2000. Its aim is to provide a co-ordinated approach for biodiversity conservation across the former county of Avon. In 2004 it produced the Avon Biodiversity Action Plan, which is being successfully implemented through the Avon BAP co-ordinator, a steering group and a series of themed sub-groups.

#### The Bristol BAP

The Bristol BAP provides a means by which national and regional biodiversity strategy can be translated into effective action in the city. It also provides the opportunity to take into account local conditions and distinctiveness.

The Bristol BAP is deliberately closely aligned to the Avon BAP to ensure a consistency of approach.

### Links to other Plans and Projects

The Bristol BAP will enable biodiversity conservation to be more easily and consistently integrated into other strategic plans and projects. Importantly this includes the Sustainable Community Strategy for Bristol and the Bristol Development Framework.

The Bristol BAP will also be delivered through plans and projects of the different individual organisations and groups making up the Bristol Biodiversity Partnership.

### The Biodiversity of Bristol

Bristol supports an exceptionally rich range of wildlife habitats and species, from the wildflower rich limestone grassland of the Downs and Gorge to the mudflats and saltmarsh of the Severn Estuary, and from water voles and otters to skylarks, peregrine falcons and rare wildflowers.

A principal reason for this richness is the city's geology. Bristol has a greater range of sedimentary rocks than any other city in Britain, and the variety of rocks, geological structures and drainage patterns give rise to a diversity of landscapes and habitats.

The two most important rocks are limestone rocks of Lower Carboniferous age that dominate the western part of the city, and the sandstones of the Pennant Sandstone Group, associated with the Coal Measures of Upper Carboniferous age, that dominate the eastern part of the city. The former weather to give alkaline soils and the latter acidic soils: the two soil types support very different plant communities. In the southern part of the city lias clays, which are also alkaline, are important, whilst the River Severn has deposited alluvium-rich fertile silts in the Avonmouth area.

The Carboniferous limestone, in particular, has left steep hillsides and gorges that have proved difficult to develop on and provide dramatic landscapes. Important areas of habitat include the Avon Gorge, Clifton and Durdham Downs, Kingsweston Down and Blaise Castle.

The Gorge and Downs are of significant value for their unimproved limestone grassland. On the Downs, plants include common rockrose, wild thyme, harebell and bee orchid. The wealth of plants attracts butterflies such as marbled white and common blue. The grasslands and rock ledges of the Avon Gorge are considered one of the most important places in Britain for rare plants and two, round-headed leek (*Bristol onion*) and Bristol rock-cress, grow nowhere else in mainland Britain. The Gorge also supports two species of tree the Bristol and Wilmotts whitebeams that grow here and nowhere else in the world. The rock faces are also home to nesting peregrine falcon and raven.

The extensive woodlands, where they occur, at these sites are usually dominated by ash, with stands of yew on particularly rocky slopes.

The sandstones support habitats that are rare in the area around Bristol. Woodlands alongside the Rivers Avon and Frome are dominated by oak and birch species, with high frequencies of wild cherry, small-leaved lime and wild service tree. More open areas, notably Troopers Hill support a mixture of gorse and broom scrub, heath and sparse acidic grassland.

# CHAPTER 1

## SETTING THE SCENE

Particularly rich neutral grasslands are associated with the clay soils in the south of the city. Many characteristic plants, such as dyer's greenweed, devil's-bit scabious and grass vetchling survive in large and small pockets of grassland here. Several slopes in Knowle support the rare yellow vetchling, and the insect populations of these grasslands are as rich as their flora.

The most significant wetland habitats in Bristol are the rivers. The Avon is a sluggish nutrient-rich river with rich stands of plants such as flowering rush, yellow flag and arrowhead, and beds of the rare Loddon pondweed. Nettle beds by the river support the bizarre parasitic greater dodder. The Frome is more fast-flowing and rocky, and its sandstone catchment produces more acidic water. A characteristic plant of its banks is small teasel, whilst even in inner city areas beds of stream water-crowfoot provide splashes of colour in the river. Both rivers support breeding kingfishers, and dippers nest on the Frome.

The Severn and the lower reaches of the Avon are strongly estuarine, with the second highest tidal range in the world. The banks of both have patches of saltmarsh, a nationally rare habitat with a range of highly specialised plants. These include English scurvy-grass, sea lavender and thrift as well as rarities such as slender hare's-ear. Mudflats exposed at low tide support internationally important populations of migratory birds such as dunlin, redshank and shelduck and the estuaries are important for migratory fish such as salmon, eel, lampreys and grey mullet.

The estuaries were once fringed with marshlands and a fine example of meadow, reedbed and sedgebed habitats survives at Lawrence Weston Moor. The drainage ditches that criss-cross the marshes are known as rhines, and those in the Avonmouth area support a regionally important population of water voles.

More urbanised parts of the city also support a rich and characteristic biodiversity. The richness of ferns such as black spleenwort and rusty-back mingled with garden escapes such as ivy-leaved toadflax on older walls is a particular feature of Bristol. Open mosaic habitats, which develop on previously developed land, can be exceptionally rich in wildlife but very few good examples now survive in Bristol. The best is at Lamplighter's Marsh where viper's-bugloss and moth mullein grow amongst other colourful plants.

Photography: Gull: Nuria Prat. Ivy leaved toadflax: AWT. Shelduck: Paul Bowerman



Bristol's gardens are famous for their fox populations and also support important populations of hedgehogs and birds such as song thrush and dunnock. Some gardens harbour colonies of slow worms, but these reptiles are more frequent on allotments and railway cuttings. Even modern buildings in the city centre hold nesting colonies of herring and lesser black-backed gulls, whilst the docks have a variety of wetland and saltmarsh plants and are visited by cormorants and a large flock of mute swans.

### Wildlife Designations

Bristol contains two sites of international importance for biodiversity: the Avon Gorge Special Area of Conservation (SAC) and the Severn Estuary Special Protection Area (SPA), candidate Special Area of Conservation and Ramsar Site. Both these sites, together with Horseshoe Bend, are also designated nationally as Sites of Special Scientific Interest (SSSIs).

In addition, Bristol contains 88 designated Sites of Nature Conservation Interest (SNCl). Examples include Blaise Castle Estate, Highridge Common and Lamplighter's Marsh. Bristol also contains 7 Local Nature Reserves at Royate Hill, Stockwood Open Space, Lawrence Weston Moor, Troopers Hill, Badock's Wood, Manor Woods Valley and Eastwood Farm. All of the SNCl contain one or more priority habitat.

Bristol also supports a network of wildlife corridors. The corridors are made up of both the SNCl and Wildlife Network Sites, which provide linkages in the network. The Wildlife Network Sites may contain priority habitat or have the potential for the creation of priority habitat.

All of these sites receive protection through policies in the Bristol Local Plan, as well as national and international wildlife legislation, where relevant. Please refer to the Development Planning and Strategy section for more information on the planning system related to biodiversity.

Bristol also contains two Strategic Nature Areas: Blaise and the Avon Gorge and Downs. These are protected by policy in the Regional Spatial Strategy (see chapter 4).



Photography: Knapweed meadow: Helen Hall. Blaise Estate: FOA

### UK BAP broad and priority habitat found within Bristol

The UK Biodiversity Group divided the whole land surface of the country and surrounding marine environment into 27 **broad habitat** types. These were further divided into a series of sub-habitats, with those of particular importance nationally being defined as UK **priority habitats**. Table 1 below lists those broad and priority habitats that exist in Bristol.

**Table 1:** UK BAP broad and priority habitat found within Bristol

UK BAP BROAD HABITAT	UK BAP PRIORITY HABITAT
Broad-leaved, mixed and yew	Lowland beech and yew woodland Upland mixed ash woods Mixed deciduous woodland Wet woodland Lowland wood pasture and parkland woodland
Boundary and Linear Features	Hedgerows
Calcareous grassland	Lowland calcareous grassland
Acid grassland	Lowland dry acidic grassland
Neutral grassland	Lowland meadows
Dwarf shrub heath	Lowland heathland
Improved grassland	Coastal and floodplain grazing marsh
Fen, marsh and swamp	Reedbeds
Standing Open Water and Canals	Eutrophic standing water Ponds
Rivers and streams	Rivers
Littoral Rock	Sabellaria alveolata reefs
Littoral Sediment	Seagrass beds Coastal saltmarsh Mudflats
Inshore Sublittoral Sediment	Seagrass beds
Urban	Open Mosaic Habitats on previously developed land
Built up areas and Gardens	
Inland Rock	Inland Rock Outcrop and Scree Habitats

### UK BAP Priority Species found in Bristol

The UK Biodiversity Action Plan identifies a list of UK priority species, which are regarded as priorities for conservation under the plan.

A list of priority species for Bristol has been drawn up by BRERC in collaboration with the Bristol Biodiversity Partnership. The list includes all UK BAP priority species that occur in Bristol, together with a number of other species identified by local experts as being of local conservation concern. The list is available from BRERC.

### People and Wildlife

Biodiversity is not just important in its own right, but also for the value that it brings to people. It is known that contact with nature provides powerful psychological, educational and health benefits; not least giving people the chance to escape the everyday hustle and bustle, refresh the spirit and to be inspired by the natural world. In Bristol:

- A survey of inner city Bristol (IRIS, 1999) found that people wanted more natural spaces and valued contact with nature
- A study to inform the Parks and Green Space Strategy (BCC, 2008) revealed that natural green space is the most highly valued type of open space
- Local people have fought to save local wildlife sites from development examples include: Royate Hill, Novers Hill and Narrowways Junction.
- There are over 40 parks and green space groups, many of which have a keen interest in wildlife. Examples include Friends of Old Sneed Park and Friends of Troopers Hill.



Photography: Mute swan and signets: Nuria Prat. Ian McGuire with barn owl: Sean Tutton



## CHAPTER 2

# IMPLEMENTATION





## IMPLEMENTATION

The implementation of the BAP will be overseen by the Bristol Biodiversity Partnership Steering Group. It will be co-ordinated by a Bristol Biodiversity Co-ordinator (proposed post to be appointed).

### **The group will meet on a quarterly basis to:**

- Update and prioritise actions each year through an annual implementation plan
- Agree new actions and establish partnership projects
- Share knowledge, experience and best practice
- Report back on achievements

An event will be organised every 2-3 years, open to the wider partnership, community and interest groups, to promote the sharing of information and best practice on biodiversity conservation in Bristol.

A biodiversity newsletter and web pages will be developed to provide updates on current activities and projects.

### **Implementors**

One or more implementors are identified against each of the actions listed throughout the BAP. Whilst in principle agreement has been reached with the various organisations listed, it is recognised that many actions are likely to require new resources to ensure that they can be implemented. Partnership working, project development and fundraising will therefore be key to ensure successful implementation of the BAP actions.





## CHAPTER 3

# INDICATORS, REPORTING BACK AND REVIEW





## INDICATORS, REPORTING BACK AND REVIEW

Monitoring progress and measuring success is a vital part of the biodiversity process. This can be achieved by measuring both **indicators and targets**.

### Indicators

The Bristol BAP has adopted those indicators in the England Biodiversity Strategy (Defra 2002) most relevant to Bristol (see Table 2). The indicator to measure the condition of Sites of Special Scientific Interest has been expanded to include Sites of Nature Conservation Interest to reflect the importance of local sites. The BAP also includes its own indicators, 'Number of community groups involved in practical wildlife projects', and 'Number and quality of visits to natural green space' to reflect the desire to have people-based indicators within the BAP.

The indicators are:

- The populations of wild birds
- The condition of SSSIs and SNCIs
- The biological quality of rivers
- Number of community groups involved in practical wildlife projects
- Number and quality of visits to natural green space
- Progress with Habitat and Species Action Plans

With the exception of the community indicators, where a programme of monitoring needs to be established, each of the indicators is being measured as part of on-going monitoring – meaning that data can be readily made available. Progress with Habitat and Species Action Plans will be monitored through the partnership steering group.

**Table 2:** Measurement of Bristol Biodiversity Indicators

INDICATOR	ORGANISATION RESPONSIBLE FOR CO-ORDINATING MEASUREMENT	FREQUENCY
The populations of wild birds	BOC, AWT, BNS, ABP through Bristol Bird Watch and Avon Bird Report/Breeding Bird Survey	Annually
The condition of SSSIs and SNCIS	NE for SSSIs (Common Standards Monitoring)	SSSIs are individually assessed at least once in 6 years. Annual reports indicate which are in favourable or unfavourable condition
	BCC for SNCIs (Favourable Conservation Status)	SNCIs are assessed for favourable condition every 5 years
The biological quality of rivers	BLRP	Annually
Number of community groups involved in practical wildlife projects	BCC	Annually
Number and quality of visits to natural green space	BCC	Annually
Progress of Bristol Habitat and Species Action Plans	BAP Partnership	Annually

### The National Indicator for Biodiversity (NI197)

The new National Performance Indicator (NI197) for biodiversity requires local authorities to report on 'the proportion of Local Sites where positive conservation management has been, or is being, implemented'.

Bristol City Council will be using its existing monitoring of favourable conservation status of SNCIs, helped by the recording and monitoring of priority habitat (see Information and Data), as the means of providing feedback on the indicator for those SNCIs in council ownership.

### Targets

Realistic, achievable targets have been set, where possible, for each of the Bristol HAPs and SAPs, in line with the UK targets (see chapter 5).

Initial restoration targets for the amount of priority habitat to be restored or created are given where relevant, however further work will be needed to refine these targets in future years.

Additional targets may be developed as BAP implementation is progressed.

### Reporting Back

The Bristol Biodiversity Partnership has a responsibility to report back on progress both locally and nationally.

An annual review will be produced each year. The Bristol BAP will also aim to report back on actions, through the Biodiversity Action Reporting System (BARS).

### Review of the Bristol BAP

The Bristol BAP is a working document. It has been produced in a ring binder and web based format to allow changes and additions to be made easily. The BAP proposes actions over an initial 5-year period, which will be reviewed at the end of this period in consultation with all partners.



“ Monitoring progress and measuring success is a vital part of the biodiversity process. This can be achieved by measuring both indicators and targets ”



Photography: Allotment gardener: BCC. Common knapweed: Helen Hall. Green roof: Juliet Dearbergh. Fern: Darin Smith



## CHAPTER 4

# CROSS CUTTING THEMES





## CROSS CUTTING THEMES

In addition to the specific actions outlined in the individual Habitat and Species Action Plans, there are cross cutting themes and issues that relate to some, or all, of the plans.

This section outlines these cross cutting themes and identifies related actions where relevant. These actions should be read in conjunction with each relevant Habitat and Species Action Plan.

### Development Planning and Strategy

#### The Planning Process

Bristol has seen huge development pressure in recent years. As well as direct loss of habitat and species, development can also impact negatively by fragmenting habitats and isolating less mobile populations.

It is vital that biodiversity is given full consideration in the planning process to ensure priority habitats and species are properly protected. Opportunities to enhance biodiversity through initiatives such as habitat management and creation, sustainable urban drainage schemes and green roofs should also be maximised. This approach is supported by government policy and guidance.

**‘Working with the grain of nature: a biodiversity strategy for England’** includes the broad aim that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it where possible.

**Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation** sets out how the government seeks to move forward to achieve this vision by setting out objectives for planning that include:

*To conserve, enhance and restore the diversity of England’s wildlife by sustaining, and where possible improving, the quality and extent of natural habitats and the populations of naturally occurring species that they support.*

PPS9 also requires that local authorities should take an integrated approach to planning for biodiversity when preparing Local Development Frameworks, including: identifying areas for the restoration or creation of new priority habitats and ensuring that the policies in the Local Development Frameworks reflect national, regional and local biodiversity priorities.

The existing Local Plan has a number of policies that seek to protect designated sites, natural features and protected species. The Local Plan will be replaced by documents in the Bristol Development Framework. This includes the Core Strategy, Site Specific Allocations and Development Control Policies and Development Plan Documents. The protection and enhancement of priority habitats and species is being fully considered in the preparation of these documents. The need for Green Infrastructure, and the role within this for a cohesive network of habitats, will also be a consideration in the preparation of the Bristol Development Framework.

### The Sustainable Community Strategy

The Sustainable Community Strategy is the overarching strategy for the city that sets out both long-term aims and a vision for Bristol. The Bristol Partnership is responsible for overseeing its preparation and implementation.

The Bristol Partnership is also responsible for the development and delivery of the Local Area Agreement (LAA), which is a three-year agreement with central government, to focus energies on the most pressing priorities for the city. The underpinning theme of the LAA is to tackle disadvantage.

Biodiversity is addressed under 'A high quality environment' with a key action being to: Monitor and report on a draft Biodiversity Action Plan for the city.

In line with DETR Circular 4/2001, which makes clear that local BAPs need to be taken into consideration when preparing Community Strategies, it is important that implementation of the BAP is fully considered in the delivery of all aspects of the Community Strategy. Working with neighbourhood partnerships (see Community Action, Education and Awareness Raising section) is one way of doing this. Raising the profile of the BAP within the Bristol Partnership and its networks is another way of encouraging action.

In 2007 the Bristol Partnership launched a new initiative to make Bristol a Green Capital: a low carbon city with a high quality of life. An integral part of the vision for Bristol as a green capital is the improvement of biodiversity. The Green Capital initiative encourages organisations across the city to get directly involved in helping to realise through their own actions and working in partnership.

ACTION	TIME	IMPLEMENTORS
Ensure biodiversity conservation is fully incorporated into the Bristol LDF	2008 – 2011	BCC, AWT, NE, EA
Ensure regular training for planning officers on biodiversity related matters	Annually	BCC
Raise awareness of the BAP within the Bristol Partnership and its networks, and identify opportunities for delivery of BAP actions and targets through the Community Strategy	2009	BAP Partnership working with Bristol Partnership

### Nature Map and the Wildlife Network

There is increasing recognition of the need to provide for biodiversity at the landscape scale to address issues of fragmentation, climate change (see Climate Change section below) and long-term viability of wildlife populations.

The South West Biodiversity Partnership has produced the 'South West Nature Map' which identifies, at a regional level, landscape scale blocks of land, known as Strategic Nature Areas (SNAs). These represent the best areas to maintain and expand wildlife habitats through management, restoration or re-creation at a landscape scale.

The Regional Spatial Strategy recognises SNAs and encourages their restoration and enhancement. Bristol has two SNAs – the Gorge and Downs and Blaise.

The Avon Gorge and Downs is already subject to a major programme of biodiversity restoration through the Avon Gorge and Downs Wildlife Project. Opportunities need to be investigated for the Blaise SNA.

The Bristol Local Plan also identifies a series of Wildlife Network Sites, which help link the SNCIs, and together form a series of wildlife corridors across the city. Many Wildlife Network Sites have potential to be enhanced for wildlife and should also be the focus of habitat creation and restoration measures, linked to actions outlined in the HAPs and SAPs (see Chapter 5).



#### STRATEGIC NATURE AREAS

'When restored the Strategic Nature Areas will benefit both wildlife and society as a whole, sustaining themselves without intensive management support, allowing wildlife to adapt and spread in the face of a changing climate, and at the same time delivering multiple benefits for society.'

**The South West Wildlife Trusts**  
Nov 2005

ACTION	TIMESCALE	IMPLEMENTORS
Investigate, map and develop opportunities for biodiversity restoration within Blaise SNA	2010 and ongoing	BCC, BRERC
Identify wildlife network sites suitable for delivery of priority habitat creation/restoration projects (cross ref HAPs actions) and develop implementation programme	2009 and ongoing	BCC, BRERC, AWT

### Land Use Types

Bristol contains a variety of land use types, which either have existing biodiversity interest, or have the potential to be enhanced for biodiversity. These are highlighted below.

### Parks and Green Spaces

Bristol City Council's Parks and Green Spaces cover an area of 1513 hectares, and include over 60% of the designated SNCIs and the majority of the Wildlife Network Sites.

Bristol Parks has undertaken some positive measures for wildlife in its parks, such as the creation and management of wildflower meadows. It has also undertaken an audit of its SNCIs to establish whether they are in favourable conservation status.

In 2008 it produced the Parks Wildlife Strategy and Parks and Green Space Strategy. These strategies include a series of actions to maintain and enhance the wildlife value of Bristol's parks and green spaces, including:

- Ensuring all council-owned SNCIs are in favourable conservation status by the year 2020
- Establishing a network of 16 Local Nature Reserves
- Improving management regimes to optimise value for wildlife and improve accessibility for local people
- Safeguarding and enhancing habitats and species within parks and green spaces through the Bristol Biodiversity Action Plan
- Creating new habitats for wildlife to remedy shortfalls in natural green space

The Parks and Green Space Strategy is being implemented through the development of Area Green Space Plans. Area Green Space Plans will provide a detailed model for the future provision of green space across the city. This will determine the future location, quantity and type of space, as well as identifying sites of low value which could be disposed of or used for other land requirements.

Bristol Parks will have a significant responsibility to ensure the implementation of BAP actions through the management of parks and open spaces, and it is particularly important that the Area Green Space Plans fully consider the long-term protection, maintenance and enhancement of priority species and habitats in both their development and implementation.

ACTION	TIMESCALE	IMPLEMENTORS
Ensure that the actions within the Biodiversity Action Plan are fully incorporated within the development and implementation of the Area Green Space Plans	2008 – 2013	BCC Bristol Parks, Parks groups
Raise awareness of Bristol BAP with parks managers and groups through talks and training	Annual training	BCC Bristol Parks

### Gardens

Bristol's gardens cover a large part of the city and together provide an important resource for wildlife.

Garden ponds are probably responsible for sustaining Bristol's amphibian population. Trees and shrubs provide nesting sites and food for birds, while flower borders provide a nectar source for insects.

Wildlife gardening can greatly benefit wildlife and bring wildlife closer to where people live, helping to improve their quality of life. Feeding of garden birds is also thought to be crucial for maintaining wild bird populations in the city.

Many people enjoy having wildlife in their gardens. The popularity of Bristol Bird Watch (with over 2000 people taking part annually) is one demonstration of how much people value their garden wildlife.

There is enormous scope to encourage wildlife friendly gardening practices and raise awareness of garden wildlife.



'With over 15 million gardens in the UK covering 270,000 hectares, gardens cover more space than all the National Nature Reserves'

**The Wildlife Trusts**

ACTION	TIMESCALE	IMPLEMENTORS
Develop Wildlife Gardening Project to promote wildlife friendly gardening	2009	AWT
Run annual Bristol Bird Watch project to support BAP wild bird indicator	2008 -2013	AWT, BCC, BNS, BOC

### Allotments

Bristol has over 4300 allotment plots totaling over 108 hectares. Evidence, from the National Society of Allotment and Leisure Gardens, shows that allotments can have up to 30% higher species diversity than formal parks.

The importance of allotments as wildlife habitats, and as part of wildlife corridors, is recognised in the designation of some as Wildlife Network Sites and others, such as Wedmore Vale, as Sites of Nature Conservation Interest.

The wildlife interest of allotments includes:

- Natural features such as hedges, ponds and long grass
- Crops which can provide a valuable nectar source for insects
- Other features, such as compost heaps, which can be attractive to species such as slow worms

Abandoned or unused allotments can add greatly to their value for wildlife, although in most cases abandonment has arisen from neglect and the wildlife value can be less than could be achieved.



Photography: Allotment gardener: BCC. Bee on lavender, Sunflower: Helen Hall

There is a significant opportunity to enhance the wildlife value of allotments through:

- Ensuring natural features such as hedges, ponds and long grass are managed to optimise their value to wildlife
- Encouraging allotment holders to undertake wildlife friendly management, create wildlife features and use organic methods of production
- Enhancing the wildlife value of some areas of allotment land, which have no realistic prospect of coming back into use

ACTION	TIMESCALE	IMPLEMENTORS
Produce 'How to help wildlife leaflet' for allotment holder starter pack	2009 -2010	BCC
Produce and implement best practice biodiversity management guidelines for allotments	2010	BCC, Allotment associations
Develop management proposals for abandoned allotments and encourage community involvement, where land is to be set aside for wildlife	2010 – 2013	BCC, Allotment associations
Develop programme of activities to encourage allotment holders to take action for wildlife eg. participation in wildlife surveys	2009 – 2013	BCC, AWT, Allotment associations

Photography: Drinker moth caterpillar, Comma butterfly, Ladybird: Becky Coffin



### Cemeteries

Cemeteries make an important contribution to the provision of greenspace in Bristol and offer a quiet sanctuary for both people and wildlife. Some cemeteries, such as Greenbank in Easton, are identified as Wildlife Network Sites. Arnos Vale Cemetery in central Bristol has long been recognised for its wildlife interest as a Site of Nature Conservation Interest.

In 2000, the City Council undertook a wildlife audit of all of its cemeteries, to assess their wildlife interest and put forward measures for how this could be both maintained and enhanced. Some wildlife enhancement measures were undertaken as a result of this work.

Arnos Vale Cemetery has received Lottery funding for a programme of restoration and regeneration, which includes proposals for both biodiversity conservation management and promotion.

In order to optimise the value of Bristol's cemeteries for biodiversity, steps are needed to review and update the previous wildlife audit and ensure implementation of actions. Opportunities should also be taken to ensure biodiversity is considered in improvement plans for cemeteries.

ACTION	TIMESCALE	IMPLEMENTORS
Review and update Cemetery wildlife audit and implement actions	2009 and ongoing	BCC (Bristol Parks, Sustainability and Environment Unit and Cemeteries)
Ensure biodiversity enhancement opportunities identified in cemetery improvement plans	2008 and ongoing	BCC (Bristol Parks, Sustainability and Environment Unit and Cemeteries)

### School Grounds

There are a large number of school grounds in Bristol. They vary enormously, ranging from attractive and pleasant green environments to large areas of asphalt. Many would benefit from biodiversity enhancements. These enhancements, while good for wildlife, also can bring other benefits, such as:

- Dynamic teaching opportunities in the outdoors
- Opportunities for cross-curricular projects to enrich the curriculum
- Opportunities to work with the local community and to network schools

'Of the schools surveyed 65% believed that school ground improvements had increased overall attitudes to learning. The results also show considerable improvements in social interaction and self esteem'

**Learning through Landscapes School Grounds Survey 2003**

Avon Wildlife Trust works with schools to introduce nature areas into school grounds. BCC's Environment and Sustainability Unit is working to promote 'Eco schools'.

There are also opportunities to link to Building Schools for the Future and the Primary Review to investigate the creation of valuable landscapes for learning. In addition, Bristol Parks will be taking direct responsibility for tree and grounds maintenance in the majority of schools across the city and this may create further opportunities to provide an integrated environmental service for head teachers.

However, little information is known about the biodiversity interest of school grounds in Bristol and the potential exists for the development of this work, both through investigating opportunities through the programmes described above and through the production of a school grounds BAP.

ACTION	TIMESCALE	IMPLEMENTORS
Undertake wildlife audit of school grounds in Bristol	2010 – 2011	BCC (Bristol Parks and Education), AWT and BRERC
Investigate opportunities for enhancing school grounds for biodiversity through input into schools development / improvement programmes	2008 – 2013	BCC
Develop school grounds BAP	2011 – 2012	BCC (Bristol Parks, Environment and Sustainability Unit and Education), AWT, FoA

### The Transport Network

Many of the transport routes in Bristol are recognised for their function as wildlife corridors, through their designation as Wildlife Network Sites.

The railway network is particularly valuable for wildlife. Network Rail has its own BAP, and there is potential for partnership working to undertake line-side surveys and identify areas that would benefit from biodiversity management.

Many road verges are managed in an intensive way, but some have potential to be enhanced for wildlife, particularly through wildflower or native tree/shrub planting. Even roundabouts can provide refuges for wildlife in built up areas. Such schemes will need to carefully consider design to ensure they fit in with highways requirements.



'There are over 30,000 hectares of lineside vegetation along the 20,000 miles of the national rail network. Our lines and land pass both through some of the most industrialised urban areas and some of the remotest areas in Great Britain, including many of the national parks. This makes the railway a major national biodiversity resource'

#### Network Rail

ACTION	TIMESCALE	IMPLEMENTORS
Develop joint working with Network Rail to investigate the wildlife interest of railway land in Bristol and develop good practice for habitat management	2010 – ongoing	BCC, BNS
Identify and develop opportunities for road verge/roundabout habitat creation	2009 – ongoing	BCC Parks, AWT, BNS, BCC Traffic Management, Highways Agency

### Green Roofs

Green Roofs are vegetated roofs, or roofs with vegetated spaces. In recent years, green roofs have become more widespread, green roof technology has developed and the benefits of green roofs have become much more widely recognised.

The Environment and Sustainability Unit in Bristol is working to promote green roofs in the city and it is hoped that a policy encouraging green roof construction will be developed in the emerging LDF.

Green roofs are intrinsically of greater benefit to biodiversity than more traditional roofing methods. However, the design of green roofs can greatly influence just how valuable they are.

The development of 'extensive' green roofs, with a shallow layer of substrate, is of particular value and can be designed to replicate species rich grassland or open mosaic (brownfield) habitat.

Not only can these help to meet restoration targets for these priority habitats, but in the case of roofs supporting open mosaic habitat, they can be a helpful tool for compensating for loss, particularly in locations such as the docks, where development pressure is intense and this habitat is now rare. In addition, priority species such as skylark could benefit from suitable schemes, as they are known to breed on green roofs.

Further work is needed to draw up guidance and specifications for green roofs for Bristol, to help promote the creation of priority habitats to benefit biodiversity. This should include provision of recommended species lists.



#### Design principles for biodiversity green roofs include:

- The use of local substrates as growing media
- Varying the depth of the substrate to provide micro habitats for spiders and beetles
- Planting with local seed mixes

[Livingroofs.org](http://Livingroofs.org)

ACTION	TIMESCALE	IMPLEMENTORS
Develop guidelines and specifications for biodiversity green roofs, and promote to developers through the planning system	2009 and ongoing	BCC (Bristol Parks and Environment and Sustainability Unit)
Ensure that biodiversity green roofs are promoted through policy within the LDF	2008 – 2009	BCC (Bristol Parks, Environment and Sustainability Unit)

### The City Council and the NERC Act

The Natural Environment and Rural Communities Act (NERC) 2006 placed a duty on all public authorities to 'have regard to the conservation of biodiversity in exercising their functions'.

As key public bodies, local authorities have an important role to play in conserving biodiversity, through their role in: developing and influencing local policies and strategies; planning and development control; owning and managing land; procurement; education and awareness raising.

Bristol City Council has already gone some way to ensuring the implementation of the biodiversity duty. This has been achieved mainly through the work of Bristol Parks and Planning Services, although some progress has also been made through the Eco Management and Audit (EMAS) Scheme.

The city council recognises the need to integrate biodiversity considerations into other service areas and functions. Whilst some of those are highlighted in this BAP (eg management of cemeteries and school grounds), it is recognised that a review is needed to establish where other opportunities exist within council departments and functions to ensure compliance with the new duty. This needs to be linked to a programme of implementation to ensure progress is made in these areas, which may identify the need for new resources.



In demonstrating that it has fulfilled the NERC duty, a local authority is likely to be able to show that it has:

Identified and taken opportunities to integrate biodiversity considerations into all relevant service areas and functions

Raised awareness of staff, managers and elected members

Demonstrated a commitment and contribution to key local biodiversity initiatives such as local BAPs

Demonstrated progress against biodiversity indicators and targets

**Guidance for Local Authorities on Implementing the Biodiversity Duty, Defra 2007**

ACTION	TIMESCALE	IMPLEMENTORS
Undertake review of all BCC departments and functions to identify opportunities for implementation of the NERC duty. Develop programme, and identify resources to ensure compliance as appropriate.	2008 – ongoing	BCC (Bristol Parks, Sustainability and Environment Unit)

### Business and Biodiversity

The England Biodiversity Strategy recognises that business can play an important role in the delivery of the BAP targets, and that this can be achieved through businesses:

- Managing their landholdings to achieve biodiversity targets
- Working in partnership to deliver Local Biodiversity Action Plans
- Championing HAPs and SAPs

With a large number of businesses based in Bristol, there is considerable potential for this work. The BAP partnership will seek to work with businesses in the city to promote and encourage biodiversity conservation within the business community.

### The Engagement of Business – a vision

'We want to see business automatically engaging in managing and reporting on biodiversity as an integral part of its processes and activities'

**Working with the grain of nature: a biodiversity strategy for England, 2002**

ACTION	TIMESCALE	IMPLEMENTORS
Establish working group to develop partnership working with business	2009	BAP Partnership

## Climate Change

Climate change will be a significant factor affecting biodiversity. Plants and animals will be influenced directly by changes in climate and habitats may alter in their composition. New species may come to thrive in Bristol with possible positive or negative consequences. Other species may exhibit declines in population. Changes in phenology may lead to loss of synchrony between species. Migration patterns may change affecting eg winter bird populations on the Severn Estuary. Certain species of tree may become more susceptible to disease and stress. Sea level rise also has the potential to threaten estuarine and other low-lying habitats.

Adaptation measures are needed to increase the resilience of natural systems, so that they can accommodate and respond to climate change. The England Biodiversity Strategy report on this advises:

- Providing corridors or linkages so that wildlife can disperse (see Nature Map and Wildlife Corridors section) both within and through an area
- Planting native tree varieties that are likely to tolerate changing climate eg warmer conditions and summer droughts
- Being aware of the future need to adjust habitat management in response to changing climatic conditions
- Undertaking habitat creation or restoration to reduce fragmentation, increase habitat size and promote permeability of the landscape
- Promoting innovative developments such as green roofs and walls to increase permeability in urban areas



'The evidence that the Earth's climate is changing as a consequence of human activity is strong and accepted by the overwhelming majority of scientific opinion. The changing climate is beginning to have an impact on English ecosystems and this impact is expected to increase and accelerate in future, threatening the conservation of biodiversity'.

**England Biodiversity Strategy – towards adaptation to climate change, May 2007**



Green roofs and tree planting also have wider benefits in helping to ameliorate the impacts of climate change in urban areas through, for example, increased percolation of water, cooling and shading effects.

Ongoing research into the impacts of climate change and measures necessary to assist biodiversity in adapting to a changing climate are being encouraged at a national level. It is important that actions in the BAP are adapted in response to new thinking and best practice as this comes to light in future years.

Other plans and strategies (eg Bristol Climate Protection and Sustainable Energy Strategy (BCC, 2004)) consider measures for carbon reduction. Some options for reducing carbon emissions may have a potentially negative impact on particular species and habitats. These issues need detailed consideration through the decision-making processes including those highlighted in the Development Planning and Strategy section.

ACTION	TIMESCALE	IMPLEMENTORS
Ensure biodiversity adaptation is fully incorporated into review of BCC's Climate Change and Sustainable Energy Strategy	2010	BCC (Environment and Sustainability Unit)
Keep up to date with research and best practice and ensure BAP actions are revised accordingly	Ongoing	Bristol BAP Partnership
Develop programme of climate change and biodiversity awareness raising activities	2008 and ongoing	BNHC, AWT, BCC

**NB.** Habitat creation, restoration and wildlife corridors are dealt with under Nature Map and the Wildlife Network. Green roofs are dealt with under Green Roof section above.



Photography: Hawthorn berries: Helen Hall. Tree plantation: FOA

### Information and Data

Up-to-date, accessible information is essential for conservation and enhancement of biodiversity. Without accurate, reliable knowledge of the location, quality and quantity of priority habitats and species, action cannot be properly focused. In Bristol further work is needed to survey, assess and map priority habitats and to record their conservation status

### Bristol Regional Environmental Record Centre (BRERC)

The central collation, storage, manipulation and dissemination of data, carried out by BRERC, is invaluable in helping to maximise its potential use. It is vital that all data records are supplied to BRERC to ensure that the most up to date information is available in helping to inform conservation research and decision making.

### Voluntary Surveying

Bristol has a good number of expert, voluntary wildlife surveyors and monitoring groups that record wildlife in and around the city.

### Citizen Science

Citizen Science – the collection of wildlife data by local people – is not only invaluable in obtaining useful data, but can help raise awareness and increase people’s enjoyment and understanding of wildlife.

A number of successful Citizen Science schemes have been run in Bristol over the years. The most long-standing is Bristol Bird Watch, which annually attracts over 2000 people and provides valuable records on garden bird populations across the city.

ACTION	TIMESCALE	IMPLEMENTORS
Record and map the distribution of BAP priority habitats in Bristol, using existing data and new survey (where needed). Refine restoration targets for priority habitats as appropriate	2009 – 2010	BCC, BRERC
Record the amount of BAP priority habitat, managed, restored, created or lost	2010 – ongoing	BRERC, BCC
Promote monitoring and recording of priority species	Ongoing	BRERC, Volunteer surveyors, BAP Partnership
Develop Citizen Science BAP survey	One new survey every two years	BRERC, BAP Partnership

### Community Action, Education and Awareness Raising

Bristol has a long history of community action, with local people actively involved in looking after and defending local wildlife sites, as well as making wildlife improvements in local parks and other green spaces. These groups have the potential to make an important contribution to the delivery of BAP targets.

Neighbourhood Partnerships, such as the Greater Bedminster Partnership, are being set up in Bristol to help co-ordinate community action and decision making. In Bedminster, local groups have got together to develop area based wildlife projects, such as the South Bristol Riverscapes Project. There is potential through the BAP to encourage the development of similar projects in other partnership areas.

Education and awareness-raising activities also provide important ways for people to learn about, enjoy and engage with their local wildlife. There are a number of projects, such as the Avon Gorge and Downs Wildlife Project and the Local Nature Reserve Project that are already delivering successful education and awareness-raising programmes around biodiversity themes. The Bristol Natural History Consortium is responsible for the delivery of the Bristol Festival of Nature, which annually attracts over twenty thousand people and also provides a significant opportunity to promote Bristol's biodiversity. Bristol Museum is also able to develop displays and activities to help promote the BAP.

Some local wildlife sites are in need of improvements to make them more accessible and welcoming, to facilitate greater enjoyment by local people, including improving entrances and routes and provision of interpretative material, as recognised in the Parks and Green Space Strategy.

ACTION	TIMESCALE	IMPLEMENTORS
Develop and implement awareness-raising programme for BAP including web site and newsletter	2008 and ongoing	BAP Partners
Encourage existing projects to develop education/ awareness raising activities linked to BAP themes	2008 and ongoing	AWT, AGDWP, BLRP, Local Nature Reserve Project, Avon Frome Partnership, BCC, BNHC, Bristol Museum and Galleries
Organise community conference (see chapt 2)	Every 2 – 3 years	BAP Partnership
Work with Neighbourhood Partnerships to promote biodiversity conservation	2008 and ongoing	BAP Partnership
Develop and deliver management programme to improve accessibility of wildlife sites in support of policy NE2 of the Parks and Green Space Strategy	2008 and ongoing	Bristol Parks

### Funding and Resources

While much can be done to implement the Bristol BAP actions working within the existing resources of the different partner organisations, there is no doubt that many actions will require additional funding and new resources. The establishment of a Bristol BAP co-ordinator post will also be vital in ensuring that the BAP is properly implemented.

A funding strategy should be drawn up to prioritise actions that need external funding, design projects suitable for funding and identify funding sources as appropriate. This should be reviewed and up-dated on an annual basis. The Biodiversity Partnership should also look at influencing funding bids being drawn up by partner organisations with a view to incorporating the delivery of BAP actions. There is also the potential to target development-led funding through, for example, section 106 agreements to benefit biodiversity through habitat management and/or creation in particular.

ACTION	TIMESCALE	IMPLEMENTORS
Prepare and implement BAP fundraising strategy	2008 – ongoing	BAP Partnership
Seek delivery of BAP actions through other funding initiatives	As and when opportunities arise	BAP Partnership

Photography: Child with nest box: Rowena Kenny. Bee: Becky Coffin. Children making bird feeders: Sally Oldfield



### Bristol as a Centre of Excellence for Urban Biodiversity Conservation

Bristol has a long history of urban conservation and has developed a national reputation for this work. Numerous projects have contributed to this, including the development of Brandon Hill Nature Park – one of the UK’s first eco-parks, the compulsory purchase of Royate Hill Local Nature Reserve – the first decision of its kind in the country, and Bristol Bird Watch – one of the biggest local bird surveys of its kind in Europe.

Bristol should ensure that it promotes its successes widely. It should also ensure that it stays abreast of the latest developments in urban biodiversity conservation, and innovative projects undertaken by other cities, both in the UK and abroad, and strive to bring innovation and best practice in the field to the development of biodiversity projects in Bristol.

Imaginative measures should be considered to develop this work, including hosting national conferences / seminars and visiting other projects both in the UK and abroad.

ACTION	TIMESCALE	IMPLEMENTORS
Investigate potential for hosting national urban biodiversity conference/seminar, to share best practice	2010	BAP Partnership working with national conservation organisation eg Natural England, the Wildlife Trusts
Foster links and exchanges with other leading cities such as London and Sheffield (and internationally)	Annually	BAP Partnership



Photography: Marbled white butterfly: Liz Faherty, Brandon Hill meadow, Peregrine: Helen Hall

Photography: Sparrow: Darin Smith. Marbled white: Liz Faherty. Water vole: AWT. Badcock's wood: Tanya Darch



## CHAPTER 5

# HABITAT AND SPECIES ACTION PLANS





## SELECTING BRISTOL'S HABITAT AND SPECIES ACTION PLANS

### Habitat Action Plans [HAPs]

The UK Biodiversity Action Plan identifies 45 priority habitats of particular national importance. Bristol contains 21 of these UK priority habitats.

The Bristol Biodiversity Action Plan includes 8 Habitat Action Plans (HAPs). These 8 HAPs actually cover 18 of the UK priority habitats found in Bristol (see table 3). This is because several priority habitats are included in some of the HAPs eg. Species Rich Grassland covers 3 grassland priority habitats.

The list of HAPs also includes a number of other habitats, which are considered to be of particular importance in Bristol, these local priority habitats are:

- **Rhines** (not just rivers)
- **Scrub**
- **Sedgebeds** (not just reedbeds)

It is possible that other HAPs may be produced in the future as other priorities are identified.

**Table 3:** List of Bristol HAPs, showing which UK Priority Habitats they represent

BRISTOL HAPS	UK BAP PRIORITY HABITAT
<b>Species rich grassland</b>	Lowland dry acid grassland Lowland calcareous grassland Lowland meadows Lowland heathland
<b>Woodland</b>	Lowland beech and yew woodland Mixed deciduous woodland Upland mixed ashwoods Wet woodland Lowland wood pasture and parkland
<b>Ponds and open water</b>	Eutrophic standing water Ponds
<b>Reedbeds and sedgebeds</b>	Reedbeds
<b>Estuarine Habitats</b>	Coastal saltmarsh Mudflats Sabellaria alveolata reefs Sea grass beds
<b>Scrub</b>	
<b>Open Mosaic Habitats on previously developed land</b>	Open mosaic habitats on previously developed land
<b>Rivers and rhines</b>	Rivers



## SELECTING BRISTOL'S HABITAT AND SPECIES ACTION PLANS

### Species Action Plans [SAPs]

A list of priority species for Bristol has been drawn up by BRERC in collaboration with the Bristol Biodiversity Partnership. The list includes all UK BAP priority species that occur in Bristol, together with species identified by local experts that are of local conservation concern. The list is available from BRERC.

While the majority of species can be accommodated by the Habitat Action Plans, some require very specific management, or are under a particular threat and so warrant a separate Species Action Plan.

The following list of Species Action Plans has been drawn up by the Bristol Biodiversity Partnership. All are priority species in the UK BAP. Hedgehog and house sparrow SAPs have been chosen as they are familiar species, popular with local people. It is likely new SAPs may be produced in future, as other priorities are identified.

**Table 4:** Bristol's Species Action Plans

BRISTOL SAPS	
Water vole	
Otter	
House sparrow	
Hedgehog	

Photography: Otter, Hedgehog, Sparrow: Darin Smith. Water vole: Nick Bertrand/AWT



## CHAPTER 5 HABITAT ACTION PLANS





## ESTUARINE HABITATS

### Introduction

Estuarine habitats in Bristol are those that are dominated by, or heavily influenced by, the tidal influence of the Severn Estuary and the tidal stretch of the Avon from Cumberland Basin to the mouth of the river. Habitats range from open water through inter-tidal mudflats to saltmarshes. The estuary is of particular importance for migratory birds and fish and for saltmarsh plants, which include several scarce species.

Estuarine habitats that occur in Bristol include three UK priority habitat types – mudflats, saltmarsh and *Sabellaria* reef, which is present in the section of open estuary that falls within Bristol. Three UK BAP priority species – skylark, linnet and reed bunting – occur on the saltmarshes.

This plan is largely concerned with the saltmarshes and inter-tidal mudflats along the stretch of the Severn Estuary from Avonmouth to the city boundary on Chittening Wharf and the Avon, most of which – including the mudflats on the western shore of the river – falls within Bristol.

The city boundary also includes a large area of open water with some inter-tidal mud and sand banks stretching approximately four kilometres out into the estuary and as far downstream as Steep Holm and Flat Holm, which form the western corners of the area. There are few objectives that can be linked to this area. It should be noted, however, that Bristol includes part of Denny Island, the mudflats at Portbury Wharf and *Sabellaria* reefs.

The estuarine habitats within Bristol are currently unmanaged. Large areas of saltmarsh and some intertidal mudflat has been lost to infilling and development, particularly in and around Avonmouth Docks.

### Current Status

The Severn Estuary, including its associated saltmarshes, is a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Ramsar Site, candidate Special Area of Conservation (cSAC) and Site of Nature Conservation Interest (SNCI). These designations, around the Avonmouth catchment, extend up the river Avon to a point approximately 400 metres upstream of the M5 motorway bridge. The remainder of the River Avon is an SNCI.

Inter-tidal areas are dominated by soft silts and muds, with smaller areas of gravel and rock. The mudflats support dense populations of invertebrates, including worms such as the lug worm *Arenicola marina* and the molluscs Laver Spire Shell *Hydrobia ulvae* and Baltic Tellin *Macoma baltica*. These invertebrates provide a food supply for large populations of migratory birds, for several of which the Severn Estuary is of international importance.

These birds are mostly present outside the breeding season, with spring migrants visiting in April and May, autumn migrants between August and October and winter visitors between November and March. At low tide the mudflats along Chittening Wharf are used by large numbers of these birds. Dunlin are the most numerous, with flocks of 2,000 frequently feeding here. Other wader species present in significant numbers include curlew, oystercatcher, redshank and whimbrel, whilst shelduck also feed on the exposed mud.

Birds are less numerous on the Avon, but redshank occur throughout and the species mentioned above – with the exception of turnstone and whimbrel – all occur in small numbers as far up the river as Sea Mills.

Small reefs of *Sabellaria* and patches of eel-grass have been found just outside the city boundary in South Gloucestershire and may be present in Bristol. Steep rocky banks on the Avon support large growths of bladder wrack and other seaweeds.

The estuary is important for fish, most of which are also migratory. There is little information on their use of Bristol's waters, but it is likely that species such as Atlantic salmon, common eel and river lamprey are present seasonally. Cormorants feed on flounders and eels along the Avon and a notable number of grey herons congregate at Shirehampton.

The saltmarshes along both the Severn and the Avon are all unmanaged. The lower saltmarsh is dominated by common cordgrass, a narrow zone of middle saltmarsh is dominated by common saltmarsh grass and a much wider zone of upper saltmarsh is dominated by sea couch, with patches of common reed and sea club-rush on Chittening Wharf. Thrift and common sea lavender are notably frequent in the middle saltmarsh here. Sea rush and long-bracted sedge have spread to the wharf in recent years, as has sea purslane to the mouth of the river Avon. The Severn Estuary saltmarshes are rich in Nationally Scarce plants, and slender hare's-ear, sea barley, stiff saltmarsh-grass, bulbous foxtail and long-stalked orache all occur in Bristol. The large estuarine sub-species of curled dock (*ssp. uliginosus*), which is nationally rare, is notably frequent along the upper parts of the Avon.



Photography: Bladderwrack, Oystercatcher: Darin Smith

The lower fringe of the saltmarsh provides a habitat for dabbling duck in the winter, with a notable concentration of gadwall around Hole's Mouth and smaller numbers of shoveler and teal. Wintering birds higher on the saltmarsh include rock and water pipits, stonechat, skylark and seed-eaters such as linnet. Large populations of field vole attract short-eared owls to Chittening Wharf in some winters. Invertebrate diversity on the saltmarsh is low but several rare specialist species are present.

A locally notable feature of Avonmouth Docks is the presence of breeding ringed plover and oystercatcher, and more intermittently little ringed plover, which benefit from the absence of disturbance and the presence of artificial stony substrates.

Natural England have assessed the Bristol part of the Severn Estuary to be in favourable condition, although adjacent areas of saltmarsh in South Gloucestershire are judged to be unfavourable due to coastal squeeze and under/over grazing.

### Current Threats

- | Pressure from development

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- | Lack of management

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- | Potential threat from Severn Barrage

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- | Climate change leading to coastal squeeze (coastal squeeze occurs as the salt marsh and mudflats become trapped between flood defences such as sea walls and the rising sea. Unable to move inland these habitats become reduced in extent and can eventually disappear)

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- | Disturbance of birds, particularly of waders at high tide roosts

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- | Pollution (although this has declined)

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- | Lack of knowledge of resource

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- | Lack of awareness of value

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Objective 1: Improve knowledge of saltmarshes along River Avon

#### Target:

- | Survey and assess the River Avon saltmarshes to provide baseline information on quality and extent of resource

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Objective 2: Seek to maintain the features for which the estuary is of international, national and local interest

#### Target:

- | Ensure that estuarine habitats are protected through the planning system in line with relevant international and national legislation

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Objective 3: Ensure that saltmarsh habitat at Chittening Wharf is in favourable condition

#### Target:

- | Reinststate short turf, suitable for roosting waders and saltmarsh plants, to parts of Chittening Wharf in partnership with South Gloucestershire Council

# CHAPTER 5

## ESTUARINE HABITATS

Objective 4: Increase awareness of special features of estuarine habitats

**Target:**

- Run an annual training event for planners and other decision makers, to highlight statutory designations and wildlife interest
- Run an annual public awareness raising event in conjunction with South Gloucestershire Council
- Provide interpretive material at one location on the Severn Estuary and one location on the River Avon

ESTUARINE HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Survey River Avon saltmarsh	1	2010	BCC
Ensure that no developments have an adverse impact on the special features of the estuary	2	2008 – 2013	BCC, NE
Commission grazing feasibility study at Chittening Wharf	3	2009	BCC, South Glos Council, NE
Implement recommendations of feasibility study	3	2010 – ongoing	BCC, South Glos Council, NE
Run annual training event for professionals	2, 4	2008 – 2013	BCC, Severn Estuary Partnership
Run annual public awareness raising event	4	2008 – 2013	BCC, South Glos Council, AWT
Investigate provision of viewing platform overlooking Chittening Wharf, with canopy and interpretive material	4	2011	BCC, South Glos Council
Seek to provide interpretive panels at Sea Mills	4	2012	BCC



Photography: Dunlin, Short-eared owl: Paul Bowerman. Greenshank: Nuria Prat



## SPECIES RICH GRASSLAND

### Introduction

Species rich grassland is the broad term used to describe grassland habitats of high nature conservation interest, which are those that have not been subject to agricultural improvement or intensive management.

The term encompasses three UK priority habitat types that occur in Bristol – lowland meadows, lowland calcareous grassland, and lowland acid grassland – more commonly known as neutral, calcareous and acid grassland. In the context of this plan it also encompasses lowland heath. Species rich grassland supports the UK priority species skylark, although its distribution is now extremely limited in Bristol.

In Bristol, areas of species rich grassland of high nature conservation interest can be found in a variety of locations across the city. The most outstanding is the Avon Gorge, which is internationally recognised for this interest and regarded as one of the top three botanical sites in the country.

Traditionally, many of these grasslands would have been grazed or cut for hay. Today, a number are managed for conservation with a summer hay cut; benefiting both wildlife and local people who have come to enjoy the summer displays of wildflowers. Unfortunately, other areas of species rich grassland have become neglected and are suffering from scrub encroachment, over grazing and/or amenity mowing.

### Current Status

The current extent, distribution and quality of grasslands in Bristol are fairly well understood. The majority of species rich grasslands in the city are designated as Sites of Nature Conservation Interest (SNCI), and – in the case of the Avon Gorge – as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC).

Calcareous grassland is found on shallow lime-rich soils generally overlying limestone rocks. In Bristol the most significant area of calcareous grassland is found on the Avon Gorge and Clifton and Durdham Downs. The Avon Gorge is particularly known for its large number of nationally rare plants – including both Bristol rock-cress and Bristol onion (round headed leek) – for which the Gorge is the only British mainland site. Other characteristic species present include yellow-wort, common centaury, fairy flax and dropwort.

Neutral grasslands are found on soils that are deeper and less free-draining than the limestone soils and are generally richer in nutrients. Characteristic species include: dyer's greenweed, devil's-bit scabious and pepper saxifrage. Neutral grassland is found across Bristol, with some of the best examples found in the south of the city. Sites include: Stockwood Open Space, Hawkfield Meadows, Manor Woods Valley, Highridge Common, Kingsweston Down, and Narrowways Junction.

Acid grassland occurs on soils overlying acid rocks. It occurs in Bristol over sandstone and is only known at two sites in the city – Troopers Hill and Oldbury Court Estate. Characteristic species present include sheep's sorrel and heath bedstraw.

Lowland heath is vegetation with more than 25% cover of dwarf shrubs including heathers and western gorse. There are patches of lowland heath at Troopers Hill, supporting bell heather and ling.

### Current Threats

- | Pressure from development

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- | Neglect leading to rank overgrowth and scrub encroachment

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- | Inappropriate recreational use

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- | Inappropriate management eg regular amenity mowing, overgrazing (particularly in pony paddocks)

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- | Lack of ability to use grazing as a management technique due to difficulties associated with the urban setting

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- | Lack of awareness of value

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- | Habitat fragmentation

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- | Arson on some hay meadows in summer months

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- | Practical difficulty of managing small areas such as roadside verges for conservation

Objective 1: Monitor condition and extent of species rich grassland resource

#### Target:

- | Aim to measure favourable conservation status of all known species rich grassland sites outside BCC control by 2013
- | Map distribution of all priority grassland habitat, its status and management
- | Identify all grassland sites with skylark present

# CHAPTER 5

## SPECIES RICH GRASSLAND

Objective 2: Maintain and enhance the quality and extent of the existing resource

**Target:**

- No net loss in the extent of the existing habitat resource
- All BCC species rich grasslands to be in favourable conservation status by the year 2015
- No net loss of skylark populations

Objective 3: Restore/create new species rich grassland on appropriate sites

**Target:**

- Restore/create species rich grassland on appropriate sites (including green roofs) – target 3 hectares by 2013

Objective 4: Increase awareness and enjoyment of areas of species rich grassland

**Target:**

- Develop Bristol Meadow Project to raise awareness of existing locations through web and other literature and encourage access
- Three 'open day' events held at grassland site every year through the Biodiversity Partnership

SPECIES RICH GRASSLAND HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Map existing known extent of species rich grassland, status and management as basis for future monitoring	1, 3	2009	BCC, BRERC
Seek to undertake favourable conservation status survey of all non BCC grassland sites	1	2013	AWT, BCC, NE
Identify and map all locations with skylarks present, monitor population	1	2008 – 2013	BOC, BNS, BRERC
Ensure that development does not lead to a net loss of species rich grassland habitat and enhances the extent where possible	2	2008 – 2013	BCC
Introduce appropriate management onto all BCC species rich grasslands to ensure in favourable conservation status by 2015	2	2008 – 2013	BCC, AWT

# CHAPTER 5

## SPECIES RICH GRASSLAND

SPECIES RICH GRASSLAND HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Conduct audit of all existing grassland re-creation/restoration schemes. Produce guidelines for new schemes including lists of appropriate species	3	2012	BRERC, BCC, NE
Identify sites for re-creation/restoration of species rich grassland and develop programme for implementation towards target of 3 hectares	3	2009 – ongoing	BCC, AWT
Develop specification for species rich grassland green roofs, and promote through the planning system (see Green Roofs section)	3	2009 – ongoing	BCC
Develop Bristol Meadow Project promotional plan and implement	4	2010	AWT, BCC
Run three meadow open days/guided walks per year	4	2009 – 2013	BAP Partnership
Identify grassland sites with poor access and develop programme to improve access as appropriate	4	2011 – 2013	



Photography: Common spotted orchid, Small scabious: Becky Coffin



## WOODLAND

### Introduction

This action plan covers all woodlands over 0.5 hectares in extent found in Bristol. This includes newly planted, secondary and ancient woodland, whether broad-leaved or coniferous (although in practice the extent of the latter is very small). The woodlands within Ashton Court, which are outside Bristol but managed by the city council, are also covered.

Bristol contains three UK priority woodland habitat types – lowland mixed deciduous woodland, lowland beech and yew woodland and wet woodland – and some woodlands have characteristics of a fourth type – upland mixed ashwood. The woods in Ashton Court include an important example of lowland wood-pasture and parkland. Bristol woodlands are home to three UK BAP priority species – Killarney fern, bullfinch and song thrush.

Bristol contains large areas of woodland, mostly on ridges and valley sides where the topography has precluded development and, historically, clearance for agriculture. They provide a resource that is extremely important in amenity and landscape, as well as ecological terms.

Bristol City Council owns and manages the majority of woodlands in the city.

### Current Status

The current extent, distribution and quality of woodlands in Bristol are well understood. The Avon Gorge woodlands are included within the Avon Gorge Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC), although only Cook's Folly Wood is designated specifically for its woodland interest. Parts of Ashton Court, including Clarkencombe Wood, are an SSSI (for dead wood invertebrates associated with veteran trees). Virtually all other woodlands in Bristol are Sites of Nature Conservation Interest (SNCI).

Most woodlands in Bristol grow on shallow soils over Carboniferous limestone. In many woodlands the canopy is generally dominated by ash and sycamore, which tends to be even aged. Other widespread tree species include wych elm, pedunculate oak and field maple. In many woods the understorey is rather sparse due to a lack of active management. Where present, however, the understorey is usually dominated by hazel, or by hawthorn in younger woods.

Regeneration – like the canopy – is usually dominated by ash and sycamore. Where a scrubby edge to woodland has developed it is often diverse, with species such as wild privet and purging buckthorn. The ground flora is generally dominated by either ivy or dog's mercury, but other species including ramsons, bluebell and wood anemone may be locally abundant. Important examples of these woodland types are found at Blaise Castle, where there are significant stands of both yew and beech, and at Cook's Folly Wood, where small-leaved lime is present. Both sites have a diverse ground flora. A small wood by the River Avon at Shirehampton supports two nationally rare whitebeam species.

The valleys of the Rivers Frome and Avon in eastern Bristol have important woodlands on acid soils derived from sandstone. These woods are generally dominated by oak species, with significant quantities of wild cherry and silver birch. Other trees present include wild service tree and small-leaved lime. As with other woods, the understorey is usually sparse, but holly can be frequent and locally dominant. Ivy can dominate the ground flora also, but great wood-rush and wood spurge are locally frequent.

Wet woodland is generally present in small pockets only, within woodland of other types and often along stream sides. Most are dominated by thickets of willow species, with alder occurring less frequently. The ground flora is often dominated by tall herbs such as comfrey, great willowherb and the introduced Himalayan balsam, for example at Oldbury Court.

Widespread bird species in Bristol's woods include great spotted woodpecker, green woodpecker, sparrowhawk, treecreeper and chiffchaff. Purple hairstreak butterfly is present in several woods, and white-letter hairstreak at rather fewer.

Lack of management in many woods has led to dense growth of saplings and absence of a shrubby understorey, which limits value for groups such as birds. Spread of non-native plants, especially evergreen species such as holm oak and laurel, has damaged the ground flora locally and there are specific threats, such as hybrid bluebell out-competing native bluebell. Some non-native plants, however, either do not pose a significant threat or are too widespread for control to be practical. An example of the latter class of plants is sycamore, which should now be accepted as an integral part of Bristol's woodland vegetation.

Several woodlands have good public access provision, but elsewhere there is inadequate access, and unplanned access can damage ground flora and other interests.



Photography: Bluebells: BLRP. Greater spotted woodpecker: Darin Smith

Some management work has been carried out, much of it funded by Woodland Grant Schemes and supported by the Forest of Avon. This has included measures to diversify structure and to control non-natives. Amenity and educational value has been enhanced by measures to regulate access and by running 'Wood Schools'.

However, many woodlands are currently in unfavourable conservation status due to problems such as those highlighted above. A more extensive management programme should aim to bring these woods into favourable status, in particular so that a dense under-storey is favoured where appropriate, invasive species are controlled where they are damaging to the wood's interest, features of special interest are protected and public access is facilitated where appropriate: eg it does not lead to damage to ground flora.

Many have fallen into neglect because of a lack of resources for management. The potential for use of wood products – eg for biomass energy production – should be investigated as a way to encourage positive management of woodlands.

### Current Threats

- | Lack of structural diversity
- | Pressure to remove standing dead wood for health and safety reasons
- | Development pressures on adjacent land
- | Lack of connectivity
- | Invasion by non-native species such as Spanish bluebell and winter heliotrope
- | Trampling of ground flora and other damage
- | Lack of management leading to deterioration of habitat and deterrent to public access

Photography: Badock's wood, wild garlic: Friends of Badock's Wood/BCC



Objective 1: Maintain and enhance the quality and extent of the existing resource

**Target:**

- Ensure that all of Bristol woodlands are in favourable conservation management by 2020.
- Seek to ensure that damage to woodland does not occur as a consequence of development, either directly or indirectly
- Develop sustainable woodland management through production and use of wood products

Objective 2: Enhance and create opportunities for plants and animals to move between woodlands

**Target:**

- Strengthen strategic woodland corridors through planting

Objective 3: Increase awareness of the special interest of Bristol's woodlands

**Target:**

- Make interpretive material available to visitors to four woodlands by 2012
- Publicise Bristol's woodlands via the Council website
- Improve access to woodland sites
- Run two annual events aimed at increasing appreciation of Bristol's woodlands

WOODLAND HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Identify priority sites to bring into favourable conservation status and implement improvement programme	1	2010 – ongoing	BCC
Protect integrity of woodland habitat through planning system and ensure ecological input into planning applications within 500m of woodland	1	2008 – 2013	BCC, FC
Ensure that an adequate buffer zone is retained between woodland and any new development	1	2008 – 2013	BCC
Investigate potential for sustainable management of woodland habitat through production of wood products and implement as appropriate	1	2010 – ongoing	BCC

# CHAPTER 5

## WOODLAND

WOODLAND HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Identify strategic woodland corridors and opportunities to strengthen by planting; consider use of available areas of public open space and street trees, using species with value for wildlife	2	2011 – 2013	BCC, FoA
Ensure that developments in strategic corridors include landscaping that helps strengthen links between woodlands, using targeted planting	2	2008 – 2012	BCC
Provide interpretive material at four woodlands	3	2009 – 2012	BCC, FoA
Provide material publicising Bristol's woods on Council website	3	2009	BCC
Expand programme of Wood Schools	3	2009 – 2013	FoA
Run two public events per year to increase people's appreciation of Bristol's woodlands	3	2009 – 2013	BCC, FoA, AWT
Identify woodlands with poor access and develop programme to improve access where appropriate	3	2009 – 2013	BCC, FoA

Photography: Ashton Court Estate: FOA: Bluebell: Darin Smith





## OPEN MOSAIC HABITATS ON PREVIOUSLY DEVELOPED LAND

### Introduction

This action plan covers the distinctive plant and animal communities found on previously developed land, which are highly characteristic of urban areas and fall outside many traditional nature conservation strategies. Some previously developed land supports vegetation akin to that of semi-natural habitats such as grassland and woodland, and is included under those action plans, rather than this plan.

Communities found on previously developed land often support components of UK priority habitats, notably species-rich grasslands, and can also support a wide range of species more often associated with other priority habitats, especially calcareous grassland. This habitat type is now recognised as a UK BAP priority habitat: Open Mosaic Habitats on Previously Developed Land. The UK BAP priority species known to be present in this habitat in Bristol are song thrush, linnet, bullfinch, reed bunting and large garden bumblebee, but there is potential for several other priority invertebrate species to be present.

Large areas of this habitat type have been lost in Bristol in recent decades, but significant examples remain at Lamplighters Marsh, elsewhere in the Avonmouth area and also in the St Phillip's Marsh area. Smaller fragments are present in other locations, such as around the Floating Harbour, but are often threatened by development.

### Current Status

Some sites supporting this habitat type, such as Lamplighter's Marsh, are designated as Sites of Nature Conservation Interest or form parts of Wildlife Network Sites. Others, especially the smaller sites, often have no designation and may be identified as development sites. The extent, distribution and quality of the resource are less well understood than those of more 'natural' habitats.

These communities usually occur on sites where intensive human activity has produced a highly unusual, artificial substrate that is nutrient-poor and may vary radically, for example in its water retention capacity, over small distances.

Most of these substrates, such as those derived from rubble or ballast, are calcareous, but materials such as furnace clinker can produce an acidic substrate.

Open Mosaic Habitats on Previously Developed Land are typically characterised by a mosaic of short sparse grassland, tall herb vegetation and scrub. Wetland may also be present. Non-native plant species are often abundant, for instance white stonecrop in short grassland, evening primrose and Oxford ragwort in tall herb vegetation and buddleia and cotoneasters in scrub. Unlike in other habitats they are often highly valued here, for their contribution to local distinctiveness, their visual appeal and their value for invertebrates and other animals. Some of the introduced species are uncommon and have a long recorded history at particular sites, such as moth mullein at Lamplighters Marsh.

The range of native species can be exceptionally diverse and often includes species from disparate habitats. Particularly distinctive species include squirrel-tail and rat's tail fescues, wild carrot, biting stonecrop and common bird's-foot trefoil. Displays of flowering plants on some sites can be very striking. Some sites are very diverse: Long Cross Tip in Lawrence Weston, for example, supports bee, pyramidal and southern marsh orchids. Particularly characteristic of Bristol are old walls, with rich fern populations and non-natives such as bellflowers and ivy-leaved toadflax, as well as natives such as flattened meadow-grass and blue fleabane. The walls and quaysides of the Floating Harbour support some highly characteristic non-natives such as beggarticks and fig, as well as natives from grassland, wetland, woodland and saltmarsh habitats.

Open mosaic habitats can be extremely rich in invertebrates, including butterflies such as common blue, brown argus and marbled white, and a range of rare bees and wasps. Many sites support slow worms, and possibly other reptiles. Scrub and wetland can support large populations of birds such as linnet, goldfinch and whitethroat.

Bristol City Council, with input from the local community, has carried out a comprehensive programme of management works at Lamplighter's Marsh, which has included scrub control and breaking up hard standing to allow vegetation to develop. This has been successful in increasing populations of plants such as moth mullein and viper's bugloss, allowing colonisation by additional scarce plants such as hawkweed oxtongue and improving habitat for scarce invertebrates such as six-belted clearwing moth.

Ruderal plant communities growing in and around the Floating Harbour have been promoted as part of the city centre nature trail. The colonisation of the old railway sidings here by Oxford ragwort also recently featured on the BBC's Nature of Britain series.

There is no comprehensive information on the extent of this habitat types within Bristol.

### Current Threats

- I Lack of knowledge of resource

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- I Pressure from development

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- I Lack of understanding of resource

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- I Lack of management, leading to scrub encroachment (although many sites can maintain their interest for long periods without management)

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- I Pressure to “tidy up” sites

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- I Vandalism and fly tipping

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- I Habitat fragmentation

Objective 1: To increase knowledge of the open mosaic habitat resource

**Target:**

- I To gather information on the extent of good quality open mosaic habitats in Bristol
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Objective 2: To maintain and enhance the open mosaic habitat resource

**Target:**

- I To ensure that development does not result in a net loss in the area of good quality open mosaic habitat
  - I To ensure that, where appropriate, development mitigates for any losses through the creation of good quality open mosaic habitats including creation of extensive green roofs
  - I To ensure that no species currently found in open mosaic habitats are lost from Bristol as a whole
  - I Where possible to ensure that sites supporting good quality open mosaic habitats are in favourable conservation status
- 

Objective 3: To increase awareness and enjoyment of open mosaic habitats

**Target:**

- I To make planners and other professionals aware of the special interest of open mosaic habitat, the threats it faces and the potential for habitat restoration and creation of new sites
  - I To raise the profile of open mosaic habitat amongst local people
-

# CHAPTER 5

## OPEN MOSAIC HABITATS ON PREVIOUSLY DEVELOPED LAND

OPEN MOSAIC HABITATS ON PREVIOUSLY DEVELOPED LAND ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Identify and survey open mosaic habitats of particular significance or importance to biodiversity	1	2009 – 2010	BCC, BRERC
Assess planning applications to ensure that no development has a net adverse impact on good quality open mosaic habitat	2	2008 – 2013	BCC, AWT
Develop specification for extensive green roofs (with open mosaic habitats) and promote through the planning system	2	2008 – 2013	BCC (Bristol Parks, and Sustainability Environment Unit)
Ensure all BCC owned open mosaic habitat SNIs in favourable conservation status by 2015	2	2008 – 2013	BCC
Develop project within Bristol Docks to ensure characteristic species and habitat is maintained and enhanced, and interpreted to the public	2, 3	2008 – 2010	BCC, BLRP
Run one training event every two years for planners and other professionals	3	2008 – 2013	BCC, AWT
Develop programme of awareness raising to include public events/publications	3	2008 – 2013	BCC, AWT

Photography: Buddleia, Beggarticks: Helen Hall





## REEDBEDS AND SEDGEBEDS

### Introduction

Reed and sedgebeds form on low-lying land where impeded drainage leads to the development of waterlogged soil or standing water. On waterlogged soils with a high organic content sedgebeds – dominated by either greater pond sedge or lesser pond sedge – develop. If the organic content is lower, or if standing water is present, reedbeds dominated by common reed are more likely to develop. Reeds will dominate in water depths of up to approximately one metre; where the water depth is greater open water communities occur. Both sedgebeds and reedbeds often support relatively few plant species, but they have distinctive animal communities.

Two UK BAP priority species – reed bunting and water vole – occur in these habitats in Bristol. A further species – greater water parsnip – previously occurred but is now extinct in Bristol. Reedbeds are identified as a priority habitat in the UK BAP.

### Current Status

The distribution of reed and sedgebeds is limited by the availability of suitable low-lying land. In the past, large areas were present in the Avonmouth and Lawrence Weston areas, but most of these have been lost as a result of land drainage and development.

The largest concentration of both habitat types, at Lawrence Weston Moor, is owned by Bristol City Council and managed as a nature reserve by Avon Wildlife Trust. It is also a Site of Nature Conservation Interest (SNCI) and Local Nature Reserve. There are also some substantial reedbeds along Chittening Wharf. These are within the Severn Estuary Site of Special Scientific Interest (SSSI). Those with substantial tidal influence are covered by the Estuarine Habitats HAP. Some of the others, however, are above high tide level and fall within the remit of this plan.

Elsewhere, there are small areas around Avonmouth Sewage Works and Hoar Gout, some of which are SNCI or Wildlife Network Site (WNS) and some are managed by Avon Wildlife Trust. There are other smaller sites in the wider Avonmouth, Hallen and Lawrence Weston area, some of which are covered by SNCI or WNS designations, for example to the south of Seabank Power Station and on Hallen Marsh. Away from

the coastal strip there are small patches of reedbed, largely within the Avon Valley, for example along the New Cut and at Eastwood Farm. Most of these are within SNCIs.

Reedbeds are overwhelmingly dominated by common reed. In the centre of reedbeds this species often forms single-species stands, but there are often other plant species. The more frequent species include hedge bindweed, woody nightshade, reed sweet grass, greater pond sedge and greater reedmace. Where standing water is present common duckweed, water starwort and other aquatic species can be present. On the fringes of reedbeds, vegetation becomes more diverse, with additional species including water mint, marsh bedstraw, hairy willowherb, purple loosestrife and yellow flag.

Reedbeds have usually attracted most attention from the nature conservation community on account of their bird populations. The reedbeds in Bristol are too small to support species such as bittern and marsh harrier, but reed warbler, sedge warbler and reed bunting all breed regularly and water rail may do so. The invertebrates of Bristol's reedbeds have been little studied, but species of restricted distribution – including large wainscot moth – are known to be present.

There are two forms of sedgebed in Bristol, defined by the dominance of either greater or lesser pond sedge. The two vegetation types are very similar. As with common reed, both species can form single species stands but they can also be more diverse, particularly where they form a mosaic with marshy grassland. In these circumstances associated plants can include ragged robin, marsh marigold, meadowsweet and hemlock water-dropwort, as well as scarce species such as meadow rue, brookweed, blunt-flowered rush and slender spike-rush.

The bird interest of sedgebeds differs slightly from that of reedbeds. Sedge warblers and reed buntings breed in this habitat, and in winter birds such as common snipe, jack snipe and teal may be present, the first two sometimes in significant numbers. Information on the invertebrate interest of Bristol's sedgebeds is sparse, although short-winged conehead (a bush-cricket) can be present in large numbers.

There are several management issues associated with these habitats. They can be invasive of more botanically rich habitats, from marshy grassland to open water, and mowing or dredging may be required to limit their spread. On the other hand, depending on water regimes, both habitats may dry out and be susceptible to invasion by willows and other trees and shrubs.

Mowing or manipulation of water levels may be required in order to prevent or reverse this trend. Changes in water levels can lead to drying out and this has led to the almost total loss of an area of this habitat type at Lamplighters Marsh. On the other hand, creation of these habitats is relatively straightforward once the correct water regime has been established and there are opportunities for habitat creation in the Avonmouth area. Habitat creation schemes should incorporate other habitats, such as open water and marshy grassland to maximise biodiversity benefits.

Greater water parsnip (*Sium latifolium*) was previously present in the Avonmouth area. Avon Wildlife Trust is at present involved in an attempt to reintroduce this species in the Gordano Valley. If this proves successful then a similar attempt at Lawrence Weston Moor may be feasible.

### Current Threats

- Loss due to changes in hydrological regimes
- Lack of management
- Development pressure

Objective 1: Identify and map all existing reed and sedgebeds and assess favourable conservation status

**Target:**

- All reed and sedgebeds should be identified, surveyed and assessed

Objective 2: Maintain and enhance the quality and extent of the existing resource

**Target:**

- No net loss in the extent of the existing habitat resource
- All reedbeds to be in favourable conservation status by 2015

Objective 3: Create new reedbed on land of low nature conservation interest

**Target:**

- Create a further 3 hectares of reed and sedgebeds in Bristol, focusing on the Avonmouth area by 2013

Objective 4: If feasible, re-introduce greater water parsnip

**Target:**

- Work towards re-establishing a viable population of greater water parsnip

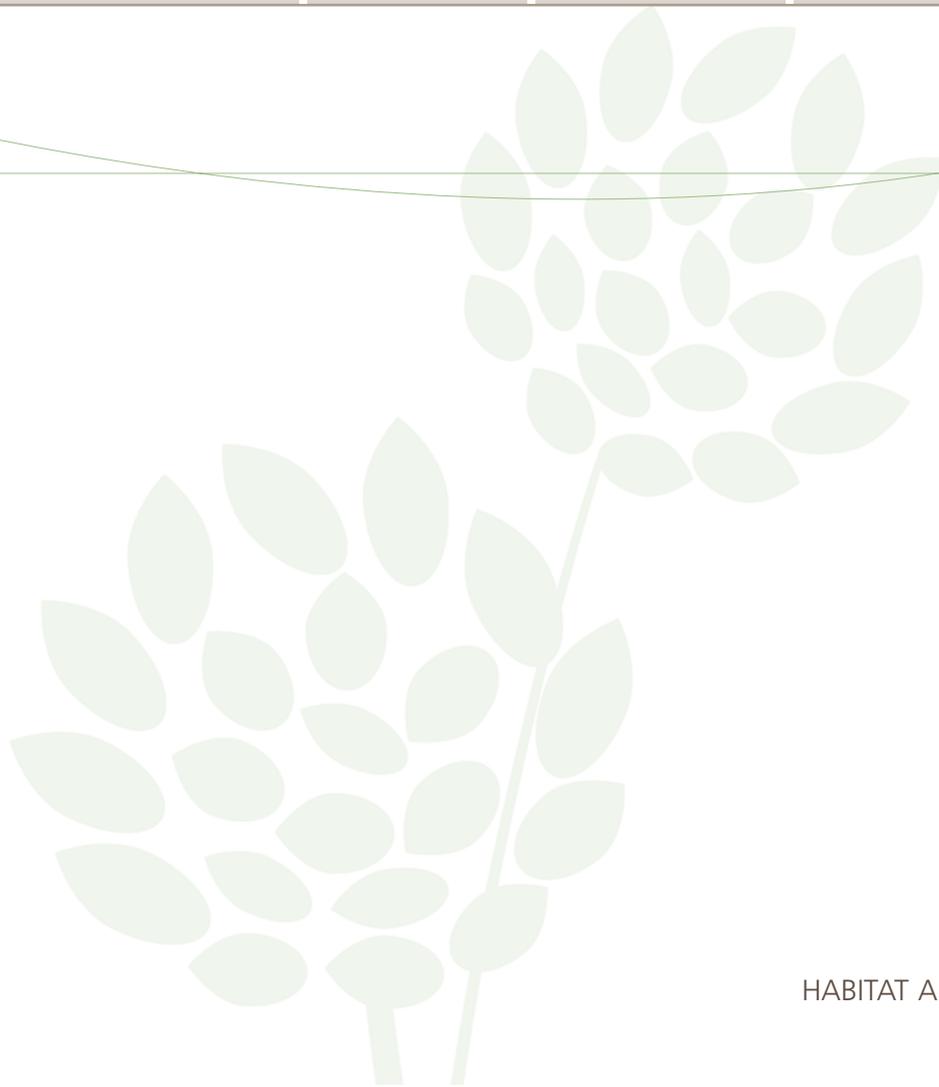


Photography: Reed warbler: Paul Bowerman. Ragged robin: Darin Smith. Branched bur-reed: AWT

# CHAPTER 5

## REEDBEDS AND SEDGEBEDS

REED AND SEDGEBED HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Identify, map, survey and assess nature conservation status (including hydrological status) of all sedge/reedbeds	1	2009	BCC, IDB, Landowners
Seek to ensure that development does not lead to a net loss of the resource	2	2008 – 2013	BCC
Work with landowners to ensure all reedbeds and sedgebeds are in favourable conservation status by 2015, prioritising those at risk	2	2009 – 2013	BCC, AWT, Landowners
Identify sites for reed and sedge bed creation, focusing on the Avonmouth area and work with developers and other partners to create new areas of reed and sedgebed	3	2010 – 2011 then ongoing	BCC, BRERC, AWT, Landowners
If the reintroduction of greater water-parsnip to the Gordano Valley is successful, prepare a feasibility plan for its reintroduction to Lawrence Weston Moor	4	2011	BCC, AWT, NE, EA





## SCRUB

### Introduction

This HAP covers scrub – vegetation that is dominated by low growing or multi-stemmed woody species.

Three UK BAP priority bird species – bullfinch, linnet and song thrush – occur in scrub in Bristol. Scrub is also part of the habitat requirement of the nationally rare priority moth species, silky wave moth, that occurs in the Avon Gorge.

### Current Status

Scrub is widely scattered across Bristol, often as part of a mosaic with other habitats, including broad-leaved woodland, grassland and wetland. Most extensive examples fall within designated Sites of Nature Conservation Interest (SNCl) and scrub is also well represented on Wildlife Network Sites (WNS), but there are numerous small patches of the habitat on undesignated sites.

There are two main scrub types in Bristol, those on neutral and those on calcareous soils. The most widespread type occurs on neutral soils and is usually characterised by large quantities of bramble, hawthorn and blackthorn, often with emergent saplings of ash, sycamore and pedunculate oak. There is often little ground flora associated with this habitat, but young stands may retain grassland species such as agrimony and meadow vetchling, and narrow-leaved everlasting pea can be a characteristic component, especially along old railways. Under older stands of this scrub type a woodland ground flora, dominated by ivy, can develop with other species including cuckoo pint, wood false brome and dog's mercury. Extensive examples of this habitat type occur at Stockwood Open Space, Eastwood Farm, the Downs and Malago Valley, and smaller examples are widespread.

Limestone scrub has a more limited distribution, governed by the occurrence of suitable soils and is largely limited to the Kingsweston Ridge and Avon Gorge. It can be species rich, with shrubs including wild privet, wayfaring tree, various rose species, spindle and dogwood. Tree species may include yew, ash and whitebeams. The more sparse open nature of this scrub often allows a diverse associated ground flora to be present, including remnant grassland species such as pale St John's wort and common rockrose. Wild madder and wild strawberry are particularly characteristic and ivy broomrape occurs on the edge of many patches.

Other scrub types with a more restricted distribution in Bristol include: broom scrub, which occurs on acidic soils for example at Troopers Hill; willow scrub, which occurs at wetland sites such as Lawrence Weston Moor; and buddleia-dominated scrub, which occurs often on derelict or previously used land.

Scrub is a key habitat for birds. As well as the BAP priority species listed above, population densities of species such as whitethroat, lesser whitethroat, willow warbler and goldfinch can be exceptional in scrub. Many of Bristol's badger setts and fox earths are protected by dense scrub. Scrub provides habitat for many species of invertebrate, often including rare species as well as attractive species such as brimstone and comma butterflies. Invertebrate value is usually greatest if tall herb or grassland habitats are present nearby.

There are several management issues associated with scrub. It can become a management problem where it encroaches across species-rich grassland (another BAP priority habitat). Elsewhere, it can make sites appear unmanaged and neglected. If not managed, it will usually develop into secondary woodland, which is usually much less species-rich.

In the grassland ecosystem, the ideal solution is to retain small amounts of scrub, whilst containing and, where practical, reversing encroachment across species-rich grassland.

Scrub habitats will require management, usually by flailing on an infrequent basis. Creation of scrub either by allowing natural regeneration or by planting can be successful in the right locations eg to create woodland edge habitat, and biodiversity benefits are often achieved far more quickly than by woodland creation.

### Current Threats

- | Lack of knowledge of resource

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- | Poor image of habitat, owing to the fact that in certain circumstances can make sites feel neglected and unsafe

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- | Isolation of small areas of scrub

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- | Lack of, or unsympathetic, management

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- | Development pressures

Objective 1: Increase knowledge of resource

#### Target:

- | Collate information on the extent, distribution and type of scrub in Bristol
- | Assess and monitor distribution of scrub-dependent birds in Bristol
- | Identify areas with important concentrations of scrub, corridors important for connectivity and areas deficient in scrub

Objective 2: Ensure that development does not damage the overall resource

**Target:**

- Minimise the loss of scrub habitats caused by development
- Where scrub is lost, ensure that it is replaced by appropriate planting
- Where appropriate, seek opportunities for enhancement of resource, particularly in areas where scrub is scarce

Objective 3: Enhance the quality of the existing resource

**Target:**

- Ensure that sites with important scrub resource are in favourable conservation status

Objective 4: Increase awareness of special features of scrub

**Target:**

- Run an annual training event for land managers, planners and other decision makers, to highlight wildlife interest of scrub
- Run a public awareness raising event
- Produce a leaflet and web material highlighting value and management needs of scrub

SCRUB HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Map distribution and abundance of different scrub types in Bristol and develop a long term monitoring plan	1	2009 – 2010	BCC, BRERC
Map distribution and abundance of scrub-dependent bird species	1	2010	BCC, BRERC, BOC, BNS
Monitor populations of selected bird species	1	2011 – 2013	BOC, BNS
Seek to introduce appropriate management onto important areas of scrub habitat to ensure in favourable conservation status	1, 3	2010 – 2013	BCC, BRERC, AWT
Ensure that development does not lead to a net loss of scrub habitat and enhance extent where appropriate	2	2008 – 2013	BCC
Run an event for planners and land managers	4	2011	BCC, AWT
Run a public awareness raising event	4	2011	BCC, AWT
Develop a leaflet and web material outlining importance of scrub and management needs			



## PONDS AND OPEN WATER

### Introduction

Open water habitats can be defined as all areas of fresh water with little or no flow. This includes natural systems such as lakes and pools, together with man made structures such as reservoirs, canals and garden ponds. Habitats that contain moving open water will be covered in the separate Rivers and Rhines Habitat Action Plan.

Most of the larger open water habitats within Bristol (e.g. Avonmouth Pools) are examples of the UK priority habitat Eutrophic Standing Water. Eutrophic water bodies are those that contain high levels of nutrients. They can contain very high levels of biodiversity providing they are not swamped by algal blooms.

Standing open water provides important habitat for a variety of wildlife including amphibians, invertebrates, birds, mammals and plants. In Bristol, UK priority species associated with this habitat include the great crested newt and water vole.

Standing open water does not always occur in isolation but can form part of a network. These networks allow several populations of, for example, great crested newts to exist close enough to one another to allow some movement of individuals between the populations – this is known as a metapopulation. Metapopulations are more able to resist threats such as habitat destruction that may cause the loss of smaller, more isolated populations.

Today, a number of these open water habitats in Bristol are managed for conservation, benefiting both wildlife and people.

### Current Status

Throughout Bristol there is a wide range of open water habitat from the Floating Harbour and pools and reservoirs in Avonmouth, to stretches of canal, garden ponds and formal park lakes. The precise amount of open water habitat is unknown, mainly due to the difficulty in assessing the number of ponds in gardens.

The largest area of open water in Bristol is the Floating Harbour and connecting Feeder Canal. This area contains a large number of fish, including pike and bream and supports several species of birds including swans, cormorants, herons, moorhens and kingfishers. Over the years, waterfront development has led to the loss of nesting sites for many of these species.

Many of the other larger areas of open water (large ponds, lakes and reservoirs) are designated as Sites of Nature Conservation Interest (SNCIs) eg. Henleaze Lake, Hoar Gout Reservoirs and Avonmouth Sewage Works, or form part of larger SNCIs eg. ponds at Stockwood Open Space and Lawrence Weston Moor.

Many of these SNCIs provide valuable habitat for wildlife. For example, the pools and lagoons at Avonmouth Sewage Works – despite being located in a heavily industrial area – support many species of waders and wildfowl. The deeper lagoons attract diving ducks such as pochard and tufted duck. Both these and ponds at Stockwood Open Space also provide important habitat for amphibians including great crested newt.

Other ponds of all sizes are found across Bristol – the number and extent of garden ponds is unknown, but it is thought that these are vital in supporting Bristol’s amphibian population and are likely to support a range of dragonflies and damselflies.

### Current Threats

- I Neglect

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- I Loss through infilling

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- I Inappropriate management

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- I Pollution

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- I Conflicting use (eg. recreational activities)

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- I The release of non-native species

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- I Direct and indirect effects of development

Objective 1: To monitor the extent and condition of standing open water habitats and ponds

#### Target:

- I Determine the extent and distribution of standing open water habitat and ponds within Bristol by 2013

Objective 2: To maintain and enhance the condition of existing standing open water habitats

#### Target:

- I Ensure that council owned SNCIs containing open water habitat are in favourable condition by 2020
- I Ensure that development does not result in the loss of, or harm to, open water habitat
- I Seek to ensure ponds and open water are enhanced for wildlife

# CHAPTER 5

## PONDS AND OPEN WATER

Objective 3: Promote the creation of standing open water habitats

**Target:**

- Encourage and facilitate the creation of wildlife ponds in school grounds and gardens
- Ensure that the creation of ponds is considered in all new developments as appropriate (for example as part of Sustainable Urban Drainage Systems (SUDS))

Objective 4: To raise awareness and appreciation of the biodiversity value of open water and pond habitats and promote good management and habitat creation

**Target:**

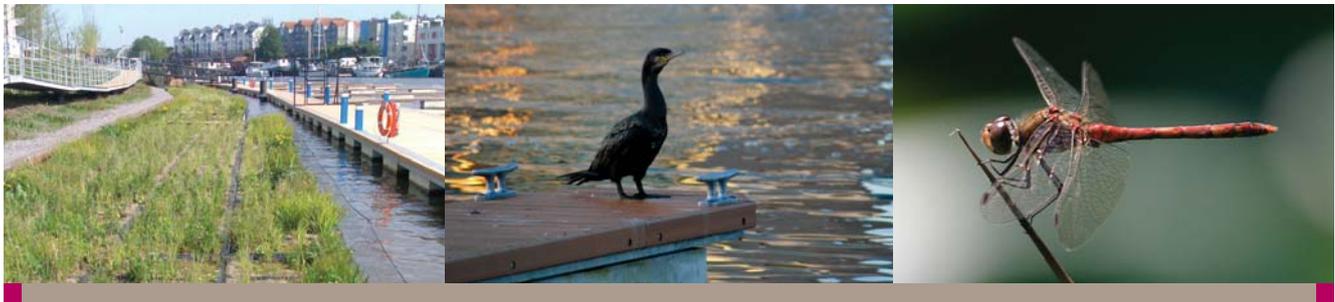
- Run annual public events to encourage creation of ponds and to raise awareness of their value to wildlife
- Run training days for parks staff, planners and other relevant personnel

PONDS AND OPEN WATER HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Determine the extent, quantity and condition of open water habitats in Bristol through survey and review of existing data	1	2010 – 2011	AWT, BCC, AVON PONDWAYS PROJECT, EA
Run Citizen Science project to determine extent of garden ponds and value to amphibians	1	2011	AWT, BCC, ARAG
Review conservation status of parks ponds and lakes and investigate options for habitat enhancement	2	2012 – 2013	BCC, BRERC
Seek to develop programme of habitat management on BCC SNCI open water habitat to bring into favourable conservation status	2	2009 – 2013	BCC, AWT
Ensure developments do not negatively impact open water habitats and their associated species and take opportunities to create new open water habitats e.g. through SUDS	2, 3	2008 – 2013	BCC, AWT, EA

# CHAPTER 5

## PONDS AND OPEN WATER

PONDS AND OPEN WATER HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Establish project to enhance the Floating Harbour for wildlife, working with users and projects such as Bristol Living Rivers e.g. by provision of floating rafts, reedbeds and nesting sites	2, 4	2008 – 2009	BLRP, AWT, BCC
Provide training to planners, parks staff and other relevant personnel on the value of ponds and open water habitat	4	2009, 2011	BCC, BLRP, AWT
Develop awareness raising programme to encourage the management and creation of ponds by local people	4,3	2010 – 2012	AWT, BCC



Photography: Bristol docks floating reed bed: BCC. Cormorant: Helen Hall. Ruddy darter dragonfly: Darin Smith





## RIVERS AND RHINES

### Introduction

This Action Plan covers all watercourses that flow through the administrative boundaries of the City of Bristol.

The tidal River Avon flows from east to west through Bristol on its way to the Severn Estuary taking in the Feeder Canal, Floating Harbour and New Cut. There are many tributaries that feed into it within the city boundaries that are of varying size, quality and character – in the north flow the River Trym, Hazel Brook, River Frome, Fishponds Brook, Horfield Brook and Coombe Brook and in the south the Malago, Pigeonhouse Stream, Brislington Brook and Colliter's Brook.

All of these watercourses are part of the Bristol Avon catchment and the much greater Severn River Basin. The River Avon up to Hanham Lock is tidal.

In the north west of Bristol, the floodplain of the River Severn supports a network of drainage ditches that cut into the Estuarine Alluvium of the Avonmouth area. The larger of these ditches are known as "rhines". The rhines and smaller ditches of the Avonmouth area flow into the Severn independently of the Avon catchment.

All the watercourses are subject to many man-made pressures such as pollution, building of flood defence structures and their operational control, disturbance, invasive species and land-use development. These pressures have a largely negative impact upon species diversity, however a surprising number of rare and scarce species are found within Bristol's watercourses. Otter, water vole and dipper are just three of the notable species found here. Otter and water vole are both UK priority species. Kingfishers are also now found throughout the waterway network, even in the heart of the city. Freshwater invertebrates are highly variable, depending on quality of habitat, flows and pollution. Where man-made pressures are less intense – e.g. parts of Avonmouth – there can be a surprisingly rich flora and invertebrate fauna.

In 2007 the UK BAP included rivers as a priority habitat as part of its review of priority habitats.

The Bristol Living Rivers Project, Avon Frome Partnership and community groups are involved in many initiatives aiming to improve the quality of the city's river corridors in partnership with riparian owners.

### Current Status

All the rivers and larger streams within the City of Bristol are either designated Sites of Nature Conservation Interest (SNCI) or flow through a wider habitat that is designated as an SNCI, or – in the case of the Avon Gorge – SSSI and SAC. Some of the larger rhines in Avonmouth are also designated as SNCIs.

The water quality of rivers and streams is monitored regularly across the city. Average faecal coliform results show an improvement trend across the city, however these results remain highly variable on some of Bristol's smaller watercourses, particularly in south Bristol and certain areas of the river Trym in north Bristol.

The larger watercourses are all eutrophic to varying degrees: the River Avon is strongly eutrophic given its wide catchment of intensively managed agricultural land/urban settlement. The Frome experiences fluctuations in its nutrient load. This is largely dependent upon rainfall events, seasonal diffuse pollution from agricultural activity and run-off from roads.

The quality of the river corridor habitats is highly variable and largely dependent on how disturbed and developed they have become, and the impact of flood risk management structures, which often divert flow to protect the city from flooding. This reduces the amount of water overall, impedes flow, causes siltation and reduces the ability of rivers to dilute pollution.

The river corridors have witnessed an increase of invasive weeds. These non-native species can out-compete native vegetation and leave large areas prone to erosion during the winter. They are likely to be even more of a threat with the predicted change in climate of warmer summers and winters.

The Avonmouth ditches and rhines are strongly eutrophic but there can be very marked variation in nutrient load between adjacent rhines, dependent upon activities along their headwaters. These watercourses are typically low in dissolved oxygen and high in ammonia. A number of Avonmouth ditches and rhines are suffering from neglect, are overgrown and in danger of drying out.

The lower, tidal, part of the River Avon supports notable saltmarsh communities where scarce plants such as sea-purslane are found. The non-tidal parts of the River Avon support populations of aquatic and semi-aquatic species such as common club-rush, whilst the nationally scarce greater dodder is locally common along its banks. Saltmarsh habitat is covered under the Estuarine Habitats Action Plan.

The River Frome is noted for its populations of fennel pondweed and stream water-crowfoot. More generalist aquatic, emergent and marginal plants can be locally very common along the Avonmouth rhines and ditches, along with local rarities such as yellow loosestrife.

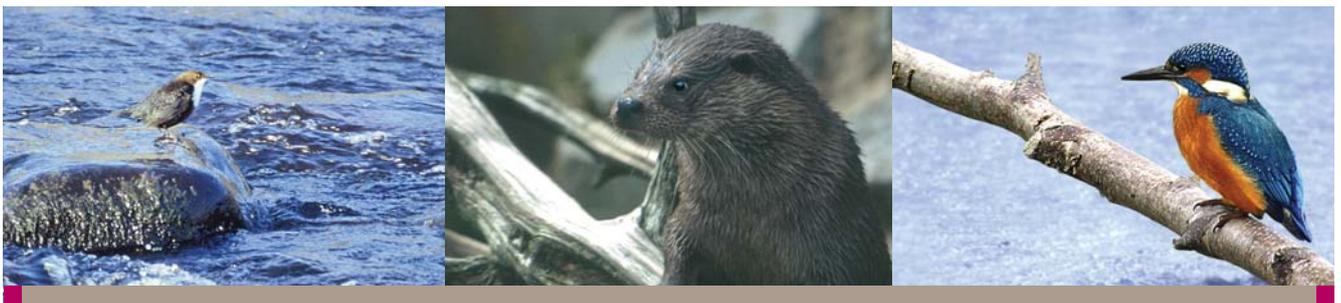
The faunal interest of Bristol's watercourses can also be of considerable local and regional importance. Otters are recorded frequently along the Avon and the Frome, and sporadically on the River Trym/Hazel Brook and water voles can be locally abundant in the rhines at Avonmouth. Dippers breed along the Frome most years. Atlantic salmon, brook lamprey and European eel (a UK BAP priority species) are known to occur along the Avon and in some of its tributaries.

The current nature conservation status of all of Bristol's rivers and streams is not fully understood.

### Current Threats

- | Loss of, or damage to, habitats from development, particularly at Avonmouth
- | New culverting for infrastructure and housing development
- | Sewage pollution entering watercourses through inadequate sewer systems
- | High nutrient load from agriculture upstream
- | Invasive species
- | Fly-tipping and littering
- | Flood defence management – structures and control of water flows
- | Lack of, or inappropriate management of watercourse, rhines and ditches
- | Increased leisure activities
- | Climate change increasing episodic pollution and lower flows

Photography: Dipper, Otter, Kingfisher: Darin Smith



Objective 1: Monitor condition (and at Avonmouth the extent) of resource

**Target:**

- l All rivers, larger streams and Avonmouth rhines /ditches to be monitored at least once a year for target species and water quality
  - l Full invertebrate surveys should be conducted over watercourses, target rhines and ditches
  - l River corridor surveys should be undertaken on selected watercourses
- 

Objective 2: Maintain and enhance the rhine and ditch network at Avonmouth

**Target:**

- l No net loss of the rhine and ditch network at Avonmouth
  - l Maintain integrity and interconnectivity of rhine and ditch network
  - l Restore all rhines where neglected/overgrown
  - l New ditches and rhines to replicate the structure of existing/recently lost watercourses especially with regard to depth, freeboard and bank profile.
  - l Ensure Internal Drainage Board works are sympathetic to nature conservation objectives
- 

Objective 3: Maintain and enhance the characteristic biological diversity and natural features of all rivers and streams and where necessary restore habitat to encourage expansion of key species

**Target:**

- l Ensure all rivers are in favourable conservation status
  - l Ensure adequate appraisal of planning applications
  - l Ensure no culverting and encourage deculverting
  - l Ensure any new development provides enhancement and no deterioration of habitat
  - l Ensure any new developments provide adequate buffer zones
  - l Ensure flood defence and improvement works minimise ecological damage and encourage retention or restoration of floodplains
  - l Control the spread of existing non-native invasive weeds
- 

Objective 4: Work to ensure lower nutrient and sediment loads

**Target:**

- l Thorough assessment of all major new developments to assess potential impact on increased nutrient and sediment loads
- l Encourage sustainable drainage systems where appropriate

# CHAPTER 5

## RIVERS AND RHINES

Objective 5: Raise awareness and understanding of the value of riparian ecosystems and encourage community involvement

**Target:**

- Inform and educate all managers and user bodies
- Maintain the Avon Invasive Weeds Forum
- Disseminate current best practice guidance to all managers and user bodies
- Support local communities to appreciate and care for local watercourses
- Develop community river corridor monitoring by schools and groups

RIVERS AND RHINES HABITAT ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Develop ecological monitoring programme for all rivers, rhines and larger streams and implement	1	2009 – 2013	BLRP, AFP, EA
Ensure no net loss to the Avonmouth rhine and ditch network through planning process	2	2008 – 2013	BCC, EA
Assess planning applications to ensure all watercourses are protected and enhanced through the planning system	3, 4	2008 – 2013	BLRP, BCC, EA
Develop programme of rhine restoration and management and implement to follow best ecological practice	2	2009 – ongoing	BCC, AWT, IDB, EA
Develop and implement enhancement plans for selected rivers through Area Green Space Plans and working with local communities	3	2011 – 2013	BLRP, BCC, EA
Review riparian management activities. Produce new guidance, monitoring systems and training where necessary	3	2010 – 2011	BLRP, AFP, EA
Produce and maintain accessible information 'a blue map' of river management activities for all stakeholders	5	Ongoing	BLRP
Support existing river groups and establish new groups	5	2008 – 2013	BLRP, AFP





# CHAPTER 5 SPECIES ACTION PLANS





### HEDGEHOG *Erinaceus europaeus*

#### Introduction

The hedgehog is unique – it is the only spiny British mammal. A full-grown adult male may have as many as 5000 spines. Hedgehogs are found throughout Europe and Asia, and are widespread throughout the UK.

Hedgehogs *Erinaceus europaeus* are largely nocturnal and have a broad diet, including earthworms, slugs and caterpillars as well as frogs, young mice and voles. They travel up to 3km per night and have a home range of 10 – 30 hectares.

They live in a variety of habitats including gardens, parks, scrub, woodland and hedgerows. Urban and suburban gardens are particularly important for food and nesting. Hedgehogs hibernate for five to six months during the winter in nests built from leaves and grass under hedgerows, in old rabbit burrows and underneath compost heaps.

Hedgehogs have been voted the UK's favourite garden creature in a survey by the Royal Horticultural Society and the Wildlife Trusts.

Avon Wildlife Trust ran a hedgehog awareness raising project *Hogline* in the 1980s, which involved people recording sightings of hedgehogs in the former county of Avon.

#### Current Status

The hedgehog is partially protected in the UK under schedule 6 of the Wildlife and Countryside Act. It is illegal to trap or kill them without a licence.

Hedgehogs are also protected under the Wild Mammals (Protection) Act 1996, which addresses wanton persecution. They are listed under Appendix III of the Bern Convention and in 2007 became a priority species within the UK BAP.

The UK has around 1 million hedgehogs (a quarter of the world population) but numbers are declining and the species is of UK concern. It is thought that the hedgehog has declined in numbers and range in Britain by more than 20% since 2001 (Mammals on roads survey).

While hedgehogs are known to occur in Bristol, their distribution and population size is unknown.

### Current Threats

- | Loss of suitable habitat and the creation of barriers to dispersal

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- | Accidental death whilst hiding in bonfires

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- | Lack of, or disturbance to, hibernation sites

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- | Drowning in garden ponds

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- | Poisoning from slug pellets and pesticides

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- | Mowing and strimming of long grass can cause injury

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- | Road kill

Objective 1: Establish the distribution of hedgehog populations within Bristol

**Target:**

- | Undertake Citizen Science survey of Bristol's hedgehog population

Objective 2: Maintain and enhance current hedgehog population

**Target:**

- | Encourage people to provide a hedgehog friendly environment in gardens and allotments
- | Ensure hedgehog friendly management of open spaces eg parks, cemeteries and allotments
- | Provide advice on how to manage habitats for hedgehogs

HEDGEHOG SPECIES ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Establish and run Citizen Science project to record hedgehogs in Bristol and compare with Hogline Results	1	2009	AWT, BRERC, BCC
Develop awareness raising programme to include production of promotional materials to encourage hedgehog friendly management of gardens and allotments	2	2009	AWT, BCC
Raise awareness among site managers of habitat requirements for hedgehogs and provide best practice guidance	2	2010	BCC



### WATER VOLE *Arvicola terrestris*

#### Introduction

This action plan covers all known, and potential, water vole populations within the administrative boundaries of Bristol.

The water vole *Arvicola terrestris* is largely confined to lowland areas associated with water. It is of considerable nature conservation concern, having experienced a 94% decline since the mid 1980s. The main cause of this decline has been predation by the American mink, together with loss and degradation of habitat. The water vole is a priority species in the UK BAP.

Bristol holds one of the south-west's most important water vole populations but this population is fragile and susceptible to many external influences such as predation, habitat loss and disturbance (particularly from development), fluctuations in water level and pollution.

Avon Wildlife Trust ran a very successful Avonmouth Water Vole Project from 1997 until 2001 which saw a great deal of survey work; liaison with statutory bodies, landowners and managers; and awareness raising. Annual surveys have been carried out when resources have allowed in subsequent years.

This document has strong links with, and a number of cross-over points and actions with regard to, the Rivers and Rhines Habitat Action Plan.

#### Current Status

Within Bristol there is currently only one area where water voles are found – the rhines, ditches and pools of the Avonmouth area. This area has the best water vole habitat in Bristol, with a number of core locations where strong water vole populations have been present for at least the past ten years, as well as many other adjacent locations, which are occupied during periods when population numbers are high. In effect the water voles of Avonmouth act as one, or several, metapopulations.

Over the past decade extensive surveys have been carried out over Bristol's other watercourses, standing waters and wetland areas to establish the presence or absence of this species. None have been found.

A similar pattern is repeated across the rest of the former Avon area with only small and scattered native populations in discrete locations and with no population matching the size or status of that at Avonmouth.

Across the UK the status of the water vole is equally fragmented and threatened. The water vole receives legislative protection under: Wildlife & Countryside Act 1981 (as amended) and the Countryside & Rights of Way Act 2000.

A number of the main Avonmouth rhines (namely Lawrence Weston Road, Salt, and Kingsweston Road rhines), which support the core water vole populations, are Sites of Nature Conservation Interest (SNCIs) for this interest. However, whilst this has provided some level of protection, a number of these rhines have suffered from loss of, or damage to, sections as a result of development.

### Current Threats

- | Loss of habitat from development

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- | Inappropriate management of rhines and ditches

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- | Unfavourable hydrological regimes

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- | Lack of resources for co-ordinated monitoring

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- | Potential mink invasion into water vole locations

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- | Pollution events

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- | Lack of full awareness amongst key players

Objective 1: Establish and maintain co-ordinated and regular monitoring of water vole and mink

#### Target:

- | Establish a new Avonmouth Water Vole Project
- | Monitor all main rhines and ponds within the Avonmouth area once a year at an appropriate time
- | Monitor all other ditches and ponds within the Avonmouth area at least once every three years at an appropriate time

Objective 2: Protect the existing water vole population

#### Target:

- | No net loss of the rhine and ditch network at Avonmouth
- | Maintained integrity and interconnectivity of rhine and ditch network
- | All development works must avoid destruction or damage to existing watercourses wherever possible
- | A minimum five metre buffer area of native vegetation to be retained between the edge of all development working areas and the edge of adjacent rhine, ditch or pond banks
- | Adequate compensation/mitigation for losses to the rhine and ditch network
- | New ditches and rhines to replicate the structure of existing/recently lost watercourses especially with regard to depth, freeboard and bank profile

Objective 3: Ensure appropriate management of all water vole habitat

**Target:**

- l All Avonmouth rhines and at least 50% of smaller ditches to be under agreed sympathetic management regimes by 2013
  - l All managers and operatives to be fully educated in the ecology and requirements of water voles
  - l All water courses subject to completed development works, or within the boundaries of a completed development work, to be under binding management agreements
  - l Ensure Internal Drainage Board works are sympathetic to nature conservation objectives
- 

Objective 4: Restore appropriate hydrological regimes across the Avonmouth area

**Target:**

- l Agreement between all main landowners, managers, and other involved parties to create an appropriate hydrological regime across the Avonmouth area
  - l Restoration, or provision, of sluice equipment on the main rhines
  - l Agreement by all parties to ensure management of watercourse does not involve excessive excavation of rhine and ditch beds
  - l Ensure new development proposals demonstrate a thorough understanding of drainage issues with particular regard to avoiding spate flows from on-site drainage
- 

Objective 5: Establish and maintain an effective mink control programme

**Target:**

- l Establish mink control procedure for Avonmouth
  - l Evidence of mink activity to be acted upon immediately
- 

Objective 6: Raise awareness amongst key players

**Target:**

- l All key players to understand and appreciate the importance of the Avonmouth water vole population
  - l Inform and educate all landowners, managers and user bodies
  - l Disseminate current best practice guidance to all landowners, managers and user bodies
  - l Encourage local communities to appreciate and care for local watercourses
-

# CHAPTER 5

## WATER VOLE

WATER VOLE SPECIES ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Establish monitoring programme and maintain co-ordinated and regular monitoring of water vole populations, mink and condition of habitat	1	2008 – 2013	AWT, EA, BCC, Landowners
Assess planning applications to ensure protection of rhine habitat and integrity of the rhine and ditch network at Avonmouth	2	2008 – 2013	BCC, AWT, EA
Develop and implement programme of habitat management and restoration on Avonmouth rhines and ditches following ecological best practice	3	2008 – 2013	BCC, IDB, AWT, Landowners
Establish Avonmouth water vole management group – to include key landowners, IDB, EA	3	2009	AWT, BCC, EA, Landowners
Implement scheme for mink control	5	2008 – 2013	Appointed mink controller/landowners
Investigate restoration of appropriate hydrological regime across the Avonmouth area	4	2012 – 2013	IDB, EA, BCC, Landowners
Run annual training/seminar for key players to promote good practice and feedback annual survey results	3, 6	2008 – 2013	AWT
Develop awareness raising programme targeted at landowners, businesses and local people and co-ordinate implementation	6	2008 – 2013	AWT, BZG





## OTTER *Lutra lutra*

### Introduction

This action plan covers all known, and potential, otter populations within Bristol.

The otter *Lutra lutra* is found in watercourses, associated waterbodies and, in some instances, coastal habitats. It is of considerable nature conservation concern having undergone a rapid decline in numbers, and a severe contraction in distribution, between the early 1950s and late 1980s.

However since the early 1990s numbers have steadily increased and distribution expanded. The main cause of the otter's decline was aquatic pollution, although degradation of bankside habitat and direct persecution were also important factors. The otter is a UK BAP priority species.

Bristol is on the northern and western edge of stable otter populations centred on the North Somerset Levels and Moors and the Bristol Avon catchment. Resurgent otter populations are also present in South Gloucestershire. There are very few records of otter within Bristol although records appear to have been increasing over the past decade.

Otter populations remain susceptible to accidental death (through eg road accidents), poor water quality (reducing potential for prey species), disturbance, and degradation of habitat.

There has previously been no concerted action on otters within Bristol. Although, incidental records of the species have been made by various organisations and individuals.

This document has strong links with, and a number of cross-over points with regard to, the Rivers and Rhines Habitat Action Plan.

### Current Status

Within the boundaries of the City of Bristol there have been recent records of otter from the River Frome (spraints recorded from 2004 onwards) and from the River Trym at Henbury (road casualty, early 2007). The status of the population on the Frome is unknown: it may represent a breeding female with resultant offspring and a territorial male, or may just be a territorial male. The Trym otter was a sub adult female and given the paucity of the Trym catchment, in terms of undisturbed otter habitat and feeding opportunities, it is likely that this watercourse was part of a much larger territory used by this animal.

There are also unconfirmed records of otter from the tidal River Avon close to the city centre and from the Floating Harbour area.

It is not known whether otters on the Avon below the city centre are part of a coastal population centred on the North Somerset / South Glos levels or whether they are part of the wider Bristol Avon catchment population recorded upstream of the city centre. Neither is it known to what degree, if any, the Frome population interacts with, or is part of, the Bristol Avon population.

The UK otter status remains tenuous, despite significant levels of population recovery/range expansion, due to the small population size and significant mortality largely through road deaths / disease. Increased public pressure along watercourses also reduces availability of undisturbed resting and breeding sites.

The otter receives legislative protection under the Wildlife & Countryside Act 1981 (Schedule 5), Countryside & Rights of Way Act 2000, CITES (Appendix I), Bern Convention (Appendix II), Habitats Directive (Annexes II & IV) and Conservation (Natural Habitats, etc.) Regulations 1994 (Schedule 2 Regulation 38).

### Current Threats

- I Disease

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- I Road accidents

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- I Development: loss of habitat and increased disturbance

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- I Disturbance from increased levels of leisure activity

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- I Pollution and poor water quality

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- I Lack of full awareness amongst key players

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- I Direct persecution

Objective 1: Establish and monitor extent and range of otter population within Bristol

#### Target:

- I The Avon running through Bristol city centre, the Floating Harbour and Feeder Canal, to be systematically surveyed, where safe to do so, for otter field signs
- I The Avon downstream of Cumberland Basin as well as all major streams and rhines to be monitored for otter field signs at least once every two months. This to include city centre watercourses and the Floating Harbour if evidence of otter activity established here (see Objective 2)
- I All otter corpses within the Bristol City area to be recovered and forwarded for post-mortem analysis

### Objective 2: Maintain and enhance existing otter populations

#### Target:

- Continued and increased presence of otter population on River Frome
- Regular otter population on lower Avon and tributaries
- All development works to avoid destruction or damage to existing watercourses and bankside habitat and provide adequate compensation/mitigation for losses
- Ensure Internal Drainage Board works at Avonmouth are sympathetic to otter habitat requirements

### Objective 3: Raise awareness of Bristol's otter population

#### Target:

- All key players (landowners, managers and user bodies) to be aware of the existence of an otter population within Bristol City boundary and of current best practice guidance
- Raise public awareness of otters and encourage local communities to appreciate, care for and monitor local watercourses

OTTER SPECIES ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Undertake definitive survey on all watercourses and waterbodies within Bristol	1	2009	BCC, AWT, BLRP, BAOG, AFP
Monitor all watercourses and waterbodies (especially where otter activity proven) at least once every two months	1	2010 – 2013	BCC, AWT, BLRP, BAOG, EA, AFP
Collect all otter corpses for post-mortem analysis, where practical	1	2009 – 2013	All
Protect and enhance existing otter populations and habitat through planning process	2	2009 – 2013	BCC, AWT
Ensure management of Avonmouth rhines and ponds is sympathetic to otter habitat requirements wherever possible	1	2009 – 2013	IDB, BCC, AWT
Develop and implement programme of awareness raising, to include training for planners, guidance for land managers and information for community groups	3	2010 – ongoing	BCC, EA, AWT, BLRP
Encourage local communities to appreciate and care for local watercourses and take part in otter monitoring surveys	3	2009 – 2013	BLRP, AWT, BCC, AFP



### HOUSE SPARROW *Passer domesticus*

#### Introduction

The house sparrow is one of our most familiar birds, thanks to its tendency for living in close proximity to humans. It is well known particularly for its frequent cheeping and chirruping from roofs and gutters.

House sparrows *Passer domesticus* mainly nest in buildings, in cracks and crevices as well as roofs. But they may also nest in climbers on walls or in trees and shrubberies. House sparrows mainly eat seeds in winter and insects in summer. They also often feed on food scraps put out in gardens, particularly in the winter months. Chicks require a protein diet of insects in the early stages of their growth to ensure adequate development occurs.

They often form loose colonies, typically of around 10 – 20 pairs. The birds in a colony are gregarious and will often gather in bushes and shrubs to call, bathe, squabble and feed together particularly outside the breeding season.

House sparrows are resident year round and are usually faithful to a breeding area, with nesting, roosting and foraging all taking place within a small area. They are prolific breeders and usually two to four broods will be produced per year.

Fifty years ago house sparrows were very abundant everywhere in Bristol, but their distribution is now largely focussed on the outskirts of the city.

#### Current Status

The house sparrow is still widely distributed in the UK but has declined by around 60%. The south and east of England have been most affected by the decline. In Bristol, numbers halved between 1980 and 1990, then stabilised for five years before falling slowly again to 2003, since when they have been largely stable (evidence from Bristol Bird Watch).

As a result of this significant fall in numbers, the house sparrow is now red listed in UK Birds of Conservation Concern. Significantly it is also now listed as a UK priority species following the UK BAP review in 2007.

House sparrows are protected under the Wildlife and Countryside Act 1981, which makes it illegal to intentionally kill, injure or take a house sparrow, or to take, damage or destroy an active nest or its contents. The provision to control house sparrows under a general licence was removed from the Act in early 2005 in England making the species fully protected in England.

House sparrows have all but disappeared from most of the city centre, and from the inner suburbs such as Bedminster, Easton, Redland and Clifton. The greatest density is now in the outer suburbs such as Bishopston, Southmead, Withywood, Hartcliffe and Stockwood.

### Current Threats

- I House sparrows need invertebrate food, especially caterpillars, for their young, and these may have declined because of changes in gardening methods, use of insecticides, herbicides and the development of new buildings on previously derelict land
- I Fledgling sparrows and their parents switch to a seed diet from July through the winter, and this may have been affected by the use of herbicides on weeds, and changes in agricultural practice including the switch to autumn cereal sowing which reduced the stubble available for winter feeding
- I Car fumes may result in a reduction in invertebrate populations on which the house sparrows rely
- I In urban areas house sparrows are scavengers for waste food, and larger species, such as feral pigeons, magpies and crows, and more recently gulls, have over the past thirty years largely replaced them
- I Reduction in nest sites through the renovation of buildings especially roofs

### Current Actions

- I Bristol Bird Watch annually records the presence of house sparrows in gardens across Bristol in the winter months
- I Detailed house sparrow breeding survey undertaken of houses in Westbury on Trym and Southmead
- I Annual Bristol Breeding Bird survey measures changes in the house sparrow population in the breeding season
- I A D Phil student funded by the BTO is looking into causes of the variation in density across the city

Objective 1: Monitor house sparrow populations in Bristol

#### Target:

- I Develop and implement monitoring programme for house sparrows

# CHAPTER 5

## HOUSE SPARROW

Objective 2: Maintain existing house sparrow populations

**Target:**

- Seek to protect known house sparrow populations through protection and sympathetic management of locations where they occur

Objective 3: To promote a greater awareness of house sparrows

**Target:**

- Develop awareness raising programme including events and activities

HOUSE SPARROW SPECIES ACTIONS	OBJECTIVE	DATE	IMPLEMENTORS
Undertake regular surveys to establish the current distribution of house sparrows within Bristol	1	annually	BOC, BNS
Develop citizen science house sparrow survey and promote	1	2010	BOC, BNS, AWT, BCC
Identify any major roosting sites and nesting colonies in parks, allotments, cemeteries	1	2010 – ongoing	BOC, BNS, BCC
Produce guidance notes for land managers to raise awareness of house sparrow habitat requirements and management and distribute	2	2010	BOC, BNS, BCC
Encourage the incorporation of nest boxes and native planting in new developments, where appropriate	2	ongoing	BCC, Developers
Develop programme of awareness raising activities including events and activities	3	2010 – ongoing	BOC, BNS, AWT, BCC



## CHAPTER 6

# APPENDICES





## APPENDICES

### List of abbreviations

<b>AGDWP</b>	Avon Gorge and Downs Wildlife Project	<b>SAC</b>	Special Area of Conservation
<b>AWT</b>	Avon Wildlife Trust	<b>EA</b>	Environment Agency
<b>ABP Partnership</b>	Avon Biodiversity Action Plan	<b>FoA</b>	Forest of Avon
<b>AFP</b>	Avon Frome Partnership	<b>FC</b>	Forestry Commission
<b>ARAG</b>	Avon Reptile and Amphibian Group	<b>HAP</b>	Habitat Action Plan
<b>BAOG</b>	Bristol Avon Otter Group	<b>IDB</b>	Internal Drainage Board
<b>BAP</b>	Biodiversity Action Plan	<b>LNR</b>	Local Nature Reserve
<b>BAP Partnership</b>	Bristol Biodiversity Action Plan Partnership	<b>NE</b>	Natural England
<b>BCC</b>	Bristol City Council	<b>SAC</b>	Special Area of Conservation
<b>BLRP</b>	Bristol Living Rivers Project	<b>SAP</b>	Species Action Plan
<b>BNHC</b>	Bristol Natural History Consortium	<b>SNCI</b>	Site of Nature Conservation Interest
<b>BNS</b>	Bristol Naturalists' Society	<b>SSSI</b>	Site of Special Scientific Interest
<b>BRERC</b>	Bristol Regional Environmental Records Centre	<b>SPA</b>	Special Protection Area
<b>BOC</b>	Bristol Ornithological Club	<b>SUDS</b>	Sustainable Urban Drainage Systems
<b>BZG</b>	Bristol Zoo Gardens	<b>UK</b>	United Kingdom

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