



Waterlife
Recovery
Trust

Reintroducing water voles - what you need to know about mink beforehand

Preamble

Reintroducing a mammal, bird, fish, insect or plant that has disappeared from an area or island can be a very rewarding and exciting prospect, and there many examples of success, where the introduction takes hold and the missing species fully re-establishes. Equally, there are many examples where, despite huge hope, expectation and expense, the introduced animals or plants simply disappear. Success depends on a great deal of research and preparation, usually over a period of years.

The single most important question to ask is this - what caused the local/regional/national extinction or reduction in the first place? It is self-evident that failure to identify and fix this problem will almost certainly result in failure of the reintroduction project itself, no matter how many times you might try.

In the case of water voles, overwhelmingly the single most important cause of local extinction (or apparent extinction - more on that below) is predation by American mink - a semi-aquatic mustelid mammal introduced to Britain for fur farming in the 1920s. Mink subsequently became established in the wild throughout the British Isles, and are today found in almost every county. Female mink are small enough to enter water vole burrows. The much larger males generally cannot, but they have twice the appetite, can catch water voles in the open and may consume two a day, every day. It is of no surprise that a healthy water vole colony can disappear in weeks if and when a mink finds it. The key to a successful water vole reintroduction project is therefore to prevent mink destroying them. Failure in this will simply mean that your precious water voles will likely become a mink meal and perhaps aid this voracious predator spreading and increasing across your region.

What can be done about mink?

It is near-impossible to keep mink out of a water vole colony. A mink-proof fence would cost a fortune and, anyway, mink will gain access by swimming underwater. You can try shooting or trapping any mink that find the colony, but others will quickly replace those you are lucky enough to remove, and often you will only know that a mink has found the colony when you realise there are few or no water voles left. Mink are mostly nocturnal, so you may think they aren't around, even if they are. And they be absent today, but present tomorrow. The only viable protection is to clear mink from a substantial area around the colony, so there's little chance of one discovering what to them is a well-stocked larder. To prepare for a water vole release without assuming a high risk of mink predation would be a mistake. As the loss of 97% of our wild water voles has proven, mink are rather good at finding them!

The good news is that American mink are very trappable - they can be completely removed from whole counties purely by trapping, at an average trap density of one per 18-20 sq km. Once a trap network has been established, and assuming all traps remain active year-round, the mink population within it can be expected to decline by two-thirds each year. This will leave 10% after 2 years, and 1% after 4 years, by which time reproduction will likely have stopped. After 5 years, any mink appearing will probably be immigrants, and they should be negligible if the trap network covers a large enough area. Better still, and as mentioned above, once mink have been vanquished it is common for water voles to spontaneously bounce back. It seems that small pockets of water voles often manage to cling on, perhaps in a reedbed or other secluded place where mink rarely hunt, only to reappear out of the blue once their nemesis has disappeared. We have seen this in many places in Norfolk, Suffolk, Essex and Cambridgeshire - water voles turning up on streams and rivers where they haven't been seen by humans in decades, despite surveys.

Natural recovery of local water vole populations is not only far cheaper than buying in farmed stock, but has two other advantages. Firstly, and most importantly, the genetics of your local voles will be different from all other populations, and by allowing them to recover and flourish you will have given the British meta-population the best chance of long-term survival by maintaining its genetic diversity. Secondly, every importation of stock, whether it be animals or plants, brings with it the risk of inadvertently introducing disease to the wild. A re-introduction project should be a last resort, when all other avenues have been exhausted.

Regardless of whether water vole recovery is to be due to a reintroduction or natural regeneration, the first crucial step is to reduce the risk of mink predation to near zero. To do this, we need to understand how far mink can travel to find and destroy a water vole colony.

How far, and how quickly, can mink travel?

Recent evidence from England is consistent with earlier information from Scotland, and shows that, while most mink don't move more than 10km in a straight line from where they were born, some will move 50km and a few will travel 80km (50 miles). And they can move these distances in a few weeks. We caught a juvenile male at Holt in Norfolk in August 2023 - an animal whose genetics showed that it had almost certainly swum around the Wash from Lincolnshire in its first weeks of independence - a distance of at least 80-100km. From the perspective of protecting water voles, it doesn't matter what *most* mink do; it only takes one or two of the more adventurous to destroy a newly-established water vole colony.

The implications of these movements for potential water vole reintroduction projects are clear, and explain why so many previous projects have failed. To remove the threat of mink predation - the likely cause of water vole disappearance in the first place - it is necessary to clear them completely from within a large radius of the reintroduction site *and keep them out*. Removing them from a reserve, or even the catchment within which the reserve sits, is simply inadequate. The 2023 Norfolk mink mentioned above crossed many different catchments to arrive at Holt. A mink-free area within, say, 20km of the release site may well buy time, but it is highly likely that mink will re-invade over that distance within a few years, and perhaps within months, unless comprehensive trapping is fastidiously implemented within that area indefinitely. Realistically, the only way that water vole populations will be safe from mink in the long term is if they are within a landscape-scale mink trapping project area, such as has now been established in a large part of East Anglia.

What is a trap network, and how does it work?

A network of mink traps is simply multiple traps managed in a coordinated way. The traps can be owned and operated by one organisation or by many different organisations and people working collaboratively. Importantly, the traps need to be continuously active if they are to be effective. Old-style mink rafts, with a clay pad to detect mink footprints and traps put in place once a mink have been detected, will never be adequately effective to protect a water vole reintroduction site.

Traps can be of two basic types - kill traps and live traps. Kill traps have the advantage of not needing checking every day, but they can and will kill non-target animals, including water voles. Live traps simply restrain the captive animal in a cage, so non-target 'good guys' can be released unharmed, but the cost is that they must be checked without fail every day, or preferably two or more times a day.

We (WRT) use only live traps, because we have found that mink are quite quickly removed from any area, and thereafter all we catch are water voles, moorhens, water rails and rats. But to physically check every live trap at least once a day is often simply not feasible. We therefore fit an electronic box (a Remote Monitoring Device - RMD) to every trap, and this device continuously monitors the trap door, informing us by text and email if and when the door closes. The fitting of an RMD to a trap turns it into what we term a 'smart trap'. Smart traps hugely reduce the burden of managing a trap by virtue of doing the checking for you; no visit is needed until you are informed that a trap door has closed. They also greatly improve animal welfare, in that an animal is held captive, on average, for much less time than would be the case if a daily or twice-daily physical visit was made.

Mink are very inquisitive, and often enter a trap with no bait in it. However, WRT has found that the chances of catching a mink are greatly improved if the trap contains the scent of another mink. The impact is so great that WRT now places a scent lure in every trap it manages (well over 1,000 of them), and replaces that lure regularly. This innovation alone may explain why WRT and its partners have achieved the eradication of mink in most of East Anglia, rather than just controlling (i.e. reducing) their numbers.

What's the financial cost of a trap network?

The up-front cost of a network is simply the cost of each 'trapping unit' multiplied by the number of units required. Let's explore these two elements separately.

Trapping unit

At its most basic, a 'trapping unit' can be nothing more than a cheap cage trap. These can be bought online for as little as £25, but better quality ones may cost £55. Each such trap would need to be installed on land, and each would require at least one physical check a day, and preferably two or more.

Land-based traps are not ideal for mink, and they do tend to catch lots of non-target mammals and birds, so it is far better to place traps on a floating platform whenever possible. However, rafts are relatively expensive, and they will increase the cost of a 'trapping unit' by as much as £180 for the best available. WRT recommends the Filcris 'Fenland edged' raft - it will last for many years and does not pollute waterways with polystyrene balls.

If, as is usually the case, volunteer trap managers cannot unfailingly check traps at least once a day, then you'll need to add an RMD to each trapping unit. WRT recommends the Remoti device, which currently costs about £130 including batteries.

Together with accessories (posts, tethering rope etc), the cost of a trap, raft and RMD (what we call a Smart Mink Raft) amounts to approximately £375.

How many trapping units are needed?

A 'gold-standard' trap network, with a very high chance of protecting water voles at a particular location would, let's say, extend to 50km in all directions from that location. That amounts to an area of 7,855 sq km. At the recommended average rate of one trap per 18-20 sq km, that's 400 traps. Only large organisations with substantial resources could even consider mounting an operation of that size, even though the wildlife benefits of clearing mink from such an area would be fantastic.

A network covering a radius of just 20km from a colony would require 63 trapping units. If many of these traps were strategically placed on the main waterways passing close to a water vole release site, and rigorously maintained, operated and re-lured (as mentioned above), then those 63 traps *could* be sufficient to do the job by virtue of having a good chance of catching any mink that lived within, or entered, the trapped area.

It is important to realise that the trap network would not only need to be in place for at least 4 years before a reintroduction took place (to remove mink already in the area), but would need to be operated permanently thereafter to prevent re-invasion. Anything less than this is, frankly, asking for trouble.

If the above is too daunting or expensive to consider, the good news is that help may soon be at hand. Thanks to the work of the Waterlife Recovery Trust and many partner organisations, a rapidly growing area of England has already been cleared of mink, and it should only be a matter of time before the whole country is mink free. WRT is already operating, and/or collaborating with partners, within 27 English counties, and new collaborations are starting every month. If you are considering a reintroduction or, better still, wish to remove mink so any local water vole populations can recover spontaneously, please contact us to find out if we can perhaps link you up with other trapping work already being carried out in your area or region. Mink eradication - the ultimate goal - can only be achieved by everyone working together in close collaboration, and you may be able to play a really important role in this, even if you don't have the resources to set up and manage a large trap network alone. The only means by which water voles can have a long-term future in Britain is for American mink to be entirely eradicated from the British Isles. Everyone can play a part in making that happen, and thousands of Citizen Conservationists are already doing so, making a substantial, long-lasting impact. In much of East Anglia, water voles are now common and widespread, having risen Phoenix-like from nowhere in just a few years.

Conclusions

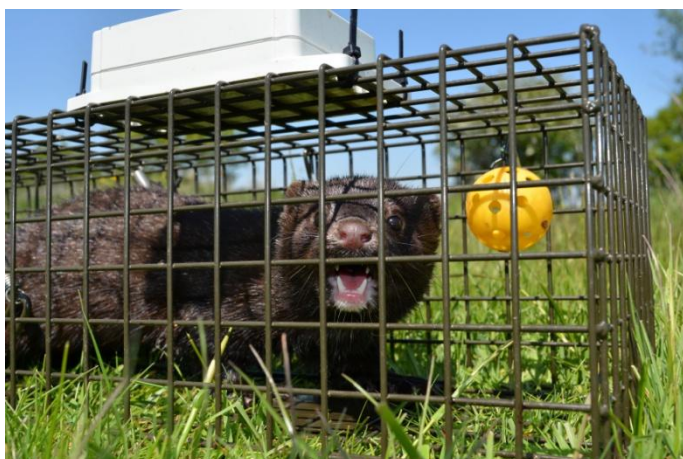
The evidence is clear. The long-term success of a water vole reintroduction project will be substantially dependent on whether or not American mink will turn up and eat the voles. Short of eradicating mink from the whole of Britain (the objective of the Waterlife Recovery Trust) there can be no guarantee of safety from them, but a comprehensive trap network maintained in place for years before and after the release will greatly reduce the risk of any

mink discovering the colony and destroying it. There is no hard-and-fast rule about how many traps to deploy, or how big an area to cover, but the more traps deployed over a larger area for a longer period of time, the greater the protection.

To release water voles without having established a large mink-free zone around them is not only courting disaster, but could be perceived as irresponsible, at best, when the consequences to the voles of not making the necessary preparations are so predictable.

About the Waterlife Recovery Trust (WRT)

WRT is a registered charity (number 1198223). As such it is non-profit, and its Trustees are unpaid. The 'charitable objects' of WRT on the Charity Commission website are 'to protect and conserve the water vole and other native species for the advancement of environmental improvement, in particular but not exclusively, by advancing the control of invasive alien species, notably the American mink, in Great Britain'. Much of the work of WRT is in providing advice, guidance and support to people and organisations wishing to protect their local water-dependent wildlife by removing invasive American mink.



Above left: mink captured in a smart trap with a scent lure (held in the yellow golf ball). The Remote Monitoring Device (RMD) is the box on top of the trap.

Above right: WRT only uses live traps because, once the mink have been removed, water voles and other 'good guys' form the bulk of the catch. The use of an RMD on all our traps means that no animal spends long inside. In many cases we eventually have to fit water vole excluders to keep them out.

Left: A typical WRT 'smart mink raft'. The raft is sealed, so it does not shed polystyrene balls. The trap and RMD are out of sight under the raft tunnel. The dowels are 'otter excluders'.

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