

## 4.6 Water Vole

### 4.6.1 Current Status

Water vole (*Arvicola amphibius*) is a UK Biodiversity Action Plan priority species and a species listed on the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Globally it is considered to be stable, but it has suffered a dramatic decline in the second half of the 20th century in Britain due to habitat degradation and fragmentation and due to predation by introduced American mink<sup>29</sup>.

In Ayrshire, between 1989 and 2006, it is estimated that water vole have disappeared from 93% of surveyed sites although more extensive surveying is required in the region. General recording suggests that the water vole is present in almost every 10km square covering the Core and Buffer zones, reflecting the widespread presence of suitable habitat, but much more surveying is required across the Biosphere to gain an accurate record of water vole distribution.

### 4.6.2 Ecology and Habitat Requirements

Water vole is a species associated with both lowland and upland environments. In the lowlands water voles are generally associated with slow-flowing streams and ditches with luxurious marginal vegetation and are present in some intensively farmed and urban areas. Losses in the lowlands, where predation by mink has been significant, however, been high. In the uplands water voles occupy a different niche, they are found in slow-flowing narrow moorland streams with peaty channels on flat or gently sloping ground, with streamside vegetation of rushes and sedges, but without any significant shading by trees. Typically such habitat is found in the upland areas with significant deposits of peat and slope gradient no greater than 3%.

Water voles are the largest of the British vole species and the Scottish water vole is genetically distinct from those in the rest of the UK and thought to be descended from migrants from northern Iberia. They are amphibious mammals, dividing their time between water and land, where they occupy shelters known as burrows, located close to the edge of a stream. Although they may live for two to three years, many only live for five months due to predation. Young are born between April and September and they will have three or four litters in a season. They live in central colonies with small satellite colonies, which are defended as territories, but will move between colonies if theirs is predated or becomes unviable. Water vole diet consists of plant species associated with water margins, predominantly rushes, but also grasses and sedges. In winter time, when food is in short supply, they are known to feed on roots and bark of trees. Although the most significant predator is the American mink, they are also predated by stoats, weasels, heron.

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<sup>29</sup> <http://www.iucnredlist.org/details/2149/0>

### 4.6.3 Concerns

- Expansion of non-native American mink (*Neovison vison*) is a major threat to water vole, as mink are known to wipe out entire water vole colonies.
- Lack of data on mink populations in the uplands which, atypically, could be a significant strong hold of the water vole in the Biosphere due to predation by mink in the lowlands
- Water vole habitat in upland situations is susceptible to grazing and poaching by wild herbivores and livestock by removing suitable vegetation and eroding watercourses.
- Wildfire and inappropriate burning on peatland areas that destroys the waterside habitat and nesting sites.
- Flooding of the burrows through urbanisation or flood defence works.
- Habitat degradation and fragmentation due to agricultural intensification (such as overgrazing of water margins, ditch cleaning, drainage of wetlands) and urbanisation. Isolated colonies have reduced viability and are more vulnerable to mink predation

### 4.6.4 Conservation Objectives

The conservation objectives for water vole in the Biosphere are to:

- Improve the understanding of water vole distribution throughout the Biosphere by co-ordinating and starting new monitoring and recording projects.
- Identify key pressures on the population of the biosphere. For example, establishing if mink are a threat to water vole in the uplands.

### 4.6.5 Management

Water vole require specific management to safeguard and enhance the population as the species has undergone a significant decline due to increases in the mink population and the loss of suitable habitat and habitat networks.

In addition to management outlined for the relevant habitats in the previous sections (see Table 1) water vole management should:

- Increase areas of suitable habitat by appropriate waterside management.
- Include mink monitoring and trapping.
- Ensure that where cleaning of ditches is necessary, work is undertaken following best practice guidance (eg. cleaning one third of one side at a time, surveying prior to undertaking any work and avoiding ditch clearing between April and September if water vole are present).
- Consider fencing of watercourses to prevent over grazing of the margins and devise a suitable grazing/cutting regime to maintain an optimal waterside habitat for water vole.

## 4.6.6 Example Projects

There have been a number of research projects involving water vole in the Core and Buffer zones. Different locations have been surveyed by different organisations, including the Cree Valley Community Woodland Trust (CVCWT), Ayrshire Rivers Trust (ART) and Galloway Fisheries Trust (GFT). Projects which have involved work to support water vole include:

- Mink trapping projects run by Galloway Fisheries Trust and Forestry Commission Scotland
- Ayrshire Rivers Trust carried out the Carrick Invasive Species Project (CISP) focused on sustainable control of invasive non-native species within Carrick area, including the catchments of rivers Stinchar and Doon. The two year project commenced in 2012, focusing on Japanese knotweed, Himalayan balsam and mink control to help benefit a range of wildlife including water vole. Work included repeated surveys of invasive plants and monitoring of water vole populations using volunteers trained through the project. There had been sporadic sightings of mink previously but no data. As part of the project mink rafts were built and 12 animals were trapped. Good records of water vole populations were recorded on the Upper Stinchar (see <http://www.ayrshirerivertrust.org/cisp/>).
- Holm Wood Riparian Project: Run by Cree Valley Community Woodlands Trust (CVCT), they undertook monitoring for water vole and mink and waterside restoration such as creating new ditches, fencing watercourses and thinning bankside conifers.
- The Nith and Lugar Water Catchment Improvement Project aimed at linking important, but fragmented, habitats at an opencast coal mining site near New Cumnock, to create an integrated habitat network by restoring land on an opencast coal mining site near New Cumnock to wet grassland. This created a habitat for breeding wading birds such as lapwing, snipe, curlew, redshank and oystercatcher and included water vole surveys. <http://www.centralscotlandgreennetwork.org/delivering/project-archive/nith-and-lugar-water-catchment-improvement>
- The Nith District Salmon Fishery Board has been successfully trapping mink throughout the River Nith for over a decade. Fishery board staff utilise live traps, set them in the winter/spring of the year to reduce the population of American mink prior to their breeding season. They have also worked alongside the Coalfield Environment Initiative trapping mink as part of a project to enhance the biodiversity in areas that are hard to access: this was primarily aimed at water voles.
- People's Trust for Endangered Species run a UK wide water vole monitoring project: which the general public can get involved in. Further details at: <http://ptes.org/get-involved/surveys/countryside-2/national-water-vole-monitoring-programme/>

### 4.6.7 Opportunities

- The Landscape Partnership bid by D&G Council within the Dee catchment which includes improvements to water quality e.g. Blackwater of Dee and supporting the work of the Galloway Fisheries Trust.
- Education and public engagement, as water vole are an engaging species and a relatively rewarding species to survey for.
- Encouragement of major development projects, such as wind farms, to include habitat management plans for water vole.
- Bog restoration which can improve water quality.
- Restructuring of coniferous woodlands to increase width of open riparian corridors.
- Habitat restoration projects which are increasingly being considered at the catchment scale.
- Ongoing Mink survey and control (Forestry Commission Scotland.)

### 4.6.8 Further Information

The Woodland Trust Water Vole Fact Sheet: <http://www.wildwoodtrust.org/files/water-voles-info.pdf>  
Water Vole Conservation Handbook, 2nd ed., Wildlife Conservation Research Unit, Oxford

Proceedings of the Water Voles in Galloway & South Ayrshire symposium held at the CatStrand in New Galloway on 8th November 2012. Edited by Malcolm Ginns MIEEM . Available at: <http://www.creevalley.com/publications/>

The Mammal Society Water Vole Species Account: <http://www.mammal.org.uk/species-factsheets/Water%20vole>

Strachan, R. and Moorhouse, T. (2006) *Water Vole Conservation Handbook*, 2nd ed., Wildlife Conservation Research Unit, Oxford