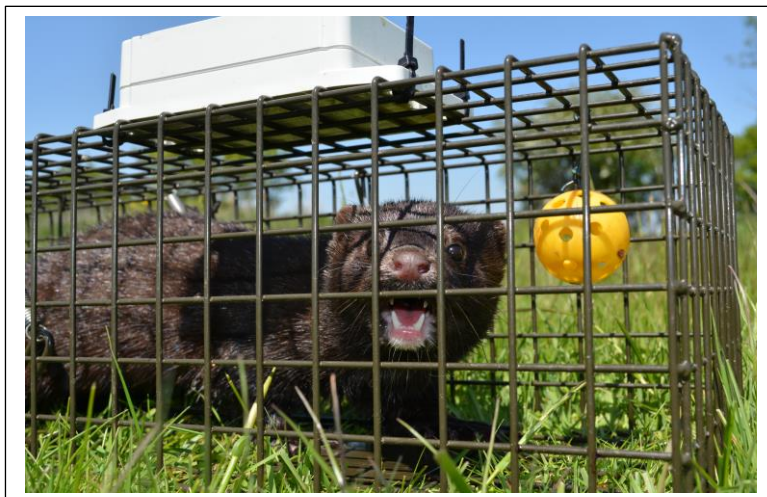




### **Reducing non-target captures when mink trapping: the use of Water Vole Excluders**

Extensive cage trapping using 'smart' traps to control invasive American mink *Neovison vison* is being carried out over large areas of the country. Such cage trapping is legal and humane if it is carried out properly; Best Practice Guidance to help ensure this is available on the WRE website ( <https://waterliferecoveryeast.org.uk/wre-reports-and-guidance/> ). The reason for controlling, and ideally eradicating, mink is to prevent the extermination of water voles from Britain and to protect other native mammals and birds. In the process of cage trapping, non-target species will inevitably be caught but can normally be released unharmed. The use of smart traps, which let the operator know as soon as the door has closed through text and email, can minimise the time an animal stays in a cage trap before dispatch or release. As all trap closures can then be followed up as quickly as possible, this should lead to better animal welfare standards compared to using traps not supporting the 'smart' technology.



'Smart' mink trap with captured mink. The yellow 'golf ball' holds mink anal gland lure.

Water voles underwent an 81% decline during the 1990s, and a further 50% decline in the following 17 years, leading to them to be listed as endangered in Britain (Matthews et al. 2018). The main causes of the decline are predation by mink and changes in land management (Matthews et al. 2018). When trapping reduces the mink population sufficiently, this will lead to an increase in water vole numbers, provided the habitat is suitable and remnant water vole populations remain. A consequence of such success is that the abundance of water voles and other prey species is likely to increase and more of them will be caught incidentally in mink traps. While smart traps are extremely reliable when properly managed (Martin 2021), any capture of a water vole is a potential risk to the individual both directly and indirectly:

- If a water vole is trapped on successive nights they are potentially at risk of starvation and hypothermia.
- If water voles are caught frequently at a site, trappers may tire of releasing non-target animals and so give up trapping. This would lead to the return of mink and increased predation of water voles.

While smart traps can improve the welfare of trapped animals, welfare can be further enhanced by reducing the probability of an animal being caught in the first place. This paper looks at the use of a Water Vole Excluder to do this while continuing to provide effective mink control, without which water voles will be in significantly greater danger. Data presented below

indicate that Water Vole Excluders should be considered as a means of reducing all bycatch on mink rafts.

### **Legislation**

Water voles *Arvicola amphibius* are protected under the Wildlife and Countryside Act 1981 (as amended). They are included in Schedule 5 making it an offence under Section 9, to intentionally kill, injure, or take them. In this context, 'take' means to trap them. There is also an exemption under Section 10 making it not an offence under s.9 if you can show that the act was the incidental result of a lawful operation and could not reasonably have been avoided. It follows that incidentally trapping a water vole during mink control is not an offence so long as reasonable steps are taken to avoid or reduce the risk of trapping the voles. The use of a Water Vole Excluder can be one such step.

### **Catching mink but not water voles**

Although the incidental capture of water voles is not in itself an offence, it should be avoided where possible. However, measures to guard against it should not reduce the effectiveness of mink trapping. Each mink that is not trapped and dispatched, will potentially take many water voles over its lifetime, assuming they have not already been eradicated locally by mink predation. As such, a low level of incidental water vole trapping is considered acceptable to achieve effective mink control because of the significant benefits this provides to water vole populations.

Waterlife Recovery East has developed a Water Vole Excluder (Annex 1) that has been demonstrated to reduce the capture of water voles very significantly but does not appear to deter mink from entering the traps. The excluder is a simple physical barrier around the entrance to a trap that also reduces the capture of other non-target species such as moorhen and water rail. It is not 100% effective, as large water voles can climb the barrier, but making it too challenging might also deter mink and negate the purpose of the trapping. The few animals that scale the excluder could be safeguarded by temporarily closing or relocating the trap, though this would leave the colony unprotected, so should be a last resort and for a limited period. Details of the excluder and what has been observed from trail cameras set to monitor the excluders is given in Annex 1.



Smart mink raft with Water Vole Excluder fitted

### ***Using the Water Vole Excluder***

The following protocol should be followed to guide when to use an excluder, and how to respond to any water vole captures that still occur.

- Use a water vole excluder on raft at sites where water voles or other non-target species are captured frequently or where a particular species has been caught on successive nights.
- Ensure there is no vegetation resting on the tunnel or excluder that could help a water vole climb over the excluder.
- If a juvenile water vole is caught in a trap fitted with an excluder it is likely that it has climbed up the blind end of the trap and along the roof under the tunnel. In these cases, fit a strip of 'stockboard' (the same recycled plastic sheet from which the raft is made) to the top of the blind end of the trap between the top of the trap and the tunnel roof to close off this route.



- If there is concern that an individual has managed to get into the trap despite the excluder and might be at risk of being caught on successive nights, you should consider temporarily closing or moving the trap.

### ***References***

Martin, A.R. (2022). Reliability and effective use of electronic trap monitoring systems based on cellular networks. *Biol Invasions* 24, 1247–1251. doi.org/10.1007/s10530-021-02713-2

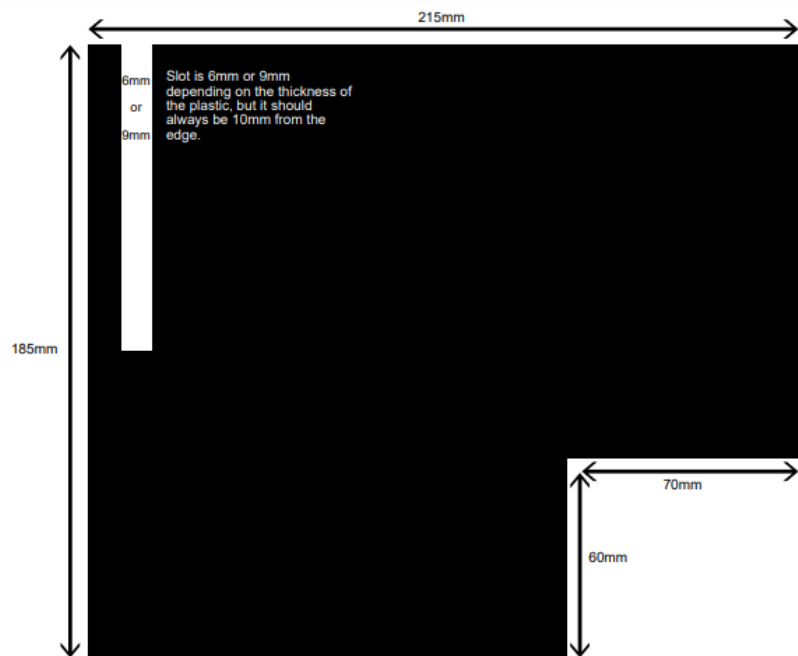
Mathews F, Kubasiewicz LM, Gurnell J, Harrower CA, McDonald RA, Shore RF. (2018). A Review of the Population and Conservation Status of British Mammals: Technical Summary. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough

### Annex 1. Water Vole Excluders

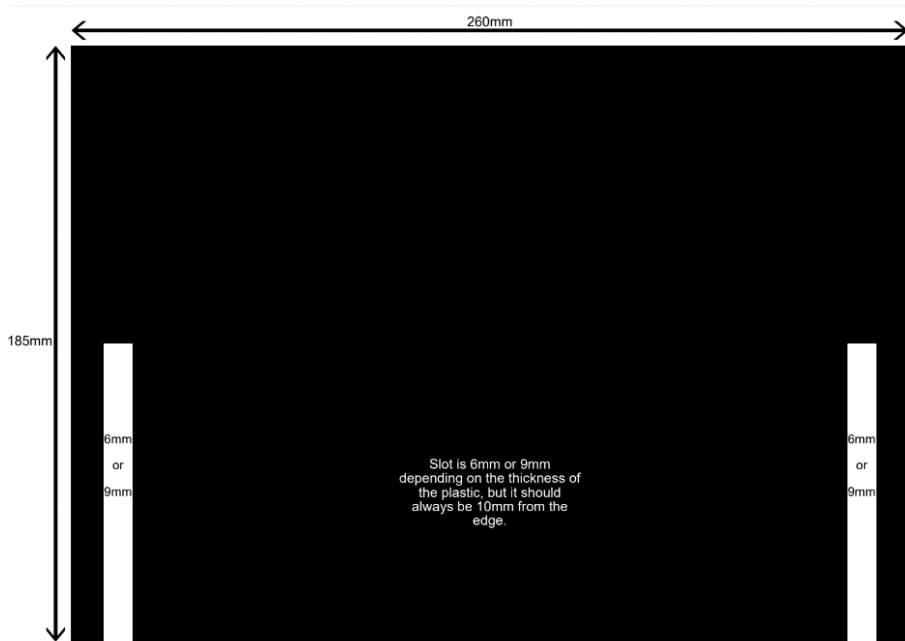
The 'water vole excluders' developed by the Waterlife Recovery East project are simply a 'wall' made from 3 pieces of stockboard that are cable-tied to the end of a mink raft tunnel forming a barrier around the open end of the trap. Mink scale the wall easily but most non-target animals do not.



Side pieces



End piece



The excluders illustrated were developed for 'Fenland Edged' rafts manufactured by Filcris Ltd ( <https://www.filcris.co.uk/category/wildlife-and-conservation/wildlife-management/mink-rafts> ) with slightly higher than standard tunnels, which can accommodate the trap monitoring device, under cover, on top of the cage trap. Despite this the excluders are likely to fit most mink trapping rafts, although the cut-out corners may not be needed on some designs of rafts. On Filcris rafts they are attached with cable ties ( <https://waterliferecoveryeast.org.uk/wre-reports-and-guidance/> ) but they could be screwed to tunnels with wooden sides.

Staff and volunteers from The Project have been monitoring rafts with trail cameras since the start of 2020 and these have been increasingly focussed on mink rafts fitted with excluders. This has helped to assess the efficacy of the excluders and the reaction of mink and non-target animals to them. Should any problems be detected, the excluders could be modified or removed. Over 30 cameras are currently in use and more are being added as funds permit.

### ***Does an excluder reduce the probability of catching a mink?***

In one trial in Cambridgeshire, in 4 months of trapping with 49 smart rafts, with water vole excluders ultimately fitted to 24 of them, 13 mink were trapped, of which 9 were on rafts with an excluder fitted (Cliff Carson, Pers. comm.). Additional anecdotal observations reinforce this result and mink are regularly caught on rafts fitted with an excluder. Mink entering a trap on a raft with an excluder fitted has been recorded on a trail camera on several occasions, and mink hardly pause at the excluder before entering a trap. All available evidence indicates that mink are not deterred from entering a trap by the presence of an excluder.

Another Project Officer reported: 'We have now caught 4 mink and two polecat-ferrets in traps fitted with excluders, and nothing else, with 20 rafts fitted with them. Video evidence has revealed the usual array of potential by-catch including several with Water Voles present, plus moorhens, rails, mallards, and rats. The rats use the excluders as climbing frames but they seem warier of going in the trap.'

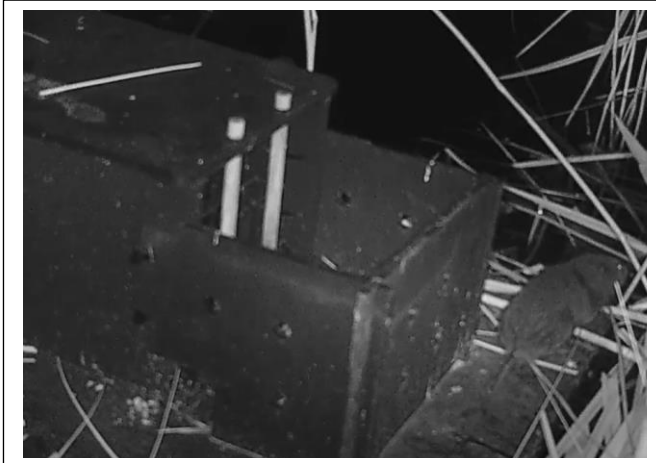


A small adult mink entering a trap fitted with an excluder.

### ***Does an excluder reduce the capture of non-target animals?***

The excluders were developed in early 2022 and over 80 excluders were fitted to WRE rafts during the year. In a sample of 38 of these, all fitted in response to water vole captures, only 4 subsequently caught a water vole. This indicates that excluders are likely to lead to some 9 out of 10 traps, where there have been previous captures, then ceasing to catch further water voles. All the animals trapped were released unharmed.

Birds seem even less likely to enter a trap with an excluder, only 1 bird, a water rail, was caught on 82 smart rafts fitted with excluders for varying periods of up to 10 months. The excluders did not seem to reduce captures of rats or feral ferrets. These data are not from a structured trial but collected during normal trapping operations. However, the magnitude of the impact chimes with the experience of Project Officers generally, which is that excluders are extremely efficient at reducing the frequency of trapping water voles and wetland birds.



Water vole on a mink raft



Water rail on a mink raft



Water rail chick on a mink raft