



American mink

(*Neovison vison*)

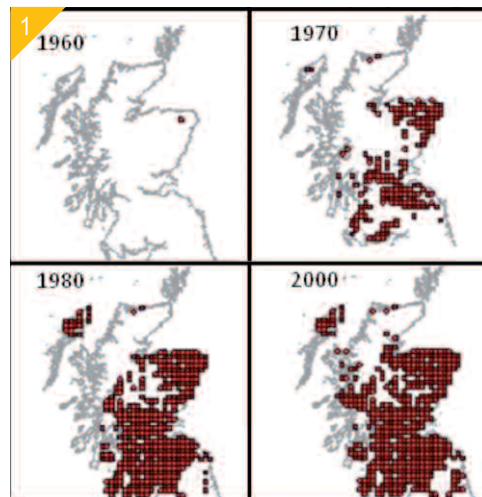
Collective management of the American mink in Scotland

Scottish Mink Initiative

- The Scottish mink initiative (SMI) for the American mink is a joint project between the Rivers and Fisheries Trust of Scotland, the Scottish Wildlife Trust, the Scottish Natural Heritage, the university of Aberdeen and the Cairngorms national park.
- The SMI is managed by the Rivers and Fisheries Trust of Scotland and is part of a larger project, the Biosecurity and invasive non-native species programme.
- The initial phase of the project lasted 24 months from August 2011 to August 2013.
- The main objective of the SMI is to eliminate the American mink from several river basins in order to protect the native species such as voles, salmonids, birds nesting on the ground and birds prized for hunting, by:
 - eliminating all reproduction of the American mink in the project zone;
 - ensuring the long-term sustainability of the American-mink control programme by transferring the know-how, knowledge and the responsibility for the continued management of the species to local organisations;
 - sharing the methods and data with researchers in order to spread the benefits of joint management adapted to invasive alien species.
- The estimated annual cost of the SMI is 156 000 euros, of which 73% is funded by the Rivers and Fisheries Trust of Scotland.

Context and issues involved

- The American mink settled in the U.K. starting in the 1950 following releases and escapes from farms for the fur industry. The species has now spread throughout the country, except in the extreme northern section. The species is firmly established in continental Scotland, as well as in the Western and Hebrides Islands.
- The American mink is commonly found in aquatic environments, notably along the coast where the species is particularly abundant.
- The mink is an opportunistic predator that feeds on a wide range of small mammals, birds and fish.



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1. Spread of the American mink in Scotland from 1960 to 2000.
2. Intervention area.

- In Scotland, the species has had a clear impact on voles, Atlantic salmon, black-throated loons, common scoters, northern lapwings, curlews and oystercatchers.
- Above and beyond the local biodiversity, the species creates indirect economic difficulties for fish farming and recreational activities such as hunting and fishing.
- The objective of the Scottish mink initiative was to set up, test and maintain collective management of the American-mink populations on over 20 000 square kilometres of the Scottish mainland.
- To facilitate project implementation, the project was divided into four large areas, namely Rural Aberdeenshire, Cairngorms-Moray, Highlands and North Tayside.

Interventions

- Control of American-mink populations consists of setting up a network of traps in the intervention area.
- The first step was to detect where the species was located in order to facilitate its capture.
- The strategy was to expand the trapping zone while maintaining detection efforts along the invasion front.
- A team was employed full-time in each sector of the intervention area to train, support and coordinate a network of volunteers, fisheries' employees and managers of natural areas.

■ Equipment used

- The type of trap used is the mink raft, developed in 2002 by the Game and Wildlife Conservation Trust (GWCT).
- The mink raft is made up of:
 - a floating platform (a slab of polystyrene between two pieces of plywood);
 - a metal grid along the edges of the platform to facilitate access by the animals;
 - a basket filled with clay and sand for footprints;
 - a wooden tunnel positioned above the basket.
- This type of device can be used both to detect and to trap minks:
 - for detection, the footprints left in the mix of sand and clay in the basket serve to identify the species that visited the device;
 - for trapping when minks have been detected, a cage trap can be placed inside the tunnel to capture the animals alive and release any species captured accidentally (European otter, voles, European pine marten).
- The rafts can be purchased commercially or made by volunteers. Construction costs have been estimated at approximately 75 euros per raft. Detailed plans and a list of the necessary materials are provided by the Game and Wildlife Conservation Trust.

■ A network of traps

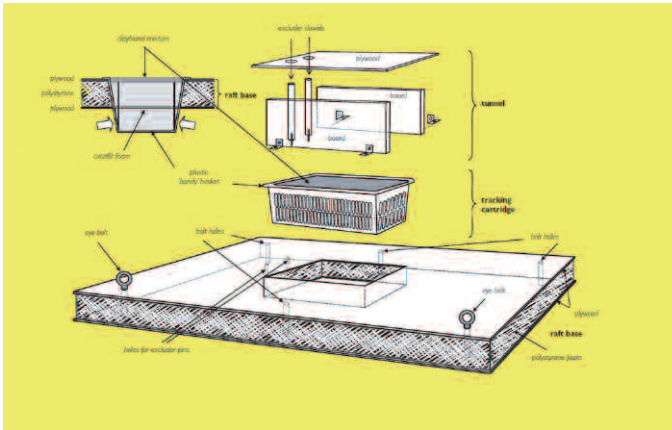
- In each project area, trap densities varied according to the conditions in the area and were regularly adjusted to take into account detections and captures.
- On average, one trap per kilometre of river was set up.
- The density of traps was increased in reproductive and nursing areas, and reduced in areas above an altitude of 300 metres where the species was rarely observed in Scotland.
- Each trap was numbered and its location precisely registered by GPS.
- A map of the habitats preferred by American minks was drawn up by the University of Aberdeen to select the priority trapping areas.
- The rafts were placed in water, with vegetation to mask them, near the bank and attached to the bank by a string long enough to handle variations in the water level.
- The rafts (without a cage trap) were checked every two weeks. A system to exclude the European otter was installed, given that the two species live in the same environments.
- If the footprints of an American mink were detected, a cage trap was installed in the tunnel.



3. An American mink and its prey.

■ Captures

- The traps were checked daily. Other species of animals were released on site.
- The traps remain operational until a mink is caught. If no minks were caught after five nights, the rafts were moved and set up for detection.
- Any minks caught were killed directly in the cage using a compressed-air pistol (Webley Typhoon).
- Each capture was recorded (GPS location, date, sex of the animal). An application for on-line entry of the data was developed (Mink App).
- The cadavers were either incinerated or buried. During the SMI, the cadavers were frozen for research on population genetics to determine the dispersion of the species in the project area and any exchanges between the mainland and the island populations.
- Most of the work (setting the traps, capture and killing) was done by volunteers. In areas where there was a lack of volunteers, the work was done by personnel employed specifically for the project by the Rivers and Fisheries Trust of Scotland.



Building diagram for the GWCT mink raft.

Results and assessment

■ Extension of the intervention area

- Following observations of the species in 2011 in Northwestern Scotland, the intervention area was extended to 30 000 square kilometres, spanning 24 river basins and including over 20 000 kilometres of river.

■ A network of traps

- In June 2013, a total of 1 019 traps were deployed in the intervention area.
- Of the total, 980 were monitored by volunteers and 39 by personnel employed by the Rivers and Fisheries Trust of Scotland.

■ Implication of volunteers

- The degree of implication varied over time with 200 volunteers in the beginning of the project and up to 600 in 2012. The number then dropped to 500 in 2013, due to several volunteers who failed to mention that they had halted their trapping activity and other who lost interest in the project.
- Over 40% of the volunteers were permanent residents in the intervention area.



4. A GWCT mink raft.

5. A raft installed on a river.

Breakdown of volunteers (in %).

Year	2011
Forestry workers, game wardens	24
Fisheries employees	15
Public institutions and agencies	5
Environmental-protection groups	7
Tourism sector	2
Farmers	2
Other	6

■ Captures

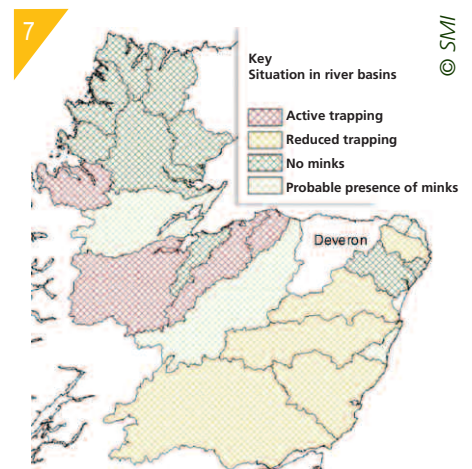
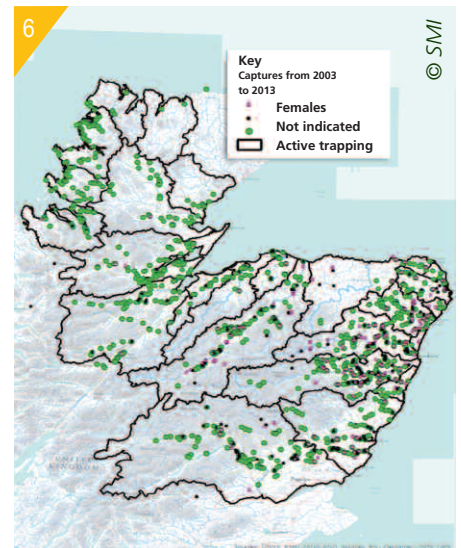
- At least 472 American minks were captured throughout the area from 2011 onward.
- After three years of trapping work, the level of mink presence and of trapping activity was assessed in each river basin:
 - absence of mink if no females were trapped for two consecutive quarters;
 - probable presence if an animal of either sex was captured over the last six months, in which case trapping activity was reduced;
 - active trapping with a campaign under way.
- The results indicated that American minks were absent from 10 of the 24 river basins. The basins with no minks were located primarily in Northern Scotland. The presence of American minks was considered possible in five river basins.
- Of the nine basins where American minks are still present, four are in direct contact with areas where no control work has been undertaken. These areas constitute a potential source of minks for recolonisation.

Information on the project

- A communication strategy was established comprising:
 - the creation and management of a dedicated internet site, www.scottishmink.org.uk;
 - information on the project on the local and national levels with over 150 articles;
 - a twice yearly information bulletin presenting SMI news in each geographic sector;
 - teaching material for schools (addressing four different class levels);
 - presentations of the SMI during public events, symposia, to local groups;
 - training courses for trapping volunteers with over 300 people trained.

Outlook

- The project will be pursued in the coming years.
- Improvements are required, notably concerning:
 - identification of American minks and checks on observation reports in order to reduce mistakes concerning the European polecat, erroneous reports and unnecessary laying of traps;
 - the long-term implication of volunteers by providing them regularly with information and inviting them to meetings on project results;



6. Map showing the trapping network.
7. Presence of American minks and trapping activity in the river basins.

- the geographic distribution of volunteers, who are unevenly spread or even absent in certain regions (Highlands), due to the very low population densities, difficulties in accessing rivers and the very discreet presence of American minks;
- strengthening links with research programmes to ensure that results are of use for management work (population genetics, ethology, etc.);
- transfer of management responsibilities and the implication of local communities to ensure the pursuit of the project in an increasingly large area.

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8. Raising awareness during events intended for the general public.

For more information

- Internet site of the Scottish Mink Initiative: www.scottishmink.org.uk
- *Scottish Mink Initiative*. 2013. Final report. 14 pp.
- Bryce R., Oliver M., Davies L., Gray H., Urquhart J., et Lambin X. 2011. *Turning back the tide of American mink invasion at an unprecedented scale through community participation and adaptive management*. *Biological Conservation*, 144(1), 575-583.
- *Game and Wildlife Conservation Trust*. 2013. *Guidelines for the GWCT Mink raft*. 11 pp.
- *Game and Wildlife Conservation Trust*. 2009. *Building a GWCT Mink Raft. A step-by-step guide*. 8 pp.