



# Global Re-introduction Perspectives: 2013

Further case-studies from around the globe  
Edited by Pritpal S. Soorae



IUCN/SSC Re-introduction Specialist Group (RSG)





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## Establishing new populations of European mink in Hiiumaa and Saaremaa Island, Estonia

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### Introduction

European mink (*Mustela lutreola*, Linnaeus, 1761) is a small semi-aquatic mustelid inhabiting the banks of forested rivers and streams. Its historical range covered most of the European continent except Scandinavia and parts of Balkans. Over the last 150 years its original range has reduced drastically. The current range consists of few isolated and shrinking fragments (Maran, 2007 and references therein). There is no data available about any extant viable wild population. The main factors operating the extinction are i) habitat loss, ii) over-exploitation and iii) impact of alien American mink (Maran *et al.*, 2011). In Estonian legislation the species belongs to the first and the most strict protection category. Since 2011 it is listed in IUCN Red List as Critically Endangered species. It is legally protected in all range states. In European Union it is listed in appendixes II and IV of the Habitat Directive and considered to be a priority species of the Community. The release operation has been conducted in two islands: Hiiumaa (1,000 km<sup>2</sup>) and Saaremaa (2,400 km<sup>2</sup>).

### Goals

- Goal 1: Remove the American mink (*Macrovison vison*) feral population in Hiiumaa Island.
- Goal 2: Establish European mink island population in Hiiumaa Island up to the size of assessed post-winter carrying capacity: 50 - 92 mink.
- Goal 3: Improve the riparian habitats in Hiiumaa Island to increase the post-winter habitat carrying capacity to 88 – 109 mink.
- Goal 3: Establish European mink island population in



European mink



Typical mink habitat

(Õsel) Island.

Saaremaa Island up to the size of assessment carrying capacity of 150 – 300 mink.

### Success Indicators

- **Indicator 1:** American mink removed from Hiiumaa Island.
- **Indicator 2:** Breeding wild population: size close to estimated carrying capacity in Hiiumaa (Dagö) Island.
- **Indicator 3:** Breeding wild population: size close to the estimated carrying capacity in Saaremaa

## Project Summary

**Feasibility:** The estimation of the carrying capacity based on the pilot studies were conducted in both island (unpublished). For Saaremaa Island a second pilot study was conducted to assess the capacity of core areas instead of the entire island. The post-winter carrying capacity of three core areas was assessed to be around 58 – 73 mink. The base for these release operations has been the conservation breeding of the European mink in Tallinn Zoological Gardens (in the frame of the EAZA EEP program), and breeding facility there hosts around 100 mink.

**Implementation:** The first releases on both islands were regarded as experiments to evaluate the feasibility of the operation. The release in Hiiumaa Island has been conducted yearly since 2000. In total, 475 (2012) mink has been released there:

- In 2000 - 2001, hard release combined with preconditioning was tried. The mortality of released animals was excessively high.
- In 2002 - 2003, the feasibility of pregnant female's release was tested as a mean to achieve a fast increase in wild-born mink. The females survived, but the litter disappeared at age of around two months.
- Since 2004 only yearlings born in release enclosures in Hiiumaa Island and in Tallinn Zoo have been released.
- In 2000 - 2003 the released mink were radio-collared to collect information about their post-release behavior.
- In 2012, a pilot release was conducted in Saaremaa Island; 11 radio-collared mink were released there and their post-release behavior was followed for two months.

Several studies have resulted from Hiiumaa operation:

- Maran *et al.* (2009) found that the mortality of released animals was the greatest during the first 1 - 1.5 month, the males mortality was lower than that of the females and that the main factor causing mortality were larger predators, like fox, stray dogs and bird of prey.
- Põdra *et al.* (2012) found that the atypical food prevailing immediately after the release in mink diet was substituted to typical wild mink diet within 30 days.
- The post-released movements of mink were analyzed in Harrington *et al.* (submitted 2012).

The release operation in Hiiumaa was regularly highlighted in local and national mass-media. The public awareness study conducted in 2004 (unpublished) revealed very high awareness among locals (97%) and highly positive attitude (>85%) to the project. Number of spawning-ponds for common amphibians have been excavated close to mink habitats to mitigate the negative effect land reclamation activities may have to important prey species. In addition, in collaboration with government agencies, the habitat quality of stream habitat was improved in several locations.

The main concerns have been the following:

- Suitable habitats patches in the island are scattered and none of them forms a sufficiently large source habitat for mink. As a solution, a running-water habitat improvement project was planned by the State, but is likely to be abandoned due mismatch between various formal governmental procedures.
- The low level of breeding in the wild.
- EU demanded anti-rabies vaccination campaign, which obviously hyper-increased the abundance of medium-sized carnivores and is suspected to negatively effect the establishment of the European mink population.
- The pilot release in Saaremaa Island (2012) was not promising as seven mink of 11 mink died within the first month after release and 71% of these were killed by fox or other predators. The following conclusions have been drawn: i) selected release site was suboptimal, ii) the attitude of local inhabitants to the project was highly positive, and iii) the further release operations may not be feasible due to the high abundance of foxes.

**Post-release monitoring:**  
In Hiiumaa Island yearly monitoring started in 2000



Captive bred European mink



Field researchers working on releasing mink

after release. There has been more or less steady increase in size of the post-winter population size (around 30 - 35 animals) and breeding in the wild has been observed. However, the demographic structure of the population is biased towards old and/or released animals. The causes of insufficient reproduction in the

wild remain unclear. It is suspected that either the spatial structure with no compact source habitat area available or the male's abnormal mating behavior (Kiik *et al.*, 2013) might be behind it. The comparison of various monitoring techniques (track counting, live-trapping, mink-rafts and trail cameras) has raised the issue of reliability of data collected under different monitoring schemes.

## Major difficulties faced

- Unstable funding complicates the planning and performance of the operation.
- Unforeseen negative factors like the rabies vaccination campaign jeopardizes the operation.
- The spatial structure of the habitat distribution in the island is important factor and this was not taken into account in the feasibility study.
- Inflexibility of state conservation procedures is incompatible with species conservation action needs.

## Major lessons learned

- The flexibility and open decision-making over the actions of the operation is crucial.
- Positive attitude of local inhabitants largely depends upon information flow, the personal contacts with local opinion leaders are critical; with time it is more complicated to keep the public information flow consistent as different stakeholders of the project will share information from their perspectives and needs.
- The administrative and political considerations of wider scope, but with serious implications to the outcome release operation are difficult to mitigate.
- Instead of overall carrying capacity of the island the core areas have to be evaluated. Scattered habitat patches without one strong source habitat are likely to result in lower than expected level of reproduction.

- Conventional single-species approach must be replaced to more holistic approach with attention to relations to other species, to the habitat and human interactions.

## Success of project

Highly Successful	Successful	Partially Successful	Failure
		√	

### Reason(s) for success/failure:

- Good team-work and very tight connections between *in situ* and *ex situ* teams.
- Rigid government procedures cause serious delays in the operations.
- Unstable funding will result in less effective operation.

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