

CANALS (Previously Canals and Associated Habitats)

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CURRENT STATUS

Around 4000 miles of canals were created in the UK during the 18th and 19th centuries as structures for freight transport, conveying industrial and agricultural raw materials and products. Canals differ from natural streams and rivers by having relatively slow water flow and a uniform, shallow profile. Canals are treated jointly in the UKBAP broad habitat type as 'Standing Open Water and Canals'. The Nottinghamshire LBAP contains separate priority habitat chapters for eutrophic and mesotrophic standing waters and ditches.

The wildlife value of canals derives in part from providing an historic continuity for the entire waterway corridor, which includes the open water zone, canal banks, towpath verges, hedgerows, field margins and built structures. The channel provides a habitat for aquatic and emergent plants, and associated invertebrates, fish and semi-aquatic mammals.

Other Habitat Action Plans are therefore relevant to canals: 'Reedbeds,' Fens, Marshes and Swamps,' 'Farmland' (including arable fields, field margins and improved grassland), 'Hedgerows' and 'Rivers and Streams,' as well as chapters covering woodlands (i.e. 'Wet Broadleaved Woodland') and grasslands. The chapter 'Urban and Post-Industrial Habitats' also applies, since canals provide wildlife corridors which link fragmented habitats, and pass through urban areas.

Being man-made, the canal channel is a continually changing ecosystem. In the absence of fast flow and the periodic scouring which occurs in rivers, silt continually accumulates on the bottom of the canal. If left without management, silt accumulation combined with plant succession can lead to reedbed and swamp development and the eventual formation of a terrestrial ecosystem. This process has already occurred in parts of the Nottingham Canal.

On canals with little or no boat traffic, practical wetland management work may be needed to prevent this succession. At the other extreme, high levels of boat traffic

can be incompatible with aquatic plants communities because of damage and frequent disturbance of silt.

Canals differ significantly from natural running freshwater systems, and as a result of high turbidity and low flow, water quality in canals is often perceived as poor. Slow water movement can provide conditions for algal blooms in warmer weather, followed by low oxygen levels. In contrast to natural running freshwater systems, canals can continue to support specialised fish and invertebrate communities even when chemical tests indicate poor results such as low oxygen levels. If this 'poor perception' extends to canal biodiversity, as for urban and post-industrial habitats, efforts to improve their wildlife value may be undermined.

Areas alongside and adjoining canals provide important wildlife habitat. Canal banks, the area where land and water meet, are colonised by a variety of specialised and opportunistic plants as well as dragonflies, damselflies, reptiles and amphibians. Towpath verges along canals can often provide unimproved or semi-improved grassland habitat which is often less intensively managed than amenity or agricultural grassland. The verge also provides shelter and food for insects and larger animals.

Hedgerows are frequently associated with canals, and were often planted by the original canal companies to define property boundaries. These hedges provide shelter, cover and food for many animals as well as a green corridor that often extends out from urban areas into more rural locations of the canal.

Field margins are identified as important in the LBAP (see Habitat Action Plan for 'Farmland: Arable Farmland, Arable Field Margins and Improved Grasslands'), as well as in the British Waterways BAP Framework document 'Adjoining Habitats' because so many canals pass through agricultural land. These areas provide important refuge habitats for birds, mice, hares, rabbits, invertebrates, reptiles and amphibians. By working with organisations and individuals that own land adjoining British Waterways' property, we can maximise the biodiversity potential of these areas while linking to the ecological management of the wider landscape.

These enhancements may take the form of conservation headlands, beetle banks and 'set-aside' and can provide buffer zones between managed land and the waters edge to prevent agricultural inputs entering the canal. Adjacent land which has been used for the disposal of dredgings can also be managed with biodiversity in mind to provide, grassland, wetland and woodland and scrub habitats.

Built structures associated with canals include bridges, locks, canal-side buildings as well as towpath walls. In many cases they are quite old and have developed wildlife interest such as birds, lichens, mosses, freshwater sponges, crayfish and bats. Daubenton's bats are especially associated with watercourses.

British Waterways are represented in Nottinghamshire by the River Trent (Shardlow to Gainsborough), Chesterfield Canal, Nottingham and Beeston Canal, Erewash Canal, Grantham Canal (Rushcliffe section) and northern sections of the River Soar.

Erewash Canal: in Nottinghamshire, the Erewash Canal runs from Langley Mill, where it once linked with both the Nottingham and Cromford Canals, through to Shipley, where it enters Derbyshire. The canal was restored by the Erewash Canal Preservation and Development Association in 1973 and is now managed by British Waterways. Fed from the River Erewash and Moorgreen Reservoir, substantial lengths have 'soft' canal banks, and associated fringe habitats. Water vole populations have been recorded along the main canal and its feeders at Langley Mill. The towing path hedgerow along the northern section has been recently restored and replanted, and water quality has improved as sewage and industrial discharges have been more rigorously regulated.

The Nottingham Beeston Canal: this canal links sections of the River Trent Navigation, and runs from Beeston Lock through the suburbs to Meadow Lane Lock in the city centre on to Trent Bridge. Although there is extensive use of hard bank protection along this section, records of water vole populations exist for associated watercourses such as Tinkers Leen.

The Nottingham Canal, managed by Broxtowe Borough Council, runs parallel to the Erewash from Trowell to Eastwood, but has in-filled sections at Ilkeston and Newthorpe. Currently this stretch is not navigable

The Grantham Canal: this canal runs from the River Trent in Nottingham to Grantham through the Vale of Belvoir. Within the Borough of Rushcliffe, there are sections that have been restored, while other lengths remain drained and disused. Restoration works have been carried out within the Cotgrave colliery site, in partnership with Rushcliffe Borough Council and partners. The viability of re-watering and restoration of the dry section is currently being investigated.

The towing path through Nottinghamshire is hard surfaced, forming part of a cycle route network, alongside a good hedgerow that has been substantially gapped in 2002. The Grantham Canal strategy, published in 2001, outlines British Waterways' vision for the future of the Grantham Canal. It includes an Ecological Action Plan to cover key habitats and species, activities affecting them, and opportunities for environmental education and interpretation. The canal has a great deal of biodiversity interest. The margins are notified as a Site of Special Scientific Interest (SSSI) in Kinoulton due to diverse flora, while scattered water vole, bat and great crested newt records also exist along the canal.

The Chesterfield Canal: this canal runs from Shireoaks, east of the M1, to the River Trent at West Stockwith via Worksop and Retford. Water quality is influenced by discharges from local coalmines, which strongly influence the aquatic flora.

A 20km stretch is notified as a SSSI for diverse and uncommon aquatic and emergent plants, and the entire canal in Nottinghamshire is a Site of Importance for Nature Conservation (SINC). Nutrient inputs from point sources (sewage treatment) and diffuse sources (agricultural run-off) contribute to declines in water quality which favours growth of filamentous algae. Water voles are known to be present along many stretches of the canal, and the invertebrate fauna includes a nationally threatened Riffle Beetle, found in silt at the base of emergent plants. British Waterways are preparing a management plan for the canal, which will include a

dredging programme designed with English Nature to conserve aquatic plant communities, based on a detailed survey in summer 2002.

THREATS

The main factors currently affecting the County's canals and associated habitats are:

- Unsympathetic development and engineering works to historic built structures can potentially threaten species such as bats, and native crayfish. Conservation aims can be met by advance planning and survey, as well as incorporation of mitigation measures such as bat bricks. Lower plants (lichens, liverworts and mosses) often occupy built structures and survey work is needed to identify their extent, significance and conservation needs.
- The addition of sheet piling to canal systems reduces bank habitat for water voles and other species and often destroys marginal vegetation. Sheet piling along canals has been a preferred method for preventing leaks and erosion of the canal bank. In some locations more innovative and sympathetic management can be employed including "hit and miss" piling or piling within the towpath, coir rolls and faggot revetment.
- The lack of sensitive maintenance practices on towpaths and adjoining land can have a major impact on grasses and wildflowers: as with wildflower meadows, frequent cuts encourage dominance of a few grass species. At the 'dry fringe' close to the bank, cover and food for mammals can be removed. Conservation aims can, however, be incorporated into maintenance contracts to retain this habitat.
- Nutrient run-off from adjacent fields and discharge from sewage treatment works can cause high nutrient levels in water, encouraging algal growth, and potentially reducing aquatic plant growth. Filamentous algae are mechanically treated on the Chesterfield canal, but long term improvements require point and non-point source pollution to be addressed. Use of Sustainable Urban Drainage Systems should be encouraged for surface run-off sources, since they can have a wildlife value in themselves.
- Management of adjacent agricultural land, such as ploughing or strimming close to watercourse edge, and cattle damage to banks, can both reduce fringing vegetation and also undermine the bank structure, leading to a need for hard edge protection. Fencing, and use of wider field margins possibly by means of grants, can do much to prevent these problems.
- Removal of hedgerows due to intensified farming practices, residential and industrial development. Canal hedgerows need to be trimmed to maintain access along towpaths; this should only be carried out in winter to avoid disturbance of nesting birds. Additional management tasks, such as planting gaps and hedge-laying, will improve the wildlife value of hedgerows.

- The variety of leisure activities and the demands of specific user groups on the canals can seriously impact biodiversity. Towpath improvements to encourage greater access and cycling can involve loss of marginal vegetation, unimproved grass verge and hedgerows and a loss of natural character. Careful design, planning and maintenance can ensure that even when implemented, impacts on habitat can be minimised.
- The impact of recreational boating on aquatic plant populations by direct disturbance. Indirect disturbance also creates problems such as turbid water which can further inhibit growth. General studies show that a low to medium number of boats are compatible with diverse aquatic plants. Where restoration schemes may increase boating, site specific studies are required which take into account these characteristics, as well as factors such as nutrient status and dredging. Means of reconciling the possible conflict between boat traffic and aquatic plants, include imposing special speed limits, the creation of 'wides' and off-line wetland areas.
- Bank disturbance by anglers can degrade wildlife habitat, remove important vegetation, and create further bank erosion and siltation of canals. Excessive damage to waterway banks by digging 'pegs', and leaving old fishing lines which can harm birds are some activities which can be prevented by raising awareness of canal wildlife value.
- The invasion and spread of alien and invasive species cause a variety of threats. Alien terrestrial plant species such as Himalayan balsam, Japanese knotweed and Giant hogweed can shade out native plants, and provide poorer habitats for native insects, birds and mammals. Alien aquatic plants such as Water fern and Australian swamp stonecrop can seriously degrade the aquatic plant communities found in the canal. Alien animals such as American mink pose a threat to water vole and water bird populations, and are known to be present in the River Trent catchment. Alien amphibians such as terrapins and turtles, often released as pets into canals, impact on the indigenous aquatic flora and fauna.

CURRENT INITIATIVES – EXAMPLES

- The British Waterways Act (1995) included a duty to further conservation and to balance this against requirements of other users. The conservation importance of canals is highlighted by SSSI and County Wildlife Site notifications. A strategic aim of The Association of Inland Navigation Authorities, members of which include British Waterways and the Environment Agency and many smaller navigation authorities, provides support for conservation: "to recognise, maintain and enhance the biodiversity and landscape value of inland waterways and associated habitats, and to help members produce plans for their management".
- In 2000 British Waterways launched an introductory document "British Waterways and Biodiversity: A framework for waterway wildlife strategies". In 2003 a Biodiversity Action Plan was begun for the Soar, Upper Trent and

Erewash canals. This provides targets for biodiversity relevant to the local area. Once the remaining waterway BAPs are completed, they will make up British Waterways' BAP, informing and feeding into the work of Local Authorities, Wildlife Trusts and other organisations working in the waterways area.

- British Waterways is a lead partner for the UK BAP Species Action Plans for the aquatic plants Floating water plantain (*Luronium natans*), and Grass-wrack pondweed (*Potamogeton compressus*), and are currently developing methodologies with English Nature and other interested parties to improve plant conservation and survival of these species during routine maintenance and dredging works.
- British Waterways carry out Environmental Code of Practice Appraisals (ECPs) for all works occurring throughout the canal network regarding routine maintenance or new large scale construction projects, covering waste, pollution, landscape, nuisance and biodiversity considerations.
- The Chesterfield Canal has been designated a Sensitive Area (Eutrophic) under the Urban Wastewater Treatment Directive. Resulting investment by water companies into phosphate stripping at sewage treatment plants should help alleviate problems of algal growth.
- British Waterways are working with the Natural History Museum to increase understanding of the extent and conservation requirements of freshwater sponges.
- British Waterways and English Nature support research into impact of recreational boating on aquatic plant ecology by Liverpool University.
- In 2002, detailed survey of the aquatic and emergent plant communities of the Chesterfield Canal SSSI & SINC was funded by British Waterways and English Nature. The results of the survey work will be used to guide future management.
- British Waterways are a partner in the county and national water vole steering groups, and have been developing bank protection techniques that can improve habitat for water voles, as well maintaining the other functions of the waterway bank. Data from regular site surveys are added to county records, and used to inform maintenance work affecting banks.

TARGETS

- Integrate principles of Biodiversity Action Planning into all maintenance and engineering works. Ongoing.
- Maintain the existing environmental quality of all canals (including associated wetlands and other habitats) and enhance through sustainable water use, improvement in water quality and protection and extension of good quality habitat.
- Ensure good conservation management practice is adopted for all canalside hedgerows.
- Extend and improve waterway bank habitat by use and development of alternatives to sheet piling in maintenance works.
- Collate records and conduct surveys for species along towpath verges. Ensure appropriate seed mixes are used following work affecting the towpath verge.
- Pursue opportunities for creation and funding of off-line reserves for aquatic plants.
- Maintain, and where possible, improve water quality in existing canals.

PROPOSED ACTION

Policy and legislation

1. Ensure the incorporation of relevant (inter-)national law, policies and guidance into all plans and policies relating to the protection, enhancement and management of canal habitat.

ACTION: Government Agencies, Local Authorities, NGO's.

2. Through planning control or other land use consultation processes, allow no further loss of areas of canal habitat and seek opportunities to enhance existing areas and create new areas through approved development.

ACTION: Government Agencies, Local Authorities, NGO's.

3. Ensure agri-environment, forestry and other funding schemes include appropriate management options and design measures to suit local nature conservation needs.

ACTION: Government Agencies.

Site safeguard and management

4. Review the extent of SSSI coverage of canal habitat and consider notifying further sites as necessary.

ACTION: Government Agencies.

5. Designate SINCs and declare Local Nature Reserves on appropriate areas of canal habitat or instigate other appropriate measures for their protection.

ACTION: Government Agencies, Local Authorities, NGO's.

6. Promote the uptake of positive management with owners of SSSIs, LNRs, SINCs and any other areas of canal habitat.

ACTION: Government Agencies, Local Authorities, NGO's.

7. Carry out appropriate habitat management on sites controlled by BAP partners.

ACTION: Government Agencies, Local Authorities, NGO's.

8. Ensure sites containing canal habitat have appropriate management plans that are working towards improving site management and condition

ACTION: Government Agencies, Local Authorities, NGO's.

9. Acquire land to ensure good habitat management or to create habitat.

ACTION: NGO's.

Advisory

10. Provide formal or informal training in management techniques for canal habitat to land managers, site wardens, volunteers, etc.

ACTION: Government Agencies, Local Authorities, NGO's.

11. Establish demonstration sites or projects to demonstrate/publicise good habitat management techniques.

ACTION: Government Agencies, Local Authorities, NGO's.

Future research and monitoring

12. Establish and maintain a monitoring programme (a site register) to determine progress towards county HAP targets.

ACTION: Government Agencies, Local Authorities, NGO's.

13. Ensure that areas of canal habitat are periodically resurveyed to establish extent and condition. Update resulting habitat inventory every 5 years and revise targets and HAPs if necessary.

ACTION: Government Agencies, Local Authorities, NGO's.

Communications and publicity

14. Improve public awareness and appreciation of canal habitat by providing appropriate interpretation, education and access (where appropriate).

ACTION: Government Agencies, Local Authorities, NGO's.

15. Improve awareness of the value of, and appropriate management techniques for canal habitat among site owners and occupiers.

ACTION: Government Agencies, Local Authorities, NGO's.

WHAT YOU CAN DO

- If you have any concerns or information relating to wildlife or habitat management along the canal please contact your local waterway office.
- If you own or manage land adjacent to a canal, consider enhancing the corridor by managing it for wildlife. Contact BRITISH WATERWAYS, FWAG, DEFRA-RDS for advice and sources of funding.
- If you own or manage a building or a mature tree next to a canal, have a bat survey done before you carry out any maintenance or management work.
- If you use a boat, dispose of cooking waste in the bin rather than emptying it into the canal, and use 'green' detergents and soaps when washing the pots, or the boat.

Species List

The following are examples of species of conservation concern (Appendix A) which are likely to benefit from this action plan:

- Freshwater sponges
- Swan mussel
- White clawed crayfish
- Red-eyed damselfly
- Variable damselfly
- Common frog
- Great crested newt
- Grass snake
- Kingfisher
- Grey wagtail
- Daubenton's bat

- Water vole
- Grass-wrack pondweed
- Fennel pondweed
- Linton's pondweed
- Brackish water crowfoot
- Short-leaved water starwort