

# European mink news 2017

CONSERVATION ACTIVITIES ACROSS EUROPE TO SAVE THE MOST ENDANGERED EUROPEAN CARNIVORE



This is the first edition of the European mink newsletter. The input of the newsletter was delivered by conservationists from Estonia, France, Spain and Romania that have been concerned with and working on the conservation of European mink for many years. This newsletter gives a short overview of the conservation activities that were done in the different countries during the year 2017. The aim of the newsletter is to reach a broader public (both governmental decision makers and the general public), in order to create awareness and support for the conservation of this small carnivore on the brink of extinction. This is in line with the focus of the EEP, who states that it is essential for improving the situation of the European mink wild populations as well as for maintaining the EEP population in the long-term.

Before highlighting the different activities per country, this first issue of the European mink newsletter gives a short overview of the status of European in Europe mink and its conservation.

## European mink: a short history

The European mink (*Mustela lutreola*) was once widespread throughout Europe, with a range that extended from the Ural mountains to eastern Spain and from Finland to the Black Sea (see map; Novikov; Heptner). Since the nineteenth century, however, its range has dwindled drastically (Maran et al.) such that it is now in danger of becoming the next mammalian extinction. There is no known large population of European mink surviving in the wild; their decline is continuing, and the species retains only isolated fragments of its former range in small areas of southwestern France and northeastern Spain, the Danube delta (in Romania and Ukraine), and probably restricted parts of Russia, as well as a small reintroduced population in Germany (see map; Maran et al.).



*Historical (white) and estimated current (grey) range of European mink. The presence of the European mink in Spain, France, Romania, and Ukraine (shown in dark grey) is based on field data, whereas the information from Russia (in light grey) is based on questionnaires and local knowledge (Dr. D. Skumatov, pers. comm. 2012). The population in the Danube delta is widespread, but of unknown size. The small reintroduced 'population' on the Estonian island of Hiiumaa, and reintroduction sites in Germany, are not shown; European mink were last confirmed in mainland Estonia in 1996, and disappeared from Germany in the nineteenth century.*

Three main factors have contributed to the decline of the European mink: habitat loss/degradation, over-exploitation and the effects of the alien American mink. Extensive research has revealed that the particular set of factors and their relative importance in the decline of this species has differed over time and among regions (Maran and Henttonen, 1995). The role of the alien American mink, has however been and continues to be the key-factor.

### American mink and EU Regulation on Invasive species

The management of the American mink is of utmost importance for the European mink survival. Therefore the regulation of the American mink in the framework of the [EU Regulation 1143/2014 on Invasive Alien Species](#) is critical. To get the species into the list of Invasive Alien Species of Union concern, which is the core of the regulation, the risk-assessment has to be prepared. For that purpose an informal [international working group](#) was established consisting of 26 mink experts from all over the EU and also from outside.

The inclusion of the American mink into the list is a highly political issue. Several countries with extensive fur-farming operations are opposing the listing despite the fact that the risk-assessment does require prohibition of the mink-farming, but only its regulation in the Union level. This is required to prevent shifting of farming from one EU country to another (usually with weaker farming regulations, but richer in biodiversity), resulting in loss of local biodiversity. The prepared assessment was submitted to the Commission in 2017. Unfortunately in early 2018 European Commission decided to postpone any update of the list until 2019. This is very unfortunate as such a delay will result in the likely invasion of the American mink into the Danube delta (Romania) and in depletion of the most viable European mink population there.

### Captive breeding and reintroductions

To keep the species from extinction, several *ex situ* operations have been developed in the past decades. In 1984, a captive breeding program was started at Tallinn Zoo, followed by the establishment of a formal EEP (in EAZA's framework) in 1992. As of December 2017, there were 214 European mink in captivity under the EEP program (105 male; 108 female; 1 unknown), all of which come from 22 founders. Nine countries now participate in the program (Estonia, the Czech Republic, Finland, France, Germany, Latvia, the Netherlands, Poland and the Slovak Republic), totaling 14 institutions in specialized breeding centers.

Already in the eighties, captive born European mink were released back into the wild (Russia, Kuril Islands; results have remained unclear or unknown). The first more coordinated and analyzed reintroductions, however, took place on an Estonian island in 2000 (after the removal of American mink). In 2006 and 2008, Germany and Spain reintroduced captive bred minks in the wild as well. The past 17 years many experience was gained and extensive research was done both on captive breeding as well as on reintroductions. Due to different circumstances, the results of reintroductions are variable. Therefore, different actions or precautionary measures have to be taken into account in different countries or areas.



Captive born European mink, Tallinn



Release of captive bred European mink in Estonia

## Conservation activities for European mink in 2017: summary per country

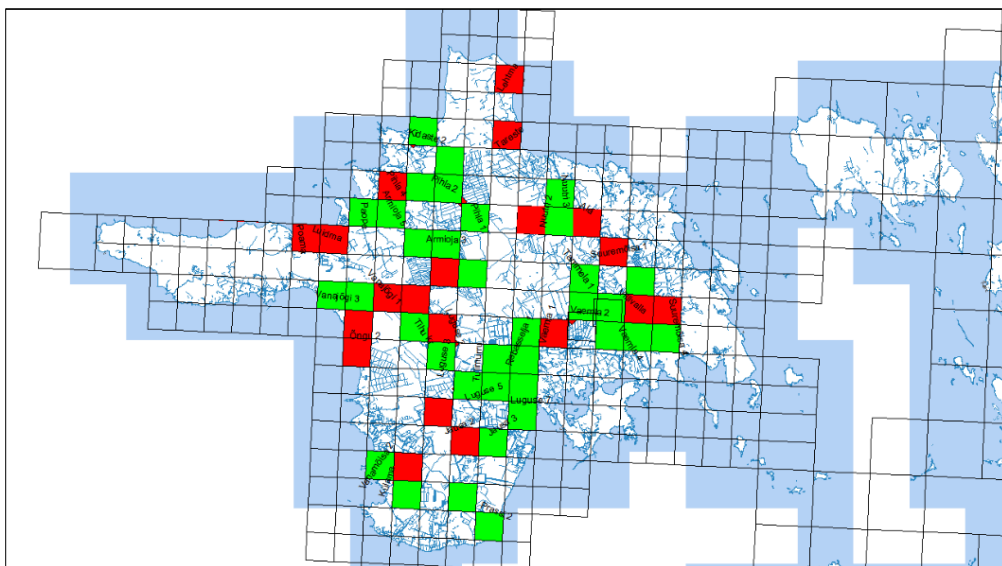
### Estonia

Text by Tiit Maran, director Foundation Lutreola



The captive breeding program in Tallinn Zoo resulted in the first reintroductions in the wild on the Hiiumaa island in 2000 (after first removing the American mink). In the past 16 years, almost 600 mink have been released and monitored extensively on Hiiumaa. In 2017 it was decided not to release more mink from Tallinn Zoo. This will allow to evaluate how well the wild population is surviving without any support from captivity. Therefore, there was only one real *in situ* action in 2017: the regular monitoring of the status of the European mink on Hiiumaa Island. This is done since 2000 in the following methodology:

- winter track census** – provides provisional information about the status of the population. In recent years this monitoring has not been conducted due to lack of snow cover;
- spring live-trapping** – provides information about the health and the sex ratio and the ratio between captive and wild born animals. Life-trapping in 2017 resulted in 9 caught mink, four of them were wild born, four were captive born and one mink escaped from trap. 7 mink out of 9 trapped mink were males.
- summer track counting in selected plots in mink habitats** – provides information about the distribution and relative abundance. Summer track counting in 2017 resulted in 63,6% of 55 plots with mink tracks. This was slightly less than in 2016 (69,1%; green plots on the map are identified mink tracks; red plots are not identified minks tracks).



The population in the Hiiumaa Island after winter was assessed to be of the same size as in 2016: 38-80 individuals (based upon data from the different monitoring methods, plus additional ad hoc data received during the year). Considering summer breeding, the prediction of the autumn abundance exceeds 150 individuals.

### Conservation breeding in Tallinn

In 2017, the Species Conservation Research Lab at Tallinn Zoo launched a small DNA lab. This made it possible to start a new process: collection of DNA samples from all European mink in the Tallinn breeding facility.

According to the breeding plan, Tallinn was supposed to get offspring from 12 females, some of them relatively old ones. The likelihood to get litter from those was very low, but due to the female genetic value, worth of trying. Nine females delivered 35 young (12.23). Unfortunately none of the old, genetically valuable females delivered young. Although the European Union Structural Funds funded a new European mink breeding facility at the Research Lab in Tallinn Zoo, the construction was delayed by various formal and financial reasons. The construction is now scheduled to be completed for the end of 2018.

### Research in Estonia

In 2017, foundation Lutreola got financial support to try to evaluate the genetic diversity of the forming European mink population in Hiiumaa Island and to compare it with the genetic diversity present in the captive population in Tallinn. The study is important, as since the beginning of the release only the mink with low genetic value have been released in Hiiumaa Island. In this way, the valuable genes will not be flushed out of the captive population. One might think that, due to the release of mink with low genetic value, the population on the island is likely to have far less gene diversity than in captivity. The preliminary results were somewhat surprising, indicating that there are no substantial differences between genetic parameters of the captive and wild population. However, some markers showed a lower number of alleles in the wild population. This means genetic management of the island population is merited.

In total, 22 samples from Hiiumaa Island and 86 samples from the Tallinn Zoo captive population were studied and 15 DNA markers were used (2 mitochondrial and 13 nuclear markers).



The new DNA lab in Tallinn



### Romania

Calin Hodor & Dan Traian Ionescu, Wildlife Management Consulting LTD



Due to constant pressures, the European mink is the most endangered carnivorous species in Romania. Factors effecting its survival are isolation from other populations, human development, disturbing tourism, lack of direct conservation measures and the presence of the American mink.

Nevertheless, in the Danube Delta a population of 1000-1500 European mink remains. According to IUCN this population "is clearly the most viable in the world".

There is information that European mink also remain in several valleys of the Carpathian Mountains. However, field studies didn't produce any solid evidence up to date. Since the presence in the Carpathians is still very likely, future field studies must be carried out in this area.



European mink in Romania (Daniel Petrescu)

### Fur farming

In the last years the fur farming companies from the Netherlands have moved some of their assets in Romania. Due to a very permissive legislation regarding this industry and cheap labour, there are signs that the amount of fur farms will increase in the future. There are proven signs of the presence of American mink in the wild, close to the new established fur farms, shortly after starting the operational phase and this will create great impacts on the small populations of European mink in the Carpathians.

### Goals for 2018

The goal of 2018 is to create a Romanian European-mink Working Group with the support of Small Carnivore TAG of EAZA, in order to gather the interested experts in the conservation of this species. We hope that this will generate interesting project ideas in the near future.

## France

Text by Maylis Fayet and Julien Steinmetz, French national agency for wildlife (ONCFS), French Conservation Plan for European Mink; Pierre Jean Albaret, Veterinary of Zoodyssee, French European Mink breeding centre; Emmanuel Mouton, Director of Calviac zoological reserve.



France is one of the few countries which still have wild populations. 2017 was an important year for European mink in France because the species was just classified as “critically endangered – CR” in the IUCN National Red List. After two national restoration plans (1999-2003 and 2007-2011), French national authorities have decided in 2014 to run new conservation actions, focused on two priorities:

### 1. Evaluate the European mink population in France

A monitoring program based on 505 trapping campaigns between 2016 and 2019. Until this day, 153 survey campaigns were conducted, leading to the catches of 3 European mink (2 males and 1 female) in the Charente and Charente-Maritime departments. These first results are confirming that the core population may now be located in the northern part of the historical range; probably already disconnected from the Spanish population.



European mink caught during one of the survey campaigns

### 2. Implement control strategy against American mink

This is based on a monitoring network and the targeted elimination program aims to protect the last areas with European mink populations in France and Spain. The control strategy is based on a mink rafts network deployed at the edge of the distribution areas of the American mink. In 2016 and 2017, new punctual data were found outside the known distribution area. This indicates that colonization of American mink is still an undergoing process.



Implementing mink rafts in the Dordogne

Furthermore, an ambitious breeding program is conducted in two Zoos: “Zoodysée” and “Réserve Zoologique de Calviac”. Fourteen European mink (from Estonia’s population) are used to start this breeding program, but until today no cubs were born. The main goal of this program is to translocate European mink for enhancing French populations and avoiding local extinction.

Zoodyssee breeding centre



## Germany

Due to several (personal) circumstances, a review of the actions for European mink in Germany could not be added to this first newsletter. The next issue however will summarize German conservation action.

## Russia

*Text by Tiit Maran, with input from D. Skumatov*

There have been interesting developments in the Russian Far-east and North Caucasus (both actually coming from 2016, but with meaning for 2017 and 2018).

On August the 6<sup>th</sup> 2016, our colleague Vladimir Katchanovsky, living in Caucasus, reported via Facebook about [trapping a European mink in his back yard](#). The DNA sample of this individual was sent to the Conservation Research Lab in Tallinn. The animal itself was sent by Russian Authorities of the Ural region to Dr. Natalia Kiseleva. On October 16<sup>th</sup> 2017 Vladimir Katchanovsky by accident caught a second European mink and DNA of this animal is also on its way to the Tallinn Research lab. These are the most recent evidences about the European mink surviving in the north of Caucasus. Further studies can only been done with support in the form of good trail cameras.



*Picture from camera-trap in Kunashir Island*

European mink were released into the islands Kunashir and Iturup during the second half of 20<sup>th</sup> century by Dr. D. Ternovsky. So far opinions and evidence about the results of these releases have been conflicting and unclear. Therefore, the new deputy director in the protected area, Jevgeni Jevgenevits Kozlovski set up trail cameras on the Kunashir Island to monitor mink habitat. In December 2016 the cameras delivered two images proving the presence of the European mink in Kunashir Island. There is however no information about the status of European mink in Kunashir. For further survey financial support is needed.

## Spain

*Text by Madis Podra, Life Lutreola Spain project team & Ministry of Agriculture, Food, and Environment*



A small population of the European mink is remained in northern Spain. Less than 500 individuals occupy fewer than 2000 km of rivers in five Autonomous Communities: Basque Country, Navarre, La Rioja, Castile and León and Aragon. Considerable effort has been done for the European mink conservation since the 1990-s: population monitoring, control of the American mink (within the range of the native mink and around) and habitat restoration (mostly Navarre and Basque Country) can be named. The survival of the species clearly depends on the conservation activities, especially on the control of American mink.

In 2017, many important events took place for the conservation of European mink in Spain. Due to the severe decline in the population during the last years, the European mink was declared as a species in “Critical situation” and the European mink Working Group meeting took place thereafter, to define the necessary actions to be taken to improve its conservation status.

### *Conservation breeding in Spain*

The ex-situ breeding program in Spain was successful in 2017: eight litters were born in the National captive-breeding program with 23 cubs in total. The results improved the demography of the population and its overall viability significantly. Breeding took place in three different centres: El Pont de Suert, FIEB Foundation and a small centre in Álava. Other centres and zoos participate in the program, by keeping mostly surplus animals.



*European mink pups born in Spanish captive-breeding centre*



*European mink in pre-release enclosure, Spain*

#### *In situ situation*

2017 was the 4<sup>th</sup> year of the on-going project [LIFE LUTREOLA SPAIN](#) and some promising results were achieved.

The use of the mink rafts method for the removal of American mink can be considered successful in several rivers. For example, the recently established population in Ebro river basin in the provinces of Alava and La Rioja (core area for the European mink), was eliminated – this gives new hope for the native mink that remain in the area in low numbers. The mink raft method is increasingly used now in other territories (Castile and León, Navarre or Cantabria).



*European mink habitat in La Rioja, Spain*

Two experimental releases were carried out with captive-born individuals: population reinforcement in Basque Country (Leizaran river, Gipuzkoa province) and assisted colonization in the territory of Aragon Autonomous Community (upper-course of Aragon river).

In 2018, continuation of release operations, and implementation of monitoring network for the European mink and eradication/prevention of the American mink, will be the most important issues in the project LIFE LUTREOLA SPAIN and in other territories in Spain.



*Raft set for detection of the American mink*

## Long-term management

Although the cooperation between European countries on the conservation of European mink was intensified the past years, even further action and management is needed to keep the species from extinction in the long run. Therefore, a Long Term Management Plan (LTMP) for European mink was developed in 2017 (in Ploiesti in Romania). A short summary of the LTMP follows.

### Summary LTMP

In the past, the Western and Eastern in situ population of European mink were thought to be different subspecies. Currently however, based on historical distribution and molecular genetic data, the European mink is thought to be a panmictic species (Youngman 1982; Cabria et al. 2015). The current EEP population is descended from Russian (Eastern) founders. To increase the viability of the ex situ population, the aim of the EEP is to incorporate the Spanish, western, ex situ population in the breeding programme. Whether this will happen, is a political decision that still needs to be made in the future. This plan was nonetheless written under the assumption that will happen at a certain moment in the coming years.

The future roles of the European mink EEP are to:

- Maintain a genetically diverse, demographically healthy and behaviourally competent population as a back-up in case all wild populations of European mink go extinct.
- Encourage, support and endorse efforts aimed to restore or establish viable wild populations of European mink in Europe.
- Further integrate *in situ* and *ex situ* conservation activities.
- Be a flagship species and provide conservation education messages for the ecologically important small stream and river ecosystems in Europe.
- Educate zoo visitors about the plight of the European mink and the damage of invasive species in general and the American mink in particular.
- Support conservation research on the European mink and encourage public and research institutions to become involved in this.
- Lobby the EU and increase the awareness of other decision makers to produce legislation and policies that favour the conservation status of the European mink.

Conclusions for the EEP Population:

- The Western and Eastern ex situ populations will eventually be managed as one combined population under the umbrella of the EEP.
- The ex situ European mink population is demographically reasonably stable and planned to grow slightly in the coming years to a population size of 330 individuals. The EEP will investigate the unusual breeding behaviours of males.
- A larger number of breeding institutions is necessary for the EEP's long-term stability.
- To reach its genetic goal (to maintain a population with a potential genetic diversity of 97.5%), the EEP will work on:
  - Breeding the EEP population by mean kinship;
  - Obtaining new founders from any wild population;
  - Cryopreservation of sperm.
- To facilitate research in the future, the EEP will support biobanking on a large scale.
- Sub-populations of European mink will be organised to decrease costs and travel-time for European mink transfers.
- The EEP will continue to increase awareness to governmental decision makers and the general public.
- This population will be re-evaluated annually by the European mink EEP Coordinator and Species Committee.
- Afterwards, institutional breeding recommendations will be developed.

**Long-term Management Plan**  
for the  
**European mink**  
**(*Mustela lutreola*)**  
European Endangered Species Programme (EEP)



**EEP coordinator**  
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Elmar Fienieg and Kristine Schaad, EAZA Executive Office

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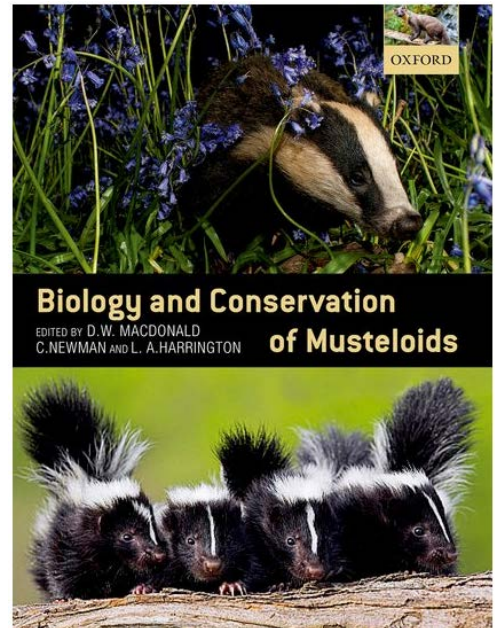


## Publications:

- In October 2017, Oxford Press published a book: [Biology and Conservation of Musteloids](#). It contains a chapter entitled: "European mink: restoration attempts for the species in the brink of extinction". This chapter reviews the actions for the European mink in Estonia and Spain. The chapter can be obtained in PDF from authors.
- In 2017 an article was published summarizing the reproductive breeding of the European mink in Tallinn Zoo and in EEP Program: Reproductive parameters of critically endangered European mink (*Mustela lutreola*) in captivity. DOI 10.1016/j.anireprosci.2017.03.019. This article provides information based on a large amount of data about the European mink reproduction.

### Summary of the article:

*Founding captive populations is often the last chance for saving endangered species from extinction. Ensuring successful reproduction is typically most critical for the maintenance of captive populations, with purposeful selection of individuals for breeding being one of the crucial aspects. Comparable cross-species data on the determinants of reproduction success are most useful for solving problems in captive species programs. In the present study, we provide an overview of a 20-year captive breeding program of the critically endangered European mink. The mating season starts in March, reaching its peak in the middle of April. The average gestation length was 43.8 days (mode 43), the mean litter size being 4.4 (mode 4). Litter size and cub survival were negatively correlated with maternal age but this effect was entirely due to the lower performance of the females over 4 years of age. Female body weight also showed a positive correlation with litter size, with the weight itself having increased by 10% during the 20-year period. We did not find any signs of a cost of reproduction: the number of litters the female had delivered earlier in her life did not have an effect on her litter size in the focal year. Beyond the effect of age and size, individual females did not differ in litter sizes. Consistently, we found the heritability of litter size to be low. We conclude that, when selecting females for breeding, there is little need to consider aspects other than genetic relatedness crucial for avoiding progressive inbreeding.*



This newsletter was compiled with the input of many dedicated European mink conservationists. We thank all of them for sharing their knowledge and experience!



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