



# Guidelines for the Control of Mink for Water Vole Conservation

In partnership with the Environment Agency, Canal & Rivers Trust and Thames Water

It is widely accepted that American mink (*Neovison vison*) have contributed to the recent sharp decline of the water vole (*Arvicola amphibius*) in Britain. Evidence suggests that the water vole has been in decline since the beginning of the twentieth century due to habitat loss, degradation and fragmentation. This decline accelerated sharply throughout the 1960s and 1970s, coinciding with the spread of feral mink. Unless some areas are kept free or relatively free of mink, it is possible that the water vole will become extinct in much of Britain in a few years. Against this background, The Wildlife Trusts and other conservation bodies have accepted that mink control is an essential tool in water vole conservation. However, it must be appropriately targeted, humane, and form part of a wider water vole conservation strategy including habitat restoration and management and monitoring programmes.

## The Wildlife Trusts' Policy on Mink Control for Water Vole Conservation

- The Wildlife Trusts support strategic and humane control of mink for the purposes of water vole conservation where mink control follows guidelines to ensure maximum benefit for the water vole. Projects must be planned, ecologically sound, properly resourced, time-limited, monitored and documented.
- Only live-capture traps must be used so that non-target species can be released unharmed. All capture and dispatch of mink must follow best practice to ensure it is humane, safe and targeted. The only presently accepted method of dispatching mink is by shooting. Mink must not be drowned. This is considered particularly cruel for an aquatic animal.
- The Wildlife Trusts do not support mink control as an alternative to the establishment of beneficial habitat management for water voles. Mink control must be accompanied by habitat restoration to provide long-term protection for the water vole.
- The Wildlife Trusts are opposed to mink hunting with hounds. This has not been proven as an effective method of reducing mink numbers and may disturb habitats and species, including otters.

The Trusts' mink control policy will be reviewed in the light of monitoring, any new information on non-lethal control methods or changes in best practice.

## American mink versus the water vole

A female mink with growing kits will predate heavily on any water vole colonies up and downstream of her den. Not only will mink follow water voles underwater, but females and juveniles are small enough to enter water vole burrows. An adult may consume a water vole every day. Water voles have no means of escape from mink and a colony can be wiped out in a matter of weeks.

Mink have a particularly damaging impact on water vole populations compared with other prey species as they predate heavily in the early spring when water voles are particularly vulnerable. All adult water voles that are tough enough to survive the winter form the breeding population. This means that every vole killed at this time is one fewer to replenish the population and this accelerates the decline.

### **Facts about mink**

Mink are not native to the UK, but were introduced from North America for the fur trade. They have become established in the UK following escape and release from fur farms. They have no natural predators in the UK. Mink are associated with aquatic places and are commonly found in wooded and scrubby areas alongside rivers and streams. They tend to avoid open areas. They are territorial, with female territories stretching 1.5km from the den.

Young (kits) are born in April/May. Litter sizes are usually 3-4 kits. The young are raised in dens, usually a cavity in a tree root, rabbit burrows or piles of stones by the water's edge. Mink are carnivorous, hunting both on land and in the water. Fish, birds and mammals are the main component of their diet, but they will also prey on invertebrates, frogs and crayfish. Prey killed by mink can be identified by a bite to the neck with bite marks 1cm apart (marks 1.5cm apart indicate predation by fox). While mink hunt in the water they are not particularly strong swimmers. They swim with their body high in the water, whereas otters only have their head showing.

### **Getting started**

Please consider these questions before committing to the mink control scheme:

- **Do you own the land on which you would like to set traps?**

If 'no' please make sure you have the owner's full permission prior to trapping.

- **Do you have the time to dedicate to mink control?**

Mink rafts should ideally be checked weekly but where this is not possible fortnightly checks are better than none. Rafts should be checked throughout the year but the most crucial time for monitoring rafts is September to March inclusive when mink are most mobile and setting up their territories prior to breeding. Once a trap is set it needs to be checked at least once, ideally twice, daily.

- **Do you have a suitable weapon and level of experience to humanely dispatch mink?**

If not perhaps a local farmer would be available to dispatch any trapped mink or the Water Vole Recovery Project may be able to put you in touch with an experienced local volunteer. Before setting any traps it is important to ensure that somebody experienced is on hand to quickly and humanely dispatch any trapped mink.

### **Best practice guidelines for mink control**

Control of mink will be most effective and efficient if those carrying out the work are properly trained and suitably experienced.

### **Conventional mink trapping**

Bank trapping using cage traps is a commonly used technique that is effective but labour intensive. Once set, each trap must be checked every day, at least once and preferably twice, just after dawn and at dusk. The disadvantage of this technique is that there is no integral monitoring of mink presence in the area, so a consistent trapping effort may be required even

when there are no mink in the area. However, it may be a more discreet technique as traps can be well camouflaged on the banks and thus may be more appropriate where there is a possibility of loss or vandalism of equipment.

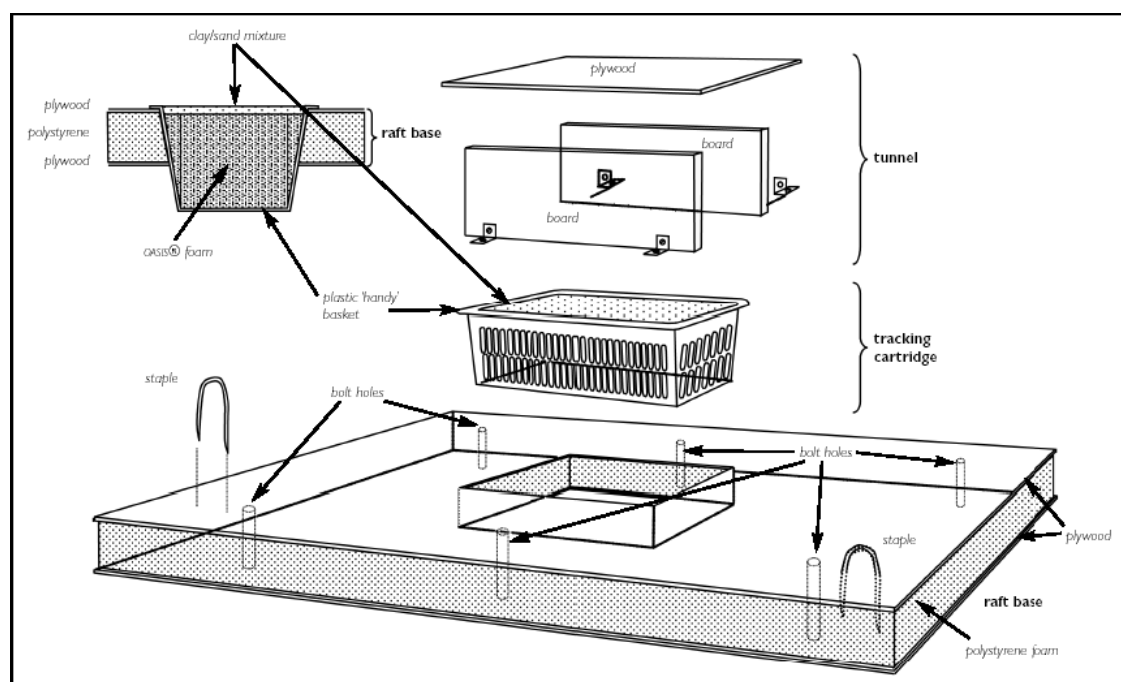
## Mink rafts

The most effective way of detecting the presence of mink and reducing the required trapping effort is using mink rafts as developed by the Game and Wildlife Conservation Trust (formerly the Game Conservancy Trust). The Water Vole Recovery Project aims to install mink rafts at approximate 1km intervals in and around known water vole areas. Rafts and traps are loaned free of charge by the project to landowners and volunteers within mink control scheme areas on the condition that these best practice guidelines are followed.

Operation of mink rafts requires consent from the Environment Agency. The Water Vole Recovery Project will seek consent from the Agency for rafts that are used within the mink control schemes. The use of mink rafts should be as part of a strategic scheme to be effective and to fall in line with the Wildlife Trust policy. Trapping on just one site may be resource intensive due to mink continually moving into the area. Strategic mink control schemes over a wider area offer the opportunity to provide the most effective control on a watercourse.

A mink raft has two modes of action: monitoring and trapping. In use the raft spends most of its time in monitoring mode when it records the footprints of any visitors on a tracking cartridge (which consists of a basket, oasis foam and clay/ sand mixture) inside a tunnel. Once mink prints are recorded a live capture trap is set inside the tunnel and mink are usually captured within a few days. The tunnel exploits a mink's natural curiosity and rafts and traps do not require baiting to attract an animal.

Figure 1. Components of a mink raft



## Installing and monitoring a mink raft

Rafts are positioned in fixed locations and will be deployed by the Water Vole Recovery Project. Landowners are asked to be present to agree the location of the raft and to be shown how it works.

Rafts should be checked once a week. At each check, remove debris from the tracking cartridge and smooth over the clay using a paint scraper, spatula or wet hand. More frequent checks are desirable where you have recently returned a raft from trapping to monitoring mode, in case further mink remain to be trapped.

**Identification of field signs**

The species which are most likely to visit a mink raft are mink and, in some areas, otters. Most commonly mink will enter the tunnel and leave prints on the tracking cartridge. They may occasionally deposit their scat on the raft or tunnel top. Otters will most frequently leave their droppings (known as spraint) on the raft or tunnel top but they may also enter the tunnel. Sometimes their large prints can be identified in the tracking cartridge or they do occasionally dig out the clay and play with the tracking cartridge components! The following guide will help you to distinguish whether you have mink or otters visiting your raft, if in doubt please contact the Water Vole Recovery Project Officer to discuss or email through a photograph for verification.

*Figure 2. Field signs of mink*


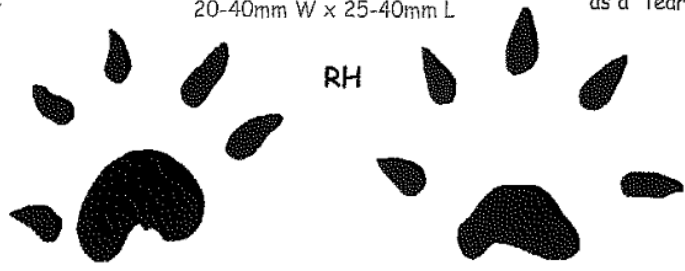



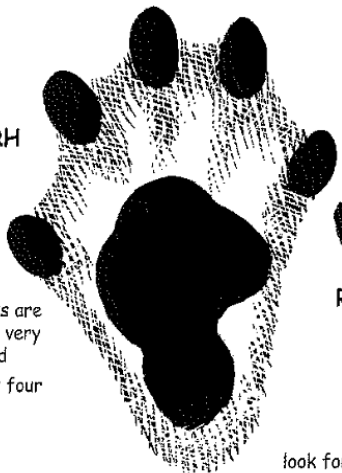



<p>Scat:</p> <p>Rancid smell, twisted structure Fur and hair usually visible</p>	
<p>Prints:</p> <p>on soft ground toes splay around palm pad in a 'star' shape</p>	<p style="text-align: center;"><b>MINK</b> variable 20-40mm W x 25-40mm L</p> <p style="text-align: center;">RF                      RH</p>  <p style="text-align: right;">toe pads and claws often print together as a 'tear' shape</p>
	

Figure 3. Field signs of otters

<p>Spraint:</p> <p>Pleasant, hay-like smell, loose structure Fish bones and scales usually visible</p>	
<p>Prints:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="263 571 742 1041" style="text-align: center;"> <p>RH</p>  <p>complete tracks are rare except on very soft ground frequently only four toes show</p> </div> <div data-bbox="742 571 1268 1041" style="text-align: center;">  <p>small oval toe pads end in short claw - can give a 'tear' shaped impression</p> <p><b>OTTER</b></p> <p>forefoot 60mm W x 65mm L hind foot 60mm W x up to 90mm L</p> </div> </div> <p style="text-align: center;">look for signs of tail drag</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>	

### Setting a mink trap

When mink tracks or scat are identified on a mink raft a trap should be should be set in the tunnel as soon as possible. The tracking cartridge should be removed from the tunnel and stood in a small amount of water to keep the clay moist. A single-entry live capture cage trap is placed inside the tunnel ensuring the trap opening faces the tunnel end with the upright dowels in place. The dowels act as otter exclusion bars to ensure otters cannot enter the set trap. If not a snug fit inside the tunnel the trap will need to be secured in place, ideally using a cable tie or short length of wire securing the trap to the tunnel. Alternatively a stick can be wedged between the tunnel side and the trap but take care to ensure that it will not interfere with the trapping mechanism. The trap is set by opening the entrance and balancing the open door on the arm connected to the treadle. When an animal puts weight on the treadle the arm releases the door which drops down and is held shut by a spring bar.

The trap should be left in place until a mink is caught or for up to 10 days. Other mink raft schemes have found that rafts which detect a mink have successfully captured a mink within 8 days. After 10 days the chances of capturing non-target animals increases and the raft should therefore be returned to monitoring mode.

By law, once set traps must be checked daily. This should be done at dawn, preferably with a second check at dusk too. It is illegal to release mink back into the wild once caught or to transport a trapped mink.

### **How to dispatch a trapped mink**

The Water Vole Recovery Project has sought advice from the Game and Wildlife Conservation Trust on the humane dispatch of a trapped mink. The recommended weapon to use is an air-weapon; this can be carried discreetly, is safe for the operator and since lead shot is not required, is more environmentally sensitive. The Game and Wildlife Conservation Trust have researched the cheaper air pistols and can vouch for the ability of a pistol producing a muzzle energy of 3.1ft lbs or more to kill even the largest mink humanely. Currently the **Webley 'Typhoon'** is probably the best buy for the purpose at around £90. With such a relatively low-powered weapon it is critical to use **'Prometheus' steel-tipped conical pellets** as lead alloy pellets will not penetrate. Air pistols generating up to 6ft lbs muzzle energy may be used without a Firearms Certificate. An air rifle (legal limit 12ft lbs) can also be used but is considerably more awkward to manipulate and more conspicuous.

To use an air weapon humanely the mink must be held still in the trap. This is done using two plywood 'combs' which fit through the trap mesh forming a divider, the equivalent of a livestock handling crush, within the trap. Combs may be provided by the Water Vole Recovery Project or can be easily made by cutting slots with a saw in 10mm plywood boards so that the prongs fit through the mesh of the cage.

Once exposed in a trap a mink may scream loudly until dispatched so prepare the air pistol, pellets and trap combs before removing the trap from the tunnel. Check that the pistol barrel is clear before loading. Using a hook or stick and ensuring fingers are kept out of reach of the trap, pull the trap out of the tunnel. By inserting the combs alternately, gently push the mink to the end of the trap furthest away from the door until it is confined to a space of only one or two mesh lengths. By easing or increasing pressure you can allow the animal to squirm around or hold it in position. Using the comb as a lever, push the mink up towards the roof of the trap, letting it squirm around until its head is immediately below the roof mesh, then clamp it in position by pressing on the comb. With the gun barrel pointing down from above on to the cranium, push the muzzle of the barrel down firmly and shoot the mink. Avoid the very strong centre line of the skull. Do not fire unless you have achieved the muzzle-cranium contact described- if the muzzle or cranium is not perpendicular to the cranium or if there is insufficient downward pressure, the pellet may glance off or fail to penetrate. One shot properly placed will cause instant and irreversible loss of consciousness but be prepared for convulsions and kicks as the animal dies. Although the single shot may be all it takes, it is recommended that you immediately fire a second shot into the skull from the junction between the neck and the back of the skull which destroys the brain stem. To confirm that the animal is dead, lightly touch one of its eyes with a piece of vegetation. If there is no blink reflex the animal is dead. Any regular breathing action also indicates that the animal is not dead. Once confirmed dead, the carcass must be disposed of responsibly by incineration or burial.

If an air weapon is not available, a shotgun (which requires a firearms licence) may be used instead although its use at close quarters does pose significantly greater risk. The Game and Wildlife Conservation Trust recommend only lead shot and do not recommend the use of any other firearms to dispatch trapped mink. If using a shotgun you will need to place the trap in front of a safe background. Never shoot in front of open water as shot can ricochet off a water surface or if it does enter the water, lead shot is highly toxic to aquatic wildlife. Retreat to a distance of about 10m and take careful aim. At this distance a normal game or clay

shooting cartridge will be humane provided you aim carefully, shooting directly at the mink and not just vaguely at the trap. There will be substantial scatter of shot fragments off the metal trap, which can reach waist height. Hearing and eye protection are recommended for the dispatcher but any bystanders should also be at least 10m away from the trap.

### Mink details

Once culled the mink can be examined to identify their gender and age using the guidance below.

*Sex:* Female mink are much smaller than males, weighing less than 900g, approx. 33cm in head/body length and tend to be placid when caught. Males have heavier bodies that typically weigh 1.5 – 2.2 kg, approx. 38cm head/body length and are more aggressive when caught, often emitting a piercing shriek. The anus-genital distance in the females is about 1cm, while the scrotum identifies males and the distance between anus and penis is 2-3cm.

*Age:* A juvenile mink will weigh significantly less and be significantly shorter than an adult of the same sex. Using the measurements provided above please assess whether this is likely to be an adult or a juvenile animal.

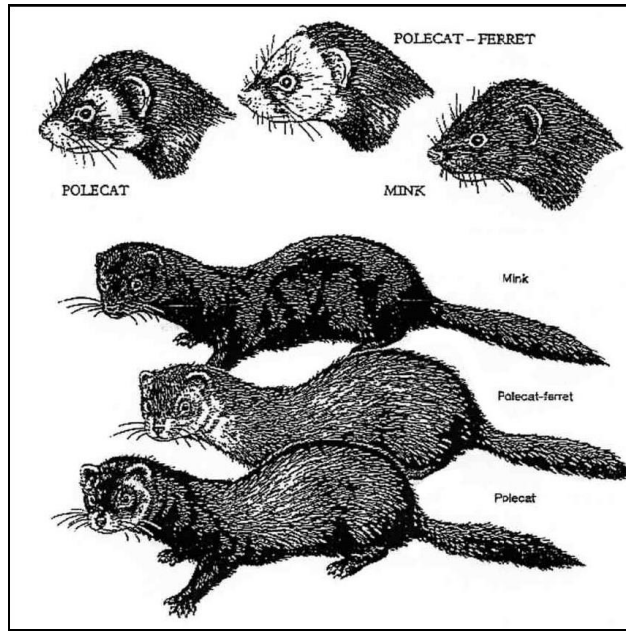
### Capture of non- target species

Because traps are only set for short periods when mink are detected, using mink rafts greatly reduces the risk of trapping non-target species. Locations which are in frequent use by other species should be avoided, for example moving a mink raft by as little as 50m can avoid a water vole colony without affecting the chance of mink captures. If a short period of monitoring shows a raft is regularly being used by non-target species the raft should be relocated. The table below outlines the necessary action to take if species other than mink are captured in a trap.

Species	Action
Grey Squirrel	Non-native species that must be shot if trapped. It is illegal to release them.
Brown rat	Can be shot or released.
Ferret	Should be re-homed.
Water voles, juvenile otters, polecats, stoats, weasels, water shrews, moorhens	Must legally be released immediately.

The ferret is a domesticated descendent of the European polecat (*Mustela putorius*), and the two will readily hybridise. In some areas there are numbers of hybrid polecat-ferrets. These can sometimes be distinguished from the pure polecat by being lighter in colour, having white ear tips and a white patch on the chin extending onto the muzzle. However it is not always easy to distinguish between a hybrid and a pure polecat and if in doubt the animal should be released to avoid accidental killing of a polecat. Be aware that there are a high proportion of pure polecats in Berkshire, Buckinghamshire and Oxfordshire and their range is increasing. Polecats are protected under Schedule 6 of the Wildlife and Countryside Act 1981 which makes it illegal to trap or shoot the species without a licence. The polecat was also recently added to the UK Biodiversity Action Plan Priority Species list 2007. Ferrets may be a missing pet and should be re-homed if trapped. Contact STA Ferret rescue on 0118 9690435 or your local RSPCA branch for information and advice.

Figure 4. Identifying mink, polecats and polecat ferrets



**Returning the raft to monitoring mode**

After a mink has been caught or after the 10 day trapping period, the raft should be reset in monitoring mode with the clay tracking pad in place. Weekly monitoring checks should then recommence although more frequent checks may be beneficial immediately after capture of a mink. If a female mink is trapped a male is often caught soon after if the trap is re-set.

**Record keeping**

Monitoring the results of mink trapping is essential to the success of the project. It provides information on the mink population and the effectiveness of the trapping programme. Mink trappers are asked to keep records of any animals captured and they will be contacted towards the end of the year for their records by the Water Vole Recovery Project. If you prefer records can be phoned through or emailed as and when mink are trapped. You may wish to use a spreadsheet or record form similar to the example below to keep records of your captures but as a minimum we need to know the name or location of the raft (each raft will be issued with an ID when installed), what species were trapped and when.

Date	Raft ID/ Location	Species Trapped	Details		Other Information	Outcome
			Sex	Age		
10/09/11	Manor Farm East	Mink	Male	Adult		Dispatched
29/11/11	Manor Farm West	Polecat	-	-		Released unharmed

**Further information**

For further advice on any of the above please contact the Mammal Project Officer on Telephone: 01865 775476 or Email: [watervole@bbowt.org.uk](mailto:watervole@bbowt.org.uk)

Additional information on constructing and using mink rafts can be downloaded from The Game and Wildlife Conservation Trust website at [www.gwct.org.uk](http://www.gwct.org.uk).





## American Mink Control Scheme

Berkshire  
Buckinghamshire  
Oxfordshire



### Why Control American Mink?

It is widely accepted that American mink have contributed to the recent sharp decline of the water vole in Britain. Evidence suggests that the water vole has been in decline since the beginning of the twentieth century due to habitat loss, degradation and fragmentation. This decline accelerated sharply coinciding with the spread of feral mink. Unless some areas are kept free or relatively free of mink, it is possible that the water vole will become extinct in much of Britain in a few years. Mink are opportunistic predators and readily take wild birds and their eggs, game birds and domestic fowl.



### What is involved in mink control?

The most efficient means of monitoring mink is with the use of a mink raft; this consists of a recycled plastic platform which floats on the water with a tunnel on top which houses a clay pad. The raft is checked weekly and when mink prints are detected in the clay the tracking pad is replaced with a live capture trap. Once a trap is set it needs to be checked at least once each day. A mink is generally trapped within a few of days of detection and should then be humanely dispatched ideally using an air rifle/pistol. Often more than one mink can be caught over consecutive nights. If the raft is positioned in a place which you visit daily then there is the option to have a trap in place permanently, thus skipping the clay pad stage.

Many landowners and managers participating in mink control schemes monitor their own rafts and trap and dispatch mink as required. If you cannot assist in all these aspects then perhaps you can help out by letting us install a mink raft on your land to be monitored by volunteers, offering to monitor a raft nearby or being available to dispatch trapped mink? All equipment will be provided by the water vole project and guidance on monitoring, trapping and dispatching procedures given, in return we simply ask for records of how many mink you catch.

To get involved please complete the form below indicating your interest either using the freepost envelope provided. Alternatively get in touch via email [gavinbennett@bbowt.org.uk](mailto:gavinbennett@bbowt.org.uk), or if you would prefer speak in person contact me on **07871630339**.

Thank you for your help.

<b>Contact name:</b>	<b>Watercourse:</b>
<b>Address:</b>	
<b>Telephone:</b> <b>Mobile:</b>	<b>Email:</b>

<p>I would be willing to have a mink raft(s) installed on my land to monitor myself <input type="checkbox"/></p> <p>OR</p> <p>I would be willing to allow a volunteer access to monitor a raft and trap <input type="checkbox"/></p> <p><b>AND</b></p> <p>I have access to a weapon I can use to dispatch trapped mink <input type="checkbox"/></p> <p>OR</p> <p>I would need somebody else to be available to dispatch trapped mink <input type="checkbox"/></p> <p><b>If you are unable to get involved in the project but know a friend/neighbour who may be interested please do pass this information on</b></p>
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