

Water Vole Action Plan

Arvicola amphibious

UK List of Priority Species:
Scottish Biodiversity List:

Yes
Yes

Summary

The Water Vole was formerly common along the banks of rivers, streams, canals, ditches, dykes, lakes, lochs and ponds throughout mainland Britain.

Despite being listed as a species of least concern by the International Union for Conservation of Nature (IUCN) the UK population has undergone a long term decline since 1900. The Water Vole is listed as endangered on the Mammal Society's recently created Red List for Britain's Mammals (more information on this List can be found in the reference section below). However, in Scotland the species is listed as Near Threatened, which acknowledges that water voles are coping better in the North of Britain, although still a conservation concern.

In North Lanarkshire mink predation seems to be a major factor in their decline locally. However, Water Voles have not been extensively surveyed in North Lanarkshire; this makes it difficult to assess the true nature and extent of their decline, and therefore limits our ability to protect the species.

Species Profile

The Water Vole is the largest of the British voles, weighing between 200g and 350g, and is frequently mistaken for a rat. They are predominantly herbivorous, primarily feeding on lush waterside vegetation composed of grasses, sedges, rushes and reeds. In the winter months, roots and bark of shrubs and trees form an important part of the diet together with rhizomes, bulbs and roots of herbaceous species. They need to consume up to 80% of their body weight daily. Recent work has shown Water Voles to be more numerous in upland and peatland habitats than formerly thought.

Water Voles are found in most freshwater habitats in Scotland, ranging from slow flowing lowland ditches and static burns, to canals and headstreams up to 620m altitude. They typically inhabit watercourses that are less than 3m wide and 1m deep, and prefer sites with steep or stepped profiles that they can burrow into and create nesting chambers, away from the water. The bankside and emergent vegetation density is very important, with Water Voles preferring a swathe of tall and rich, riparian plants. Ideal habitat consists of layered bankside vegetation with tall grasses and stands of: Willowherb; Purple Loosestrife; Meadowsweet and Nettles. It should also be fringed with thick stands of rushes, sedges or reeds. Sites excessively shaded by shrubs or trees (>20% bankside tree cover) are less favourable.

In waterside populations, each vole utilises a series of burrows dug into the riverbank, preferably where the soil is soft and easily excavated. The burrows comprise of nest chambers, inter-connected tunnels with many entrances and bolt holes consisting of short tunnels ending in a single chamber. Nest chambers occur at various levels in the steepest part of the bank and the nest consists of shredded grass. Occasionally, Water Voles will weave a nest into the bases of sedges and reeds. Water Voles typically inhabit water courses that don't exhibit extreme water level fluctuations. Sites that suffer total submersion during

protracted periods of winter flooding are untenable, but populations may migrate seasonally to avoid flooding of burrow systems.

Water Voles can be detected by the presence of burrows, runways up to 9cm wide at the edge of densely vegetated banks, and latrines containing cylindrical faeces with blunt ends, which are typically found at prominent points along the watercourse. At low population densities, these signs may be difficult to find and water voles can be difficult to detect due to their secretive nature.

Water voles typically live in groups of fewer than ten individuals, known as colonies. Breeding lasts from April to October with a gestation period of 20-30 days. The females may produce 2 to 5 litters annually, with the average litter size 4-6 young. Early-born young may breed that autumn, but most reach sexual maturity after their first winter. Exceptionally, Water Voles may survive three winters but mortality is thought to be very high among dispersing juveniles.

Population Dynamics

Water voles colonies cannot persist in isolation as individuals disperse to form new colonies. Individual colonies may go extinct but, if near to another colony, recolonisation can take place. If there are no nearby colonies, the species will become locally extinct, leaving surviving populations further isolated. This population structure is known as a metapopulation. Due to this metapopulation structure and the dispersal behaviour of water voles, management strategies are likely to be more effective if connectivity of colonies is considered.

Legal Status

In Scotland, the Water Vole has had limited enhanced statutory protection under Schedule 5, section 9(4) of the Wildlife & Countryside Act 1981 since 1998. This section of the act protects habitat occupied by the species. Under the Nature Conservation (Scotland) Act 2004, the term "recklessly" has been added to the legislation, so the protection now makes it an offence to intentionally or recklessly:

- damage, destroy or obstruct access to any structures or places used by Water Voles for shelter or protection.
- Disturb Water Voles whilst they are using any such place of shelter or protection.

This covers only their places of shelter and protection and does not extend to cover the animals themselves. It should be noted that the water vole has been recommended by statutory authority for full individual protection under the Wildlife and Countryside Act 1981 and that this may be enacted at any time.

Under animal welfare laws, cruelty to Water Voles is an offence.

Licences are available from NatureScot for :

- Survey, science and research purposes Social, economic or environmental purposes

Current Status

Members of the Council's Pest Control team in Cumbernauld have linked the Water Vole's decline with the appearance of Mink in the area around 20 years ago.

The Water Vole has been recorded at over 50 sites in North Lanarkshire since 2000 including: Forth and Clyde Canal; Gartosh Nature Reserve; near Longriggend; Fannyside Loch; Luggie Water; Brownsburn, Airdrie; Frankfield Loch LNR, Stepps; Chryston and the Drumpellier to Hogganfield wetland complex. It is likely that the upland populations are small and fragmented but the lack of any survey of this area means that this is still conjecture.

Populations of Water Voles in the Glasgow area are known to live away from water, almost entirely underground, like moles, in dry, grassland habitats. They are known as fossorial or grassland water voles. A fossorial water vole population was found in Chryston in 2021, so there could be more water voles living in grasslands in North Lanarkshire, particularly near Glasgow.

Water voles burrows have recently been recorded further away from watercourses in North Lanarkshire, perhaps up to 65m. While the voles are likely to still associate with the nearby aquatic habitat, these voles appear to be living a partly fossorial lifestyle, and they live further from an aquatic environment than many ecologists might survey for them.

The population in the Drumpellier to Hogganfield wetland complex has one of the highest densities in Central, and perhaps all of, Scotland. Results from Glasgow show that larger populations of Water Voles are found in wetland areas, rather than along linear water courses; these areas seem to provide better cover to evade predatory Mink. However, fossorial water voles live at even higher densities and currently Cranhill Park in Glasgow has the highest recorded density of water voles living in Britain.

Current Factors

- Insensitive river engineering, bank protection, land drainage programmes and maintenance works (e.g. de-silting operations) can damage habitats.
- Urbanisation of floodplains has led to direct habitat loss and containment of the river channel.
- Development on grasslands can lead to habitat loss, fragmentation and degradation for fossorial water voles.
- Pollution of watercourses reducing breeding success.
- Heavy grazing pressure from domestic livestock denudes riparian vegetation and may make site unsuitable for Water Voles by trampling the banks.
- A substantial fringe of waterside vegetation is essential for water voles and this can be dramatically reduced through inappropriate management.
- Bank mowing and vegetation clearance may increase the risk of predation.
- A lack of, or inappropriate, river management can lead to habitats becoming over shaded, silted up or dried out.
- Population fragmentation resulting from isolated habitats or local extinction may accelerate the rate of decline. This is due to the decreased genetic variability and increased vulnerability of small populations to disease and external parasites.
- Increasing fluctuations in water levels affecting food, cover and burrows. Fluctuations arise from changing weather patterns and an ever increasing area of development with no Sustainable Urban Drainage Systems, which can lead to large amounts of run-off.

- Predation by American Mink is likely accelerated by poor riparian habitat. The impact of Mink appears to be less where there is dense cover such as expansive wetlands or interconnecting waterways and ponds, or amongst reedbeds.
- Locally, domestic/feral cats are also known to be predators of Water Voles. Dogs, foxes, gulls, herons, buzzards and kestrels, as well as cats, will also eat fossorial water voles.
- Where Water Voles are found in urban areas, they appear to be very tolerant of disturbance and may even occupy degraded habitats. This is because there is fewer predators in these areas, increasing their chances of survival.
- Poisoning by rodenticides, either directly or indirectly, when used for brown rat control may be responsible for some localised extinctions, as may control operations for rabbits or moles in floodplains. Fossorial water voles are more likely to be seen by members of the public and misidentified as rats, which can lead to action by pest control companies, which poisons the water voles.
- Rats can pose a risk by acting as competitors to Water Vole, as well as predators of the young Voles.

Current Action

- Ongoing recording of water vole sightings by Greenspace Development, NLC, from organisations, individuals and developer's environmental surveys in North Lanarkshire.
- All developments affecting potential Water Vole habitat must undertake a survey for this species prior to development (many new records for Water Voles come from these surveys).
- Training of and working with Pest Control staff in North Lanarkshire in the identification of water voles and their field signs.
- Distribution of copies of the Water Vole handbook to Pest Control staff.

Work Done to Date

- Habitat creation and enhancement work as part of the Greenspace for Communities Project. So far:
 - Improvements were made at three known Water Vole sites: Brownsburn, Central Park and an additional park north of Central Park.
 - Interpretation produced to raise awareness of the species with local communities about Water Voles.
- Ditches and ponds were created at Mosswater Local Nature Reserve, creating 8000m² of suitable Water Vole habitat with the potential for natural colonisation.
- De-culverting of the river that runs through Stane Gardens to improve habitat connectivity and encourage water vole colonisation from The Voe. Including specific habitat enhancements for water vole.
- Two ponds suitable for Water Voles, as well as surrounding suitable habitat, were created as mitigation for development at Frankfield Loch.

Proposed Objectives, Targets and Actions

Objectives

1. To arrest the decline of Water Vole populations
2. To encourage the Water Vole population of North Lanarkshire, and Central Scotland, to increase by enhancing riparian habitats, watercourses, wetlands and grasslands
3. To improve and maintain habitat connectivity between individual Water Vole colonies
4. Increase knowledge of North Lanarkshire's Water Vole population and its associated freshwater and grassland habitat and ecology

Action	Meets Objective Number	Action by	Target
<i>Policy and Guidance</i>			
1.1 Pull together existing water vole guidance and create an electronic map showing existing records – this can be updated when necessary and located on the Council's website	1, 2	NLC, NatureScot	Produce by end of 2024
1.2 Work with Scottish Canals to prevent destruction and disruption of habitats by canal dredging and to provide suitable banks or artificial burrow holes	1, 2	NLC, BW, SWT, NatureScot	1 annual project
1.3 Contribute to the success of the Seven Lochs and North East Glasgow Water Vole Conservation Action Plan by undertaking relevant actions	1, 2, 3, 4	GCC, NLC, NatureScot, 7 Lochs	Ongoing
<i>Site Safeguard and Management</i>			
2.1 Target existing key areas and potential habitat corridors for river and wetland habitat restoration and creation to benefit water voles	1, 2, 3	NLC, SEPA, NatureScot	Identify key sites and corridors by end 2024. One restoration project annually from 2026
2.2 Inform landowners, who have water vole populations, of relevant good practice for water vole conservation	1	NLC, private owners	On going
2.3 Provide additional information on sympathetic bankside management to landowners (e.g. fencing buffer strips to protect from excessive grazing)	1, 2	NLC, private owners, NatureScot.	Provide advice to at least 3 landowners per annum, including any available funding options
2.4 Work with landowners and funders to manage the mink population where monitoring shows it is required	1	NLC	From 2024
<i>Species Protection and Management</i>			

3.1 Maintain abundant herbaceous riparian vegetation and management of bankside trees to avoid excess shading at North Lanarkshire and Forestry and Land Scotland sites	1, 2	NLC, FLS	All known sites in positive management for water voles by 2026
Monitoring and Research			
5.1 Gain a better understanding of where water vole populations are in North Lanarkshire, particularly fossorial populations, by organising surveys of suitable habitats	1, 4		From 2023
Communications and Publicity			
6.1 Inform the public of North Lanarkshire's water vole population, it's ecology and the threats posed to it	1, 4	NLC, Countryside Rangers	Deliver through schools and talks, and on site interpretation.
6.2 Use this popular species to highlight the importance of freshwater habitats	1, 4	NLC, Countryside Rangers	As appropriate at community events and through promotional activities
6.3 Raise awareness of fossorial water vole populations and associated guidance with relevant Council staff, such as Rangers, Planners and Land Managers.	1, 4	NLC	Ongoing

References

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