



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.

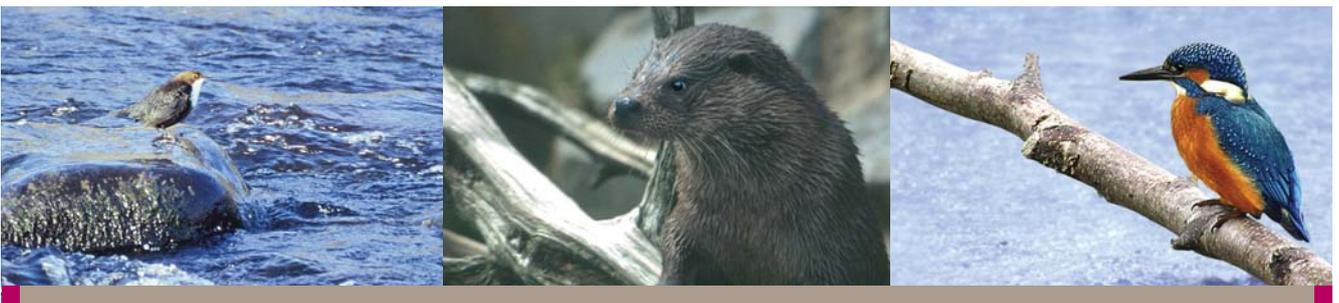
The faunal interest of Bristol's watercourses can also be of considerable local and regional importance. Otters are recorded frequently along the Avon and the Frome, and sporadically on the River Trym/Hazel Brook and water voles can be locally abundant in the rhines at Avonmouth. Dippers breed along 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
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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
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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
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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

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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