

# The breeding in captivity of the European mink (*Mustela lutreola*).

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## Objectives

To know about the current situation of the European mink (*Mustela lutreola*), one of the most threatened mammals in Europe, from studies and data related to conservation, population (wild and captive) and causes of extinction. In addition, the research will focus on the effectiveness, results and difficulties of the recovery, conservation, breeding and release programs carried out in Europe, Spain and Catalonia. From this, some possible options will be evaluated to overcome the obstacles that the objective of saving the species is facing and if the programs applied nowadays are useful in the conservation of the European mink.

## European mink. Biology of the species

The European mink is a little semi-aquatic carnivorous mammal of the Mustelidae family, known for its brown "chocolate" coat, one of the main reasons for it being hunted, and a white spot covering both lips. Its habitats include riparian forests and humid zones. It has solitary habits and a crepuscular and nocturnal activity in which it travels along the fluvial courses. Is a polygamous species, with a seasonal polyestrus and only breeds once a year giving birth to about three to six pups. In wildlife these animals live about 5-6 years.

## Situation of the species

Until the end of XIX century it was very common and it was widely distributed around the whole continent, especially central and northern Europe. But in the XX century it disappeared from 20 countries and now only exists in about 10% of its initial distribution. Nowadays there are three isolated areas of population in: Russia, Romania-Ukraine and Western Europe (France and Spain) (Figure 1). In 2011 the IUCN (International Union for the Conservation of the nature) catalogued the European mink in the Red List as "Critically Endangered". This means that it's one of the most threatened mustelids, the most threatened mammal on the Palearctic (with Iberian lynx (*Lynx pardinus*) and one of the species most at risk of extinction in Europe.

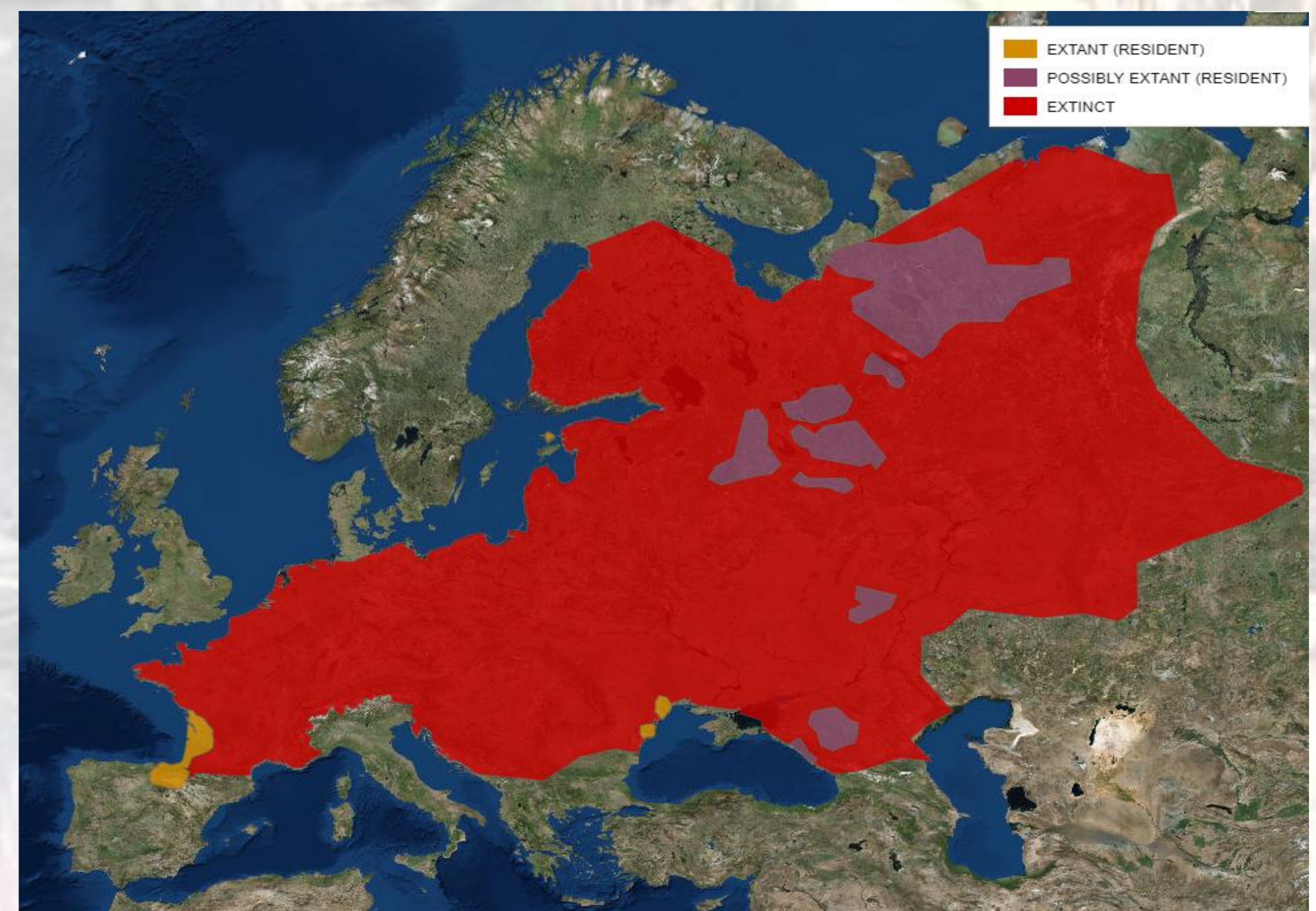


Figure 1: Geographic range of European mink. Historical distribution area (red), area where it is possibly still existent (purple) and confirmed existence area (orange). Source: IUCN.

## Conservation, breeding and recovery programs

Many European countries (especially in Estonia, Germany, Spain and France) carry out reproduction and environment action programs in the wild. These programs are in the European Endangered Species Programme (EEP), which started in 1992 with the goal of preserving 85% of heterozygosity of the initial population over 50 years. In Spain eight LIFE projects have been carried out since 2001 with actions based on: monitoring the population, captivity breeding program, control of the American mink, habitat recovery, health status control, releases and awareness of society. The LIFE project in Catalonia, carried out between 2002 and 2005, was based on the breeding program in the Wildlife Center of Pont de Suert and it still continues.

## Main complications on the recovery programs

In the *ex situ* reproduction the most important problem is the success of the breeding which has low results due to the high abnormal behaviour for mating shown by many captivity born males. This abnormal conduct is perhaps related with social stress of the conditions of growth in captivity. As well as the difficulties of controlling the American mink, the pressure of the fur trade to exclude this species from the Invasive Species List, can have a very severe effect on the control measures. The lack of genetic variability detected in the western population has started a discussion on if this population was introduced by human action or separated naturally from the rest of European population suffering a founding effect. Also, many programs present a lack of budget and human resources to be carried out.

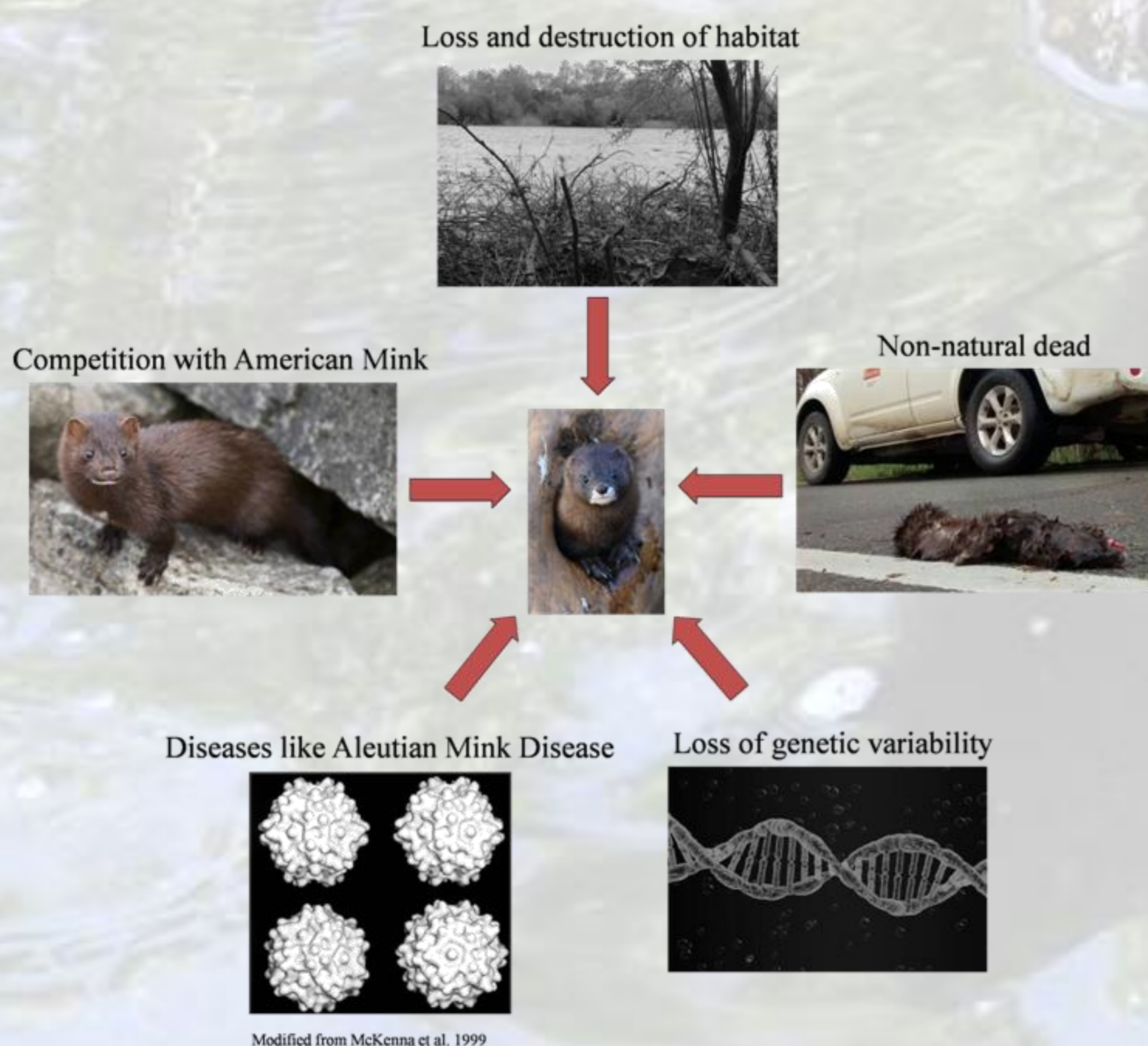
## Feasible solutions

Continue and increase the control and eradication programs of the American mink, monitoring the two mink species populations, constant number of releases in actual and new distribution areas, protect and recover the environment of this species, study the situation of ADV, pollution and genetic variability, promote the flux of genes between different populations, investigations into reproductive biotechnology as a future investment to improve the management of the species.

## Conclusions

Although the situation is critical, the efforts of conservation are the hope to save this species. Its essential that both *in situ* and *ex situ* actions have to be carried out jointly to success. The invasion of the American mink prevent the full recovery of the European mink, for this is important to maintain a captive population to help its repopulation, preservation and increase the wild population. In short, the actions have to be focused on the habitat and control of American mink, but in the long term it must continue working on the maintenance of genetic variability.

## Main causes of the european mink decline:



In all the regions that the European mink is present in wild, the population is quickly decreasing. The population in Spain, localized in the north, is estimated at about 500 specimens, human intervention is the primary cause of this decrease and in the last years the American mink has started to colonize the area. In Catalonia, observations of the European mink are rare, but its presence has been dated sporadically around the lower parts of the Ebro river and its delta, maybe coming from the upper basin of the river.