

## The European mink, *Mustela lutreola* – the light at the end of tunnel ...

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On a rainy June morning, some 15 years ago, three men in wet field outfits were walking along the bank of a small stream, flowing out from Tihu lake, in the centre of Hiiumaa Island (1000 km<sup>2</sup>) in Estonia. The men carried, in both hands, cages with European mink born in the Species Conservation Research Lab at Tallinn Zoo. In an area where water from a small ditch joining the main current formed a tiny sandy plateau, the cages were opened and the European mink had an opportunity to leave. I was one of these three in a wet field outfit and released a male mink nicknamed Vivaldi. Looking at Vivaldi, who was making his very first steps out into this unfamiliar world, I found myself thinking: "Such a tiny shy step for Vivaldi, but what an important move for his species". Then I thought: "Will it really be a success story and will we manage to establish a secure European mink population on this island?" I was not sure ....

Think about the European mink as a small beautiful wonder and as the warden of small streams and rivers. The streams in nature are like blood capillaries in our body – tiny, but more important than we realise. The large cannot exist without the small, but small rivers and their folk remain inconspicuous and their great value is often overlooked.

Today the European mink is the most critically endangered small carnivore in the world. In Europe, it is, no doubt, one of the most endangered mammals. The demise started long ago with habitat loss and overhunting. Later, the invasion of alien American mink from intensive fur farms into European river-basins put our stream-dweller, native mink everywhere into the imminent threat of extinction.

The European mink conservation in Estonia has a long history. The story started in 1986 with the first wild European mink was brought to Tallinn Zoo, and it found its right path in 1992, when the European mink EEP breeding programme was established. There has always been two story-lines in this story, the *ex situ* and the *in situ*. Like in any good story, the story-lines, though seemingly separate, are part of the one whole.

Fifteen years ago the story reached its first important milestone – the regular management of a captive population of 100 mink at Tallinn Zoo gave the opportunity to release the first captive born mink, including our Vivaldi, to the wild, in Hiiumaa Island. This was preceded by the eradication of the American mink there.

Since then the story has been proceeding like a mountain path - ups and downs in every curve. Small carnivores have a complicated life in the wild, with dangers looming in every corner, resulting in a very high mortality, which is even higher for released naïve captive born mink. We were doing anything possible to gain success against all odds. In some 15 years we were releasing more than 500 European mink in Hiiumaa Island and attempted all imaginable methods to decrease the annoyingly high mortality. We wanted to be sure that our monitoring gave us right data, so we advanced the ways to measure our results in the most reliable way. We knew that in the long-term the survival of the European mink in the island depended upon the attitude of islanders, so we worked hard on securing positive attitudes. Thinking of mink, think of running water – we collaborated with government institutions to find ways to improve the running water ecosystems. Did we know that we are doing the right thing? We were doing research, both *ex situ* and *in situ*, to

be sure. Should we be the only leaders in European mink conservation? Of course not, so we disseminated our experience to anybody interested.

Despite all of this, only a few mink were born in the wild and their overall population remained too low. The number of mink grew slowly – way too slowly and the wild population was not self-sustaining. This was extremely frustrating after all these years of intensive work.

In 2014, the change came. In fact, it was heralded already by the 2013-radiotracking study: the survival of released mink was remarkably high - around 70% of survival against earlier 30-or-less %. Then, the 2014-monitoring-data told us that the number of mink in the island had leapt up. More importantly, at least half of monitored mink were wild-born islanders. The tracks of mink found almost in every stream were even more encouraging. Still, we were afraid that it might be just a lucky year and could take a turn for the worst the next year. Thankfully this was not the case. In 2015 the mink were found almost everywhere, even in the most remote or unlikely streams, like a stream flowing through the largest village Kärdla, with buildings on both banks. The good health of the established population could also be seen by a few cases of mink entering into farms and killing hens – it was like in old days when European mink were common in Estonia.

Some 30 years has passed when this European mink story started and now finally there is a wild population away from deadly impact of the American mink in Hiiumaa Island - one guarantee against the extinction of this species.

Things are even better – Tallinn Zoo and Estonia are not the lone riders in European mink conservation any more. Other stories are developing on their own in Spain and Germany. Even more good news came in 2015 from the Steinhuder See (Lower-Saxony in Germany) European mink restoration project. The six-year European mink release project reached a remarkable milestone, with a trail camera catching a picture of a female European mink with young, the first wild-born European mink in Germany in over 150 years.

So, my dearest Vivaldi, there seems to be a light at the end of the tunnel for you and your kind...