

Water Voles

Introduction

Plop... the unmistakable sound of a water vole as it drops into the water. A glimpse of one of these elusive mammals is always a welcome occasion. Famous for being 'Ratty' in Kenneth Grahame's 1908 'Wind in the Willows', the water vole is familiar to many people. However, this species is in danger; it is Britain's fastest declining mammal and is listed as 'Endangered' (Mathews and Harrower, 2020). The fens still hold strong populations of this species and our Wider Countryside work is helping to secure the future of this species across the whole area.

“ Seeing water voles is quite the privilege. Many people I speak to about water voles reminisce about how they used to see and hear them all the time down by the river and now not anymore ”

Lewis Dickinson, Water for Wildlife Officer

Water vole ecology

The water vole *Arvicola amphibious* is one of our most charismatic and well-known mammals. Water voles live in a wide variety of still and slow-flowing waterways. They nest in the banks of these watercourses, excavating their own burrows. They are herbivorous and must eat around 80% of their body weight in vegetation each day; this means that they require at least a two-metre width of bankside vegetation. Water voles have been shown to eat over a hundred different species of waterside plants, leaving characteristic patches of vegetation chewed off at 45-degree angles. Water voles are a prey species for many other species, so the vegetation also provides somewhere for them to hide.

When we think of ecosystem engineers, we quite rightly think of the beaver. The water vole is also considered an important ecosystem engineer. Studies have shown that where there are more water vole burrows, there is a higher diversity of plant life surrounding these burrows (Bryce, 2006). This is because they affect the root structure of plants, which stops nettles and grasses becoming dominant on banksides, this allows a higher diversity of plant species to flourish (Roos, n.d).

Water voles have been shown to eat over 100 different bankside plant species. At least a 2m width of vegetation is required to provide them with enough food and cover to hide. Photo © Terry Whittaker/2020VISION





As it is a prey species, the water vole is an elusive animal, fleeing when it detects movement. Therefore, surveys are carried out by looking for signs of water vole presence. Their burrows near the water are a good indication of their presence, but not conclusive. Water voles leave behind distinctive feeding signs with vegetation chewed off at a 45-degree angle, and their droppings are distinctively shaped and have a black glossy colouration. These droppings and feeding signs show there are water voles present. Photos © Ruth Hawksley

Water vole conservation

The water vole was once common in our streams, brooks, rivers, canals and wetlands throughout Britain. When 'Wind in the Willows' was written in 1908, this species would have been familiar to many people, yet many people now will never see a water vole in their lifetime. Water voles used to be found in nearly every waterway in England, Scotland and Wales but are now thought to have been lost at up to 90% of these sites (Mathews and Harrower, 2020). These declines in distribution are still occurring, with one study showing that between 2006 and 2015 their distribution had declined by 30% (McGuire and Whitfield, 2017).

Population sizes of this elusive mammal are hard to establish but show clear declines. They are Britain's fastest declining mammal. In 1990, the population of water voles was thought to be around 1,169,000 (Harris et al., 1995), by 1999, the population had dramatically declined to around 262,500 (Strachan, Strachan and Jefferies, 2000). The latest estimates were carried out in 2016 and show that there may be as few as 132,000 water voles left in Britain with 77,000 in England (Harris et al., 1995). Despite conservation efforts, further population reductions are suspected to be seen in the future in many areas.

There are many reasons for the water vole's decline. The removal of bankside vegetation in the first and second world wars to grow crops and farm cattle caused habitat loss, degradation and fragmentation (Strachan, Moorhouse and Gelling, 2011). These

effects were compounded by the introduction of the American mink *Neovision vison* to Britain. Mink farms started in the 1920s and were booming by the 1970s, due to the demand for mink fur. Some of these farms had over 5000 mink and many escaped. Animal activists released large numbers of mink from fur farms in the 1980s and '90s. Since then the American mink has decimated the population of water voles, even in areas where the habitat is now suitable for them (Strachan, Moorhouse and Gelling, 2011). It is possible that many water vole populations would have been more resilient to mink if their complex habitats had not been lost and degraded. Other threats to the species come from inappropriate management of watercourse vegetation, attacks from domestic pets, development, pollution and litter (Strachan, Moorhouse and Gelling, 2011).



Photo © Terry Whittaker/2020VISION

Water voles in Beds, Cambs and Northants

The whole of the Nene Wetlands area in Northamptonshire and many watercourses in Bedfordshire and Northamptonshire have suitable habitats for water voles. Water voles would have once been found in all of these areas. Due to all the impacts detailed here, the vast majority of these populations have disappeared.

The Wildlife Trust is working with partners to reverse this decline through invasive species control and working with landowners on habitat restoration. The aim is to restore this iconic species to our area. Another threat that this species faces in our area is water abstraction. Many Cambridgeshire chalk streams (internationally important habitats in their own right) have suffered due to increased water abstraction. We are working in partnership to protect and restore these waterbodies, safeguarding habitat for a wide variety of species.

Water for Wildlife project

Our freshwaters are home to a wealth of wildlife. Although the condition of our rivers has improved in the last 60 years, there is a long way to go. Only 35% of surface waters were classed as 'Good' in a 2016 Environment Agency report. The demand for water has never been higher, from drinking water supply, development and recreational use.

Our Water for Wildlife project helps landowners to restore and protect their river habitats. We use a variety of management techniques to improve rivers: laying gravel, rebuilding and reprofiling banks, carrying out tree work, installing woody material, and installing cattle drinks. Our wider countryside work is essential to expand, connect and improve habitats for wildlife across the whole of our area.



Find out more

wildlifebcn.org/water-for-wildlife

“ Good numbers of water vole are present throughout the catchment of the River Cam, and in 2011 they even reappeared on the main river after years of absence ”

Ruth Hawksley, Water for Wildlife Officer

Water voles in fenland ditches

Due to large populations of water voles in the fens, the area is considered to be of national importance for the species. Fenland ditches have a long continuity of management on rotation, resulting in good water vole habitat (Carson, n.d.). There is a large amount of fenland drain habitat and it is well connected. This allows water vole metapopulations to move around the area and breed and also enables them to evade mink predation. On rivers with few side channels, mink can quickly wipe out a population, but a complex network of smaller channels allows water voles more opportunity to escape.

On the fenland drains, we work in partnership with the Middle Level Commissioners and internal drainage boards to carry out surveys and habitat restoration. In these areas, our surveys have shown that water vole populations are stable, which is very different from the national picture of continued declines (Hawksley, 2016). As ditches are restored as part of the Great Fen project, they are becoming less linear and more floristically diverse. Wide strips of four metres are left alongside the channels, providing a wide variety of habitats. Water voles and otters thrive in these areas.

Otters

Another water mammal that we have in our area is the otter *Lutra lutra*. The otter is a great success story, as it has made a comeback in Britain over the past few decades. Otters are apex predators and therefore make great indicator species. If their populations are doing well then so are the fish and the invertebrates lower down the food chain. Otters are an important part of a functioning ecosystem, keeping populations of other species in balance. In our area, otters are widespread on a variety of watercourses but are not common in the fens. Otters tend to prefer running water and trees beside watercourses for them to build their holts. These habitats are not frequent in the fens. Artificial holts installed in the area have helped create suitable habitat and monitoring has shown they are frequently used.

Studies carried out in Bedfordshire in 2008 – 2009 (Lawrence, 2009), showed that otters were found on an increased number of sites compared with previous surveys. They were found on 52% of the sites in 2008/2009 compared with 18% of the same sites in 1996/1997. This study also showed that mink were on the decrease as they were only recorded on 8% of the sites in 2008/2009 compared with 35% of the sites in 1996/1997.

In Cambridgeshire, otter surveys have been carried out every five years since 1992. They are coordinated by the Cambridgeshire Mammal Group, with the Wildlife Trust BCN now jointly coordinating. The results have shown an increase in otter presence, from almost none in 1992 to now being present on all of Cambridgeshire's main rivers and many of its streams.

Summary

Although water vole populations are continuing to decline in many areas of Britain, our work in the Beds, Cambs and Northants area is helping this species to hold on and fight back. The Cambridgeshire fens remain an important area for this threatened and charismatic species. Protecting wildlife on nature reserves is no longer enough, we need to extend our efforts to the wider landscape. Our Water for Wildlife project is successfully doing this by liaising with landowners, carrying out surveys and through habitat restoration. There is a long way to go to reverse the declines seen in the freshwater environment, but we are confident, due to our successes so far, that we can make a significant difference.

Acknowledgements

Our thanks go to Peter Beckenham from Middle Level Commissioners for information for this case study.

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