# Post-release movements of captive-born European mink Mustela lutreola 

Lauren A. Harrington ${ }^{1, *}$, Madis Põdra ${ }^{2}$, David W. Macdonald ${ }^{1}$, Tiit Maran ${ }^{2,3}$<br>${ }^{1}$ Wildlife Conservation Research Unit, Department of Zoology, University of Oxford, The Recanati-Kaplan Centre, Tubney House, Abingdon Road, Tubney, OXON OX13 5QL, UK<br>${ }^{2}$ Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences, Kreutzwaldi 62, 51014 Tartu, Estonia<br>${ }^{3}$ Species Conservation Lab, Tallinn Zoological Gardens, Paldiski Road 145, Tallinn 13522, Estonia<br>* Corresponding author: lauren.harrington@zoo.ox .ac.uk<br>Endangered Species Research 24:137-148 (2014)

Supplement. Additional data on released captive-bred European mink Mustela lutreola

Table S1. Mustela lutreola. European mink released on Hiiumaa Island, Estonia, in 2000 to 2002. All animals were released in early summer (May and June), except juvenile mink (ca. 3 mo old) in 2000 that were released in September. T: number of generations in captivity; for enclosure type, L: large naturalistic enclosures, S: standard zoo enclosures (see 'Materials and Methods' in the main text for a detailed description); minS: minimum survival (d) (see 'Materials and Methods' in the main text). Fate is the status of the animal at the end of the study in August 2002. Dates are given as dd $/ \mathrm{mm} / \mathrm{yy}$. F: female, M: male. Asterisks indicate females that were pregnant

| ID | Sex | Age | Average T | Enclosure type | Dates tracked | No. days tracked ${ }^{\text {a }}$ | No. locations | minS ${ }^{\text {b }}$ | Fate ${ }^{\text {c }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | F | 1 | 1.00 | L | 29/6/00-6/8/00 | 34 | 40 | 38 | Lost |
| 2 | F | 1 | 1.50 | L | 29/6/00-16/7/00 | 15 | 19 | 17 | Predated |
| 3 | F | 1 | 1.50 | L | 30/6/00-3/12/00 | 44 | 49 | 156 | Alive |
| 4 | M | 1 | 1.50 | S | 29/6/00-23/11/00 | 50 | 56 | 630 | Alive |
| 5 | F | 1 | 2.25 | S | 30/6/00-16/7/00 | 16 | 20 | 16 | Dead (human) |
| 6 | F | 1 | 1.50 | S | 28/6/00-7/7/00 | 10 | 20 | 9 | Lost |
| 7 | M | 1 | 3.13 | S | 28/6/00-5/11/00 | 54 | 68 | 196 | Alive |
| 8 | M | 1 | 2.13 | S | 30/6/00-14/7/00 | 8 | 11 | 14 | Lost collar |
| 9 | M | 1 | 1.50 | L | 29/6/00-3/8/00 | 26 | 35 | 35 | Lost |
| 10 | M | 0 | 2.25 | S | 4/9/00-10/9/00 | 6 | 6 | 5 | Predated |
| 11 | M | 0 | 2.25 | S | 4/9/00-7/9/00 | 3 | 4 | 3 | Dead (human) |
| 12 | F | 0 | 2.25 | S | 4/9/00-11/9/00 | 8 | 9 | 7 | Predated |
| 13 | F | 0 | 2.25 | S | 4/9/00-6/9/00 | 3 | 3 | 3 | Lost |
| 14 | M | 0 | 2.25 | L | 4/9/00-10/12/00 | 50 | 53 | 100 | Lost |
| 15 | M | 0 | 2.25 | L | 4/9/00-17/9/00 | 12 | 13 | 12 | Dead <br> (unk) |
| 16 | F | 0 | 2.25 | L | 4/9/00-1/10/00 | 27 | 30 | 27 | Predated |
| 17 | F | 0 | 1.88 | L | 4/9/00-3/3/01 | 62 | 63 | 1180 | Lost |
| 18 | F | 2 | 7.48 | S | 17/06/01-02/07/01 | 14 | 15 | 15 | Lost collar |
| 19 | M | 1 | 3.25 | S | 28/06/01-19/07/01 | 21 | 47 | 21 | Lost collar |
| 20 | M | 1 | 3.25 | S | 28/06/01-01/07/01 | 4 | 29 | 3 | Lost collar |
| 21 | M | 1 | 2.38 | L | 18/06/01-20/08/01 | 38 | 39 | 1020 | Lost |
| 22 | F | 1 | 1.50 | L | 20/06/01-27/06/01 | 5 | 6 | 7 | Lost collar |
| 23 | F | 2 | 2.38 | S | 19/06/01-15/07/01 | 26 | 27 | 26 | Lost |
| 24 | M | 1 | 6.21 | L | 17/06/01-18/08/01 | 50 | 51 | 62 | Lost collar |
| 25 | F | 1 | 2.56 | S | 28/06/01-02/07/01 | 5 | 7 | 4 | Predated |
| 26 | F | 2 | 1.88 | S | 19/06/01-25/06/01 | 6 | 7 | 6 | Lost |
| 27 | M | 2 | 1.50 | L | 19/06/01-04/07/01 | 15 | 16 | 15 | Lost |
| 28 | F | 1 | 2.25 | S | 18/06/01-26/06/01 | 5 | 6 | 8 | Predated |
| 29 | M | 1 | 1.50 | S | 28/06/01-25/08/01 | 59 | 199 | 198 | Alive |
| 30 | F | 1 | 7.09 | S | 16/06/01-03/07/01 | 17 | 19 | 17 | Predated |
| 31 | M | 1 | 7.09 | S | 13/06/01-20/06/01 | 8 | 78 | 7 | Lost collar |
| 32 | F | 1 | 7.09 | S | 13/06/01-23/06/01 | 10 | 82 | 10 | Predated |
| 33 | M | 1 | 1.88 | L | 17/06/01-25/08/01 | 67 | 68 | 69 | Lost |
| 34 | M | 2 | 1.75 | S | 20/06/01-25/08/01 | 64 | 633 | 146 | Alive |
| 35 | M | 1 | 6.87 | S | 16/06/01-04/07/01 | 18 | 20 | 650 | Lost |
| 36 | M | 1 | 2.56 | S | 28/06/01-19/07/01 | 21 | 112 | 21 | Predated |
| 37 | F | 1 | 1.88 | S | 18/06/01-26/06/01 | 7 | 8 | 8 | Lost |
| 38 | M | 1 | 6.87 | S | 12/06/01-24/06/01 | 12 | 16 | 11 | Predated |
| 39 | F | 1 | 1.75 | S | 19/06/01-05/07/01 | 13 | 15 | 16 | Lost collar |
| 40 | F | 1 | 7.09 | S | 12/06/01-27/06/01 | 14 | 17 | 15 | Lost collar |
| 41 | F | 2* | 2.25 | S | 04/05/02-09/05/02 | 6 | 6 | 5 | Lost collar |
| 42 | F | 1* | 1.94 | L | 27/05/02-15/08/02 | 41 | 57 | 305 | Alive |
| 43 | F | 4 | 1.75 | S | 27/05/02-05/06/02 | 9 | 9 | 9 | Predated |


| ID | Sex | Age | Average <br> T | Enclosure <br> type | Dates tracked | No. days <br> tracked $^{\text {a }}$ | No. <br> locations | minS $^{\text {b }}$ | Fate $^{\mathrm{c}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :--- |
| 44 | F | 1 | 1.50 | S | $27 / 05 / 02-09 / 07 / 02$ | 30 | 30 | 38 | Predated |
| 45 | F | $2^{*}$ | 2.13 | S | $15 / 05 / 02-22 / 05 / 02$ | 8 | 8 | 7 | Dead <br> (human) |
| 46 | F | 4 | 1.75 | S | $27 / 05 / 02-15 / 06 / 02$ | 18 | 18 | 19 | Dead |
|  |  |  |  |  |  |  |  |  | (disease) |
| 47 | F | 1 | 1.75 | S | $27 / 05 / 02-02 / 06 / 02$ | 7 | 7 | 6 | Predated |
| 48 | F | $2^{*}$ | 2.50 | S | $04 / 05 / 02-09 / 05 / 02$ | 6 | 6 | 5 | Predated |
| 49 | F | $1^{*}$ | 2.25 | S | $15 / 05 / 02-27 / 05 / 02$ | 12 | 12 | 12 | Lost |
| 50 | F | $1^{*}$ | 2.25 | S | $04 / 05 / 02-11 / 07 / 02$ | 54 | 54 | 45 | Lost collar |
| 51 | F | $2^{*}$ | 2.25 | S | $04 / 05 / 02-05 / 05 / 02$ | 2 | 2 | 1 | Predated |
| 52 | F | 1 | 2.63 | S | $29 / 05 / 02-11 / 06 / 02$ | 13 | 13 | 15 | Predated |

${ }^{\text {a }}$ Number of days for which location data are available (not necessarily the same as the period over which the animal was tracked in days); note that subsequent live-trapping indicated that some animals survived ( minS ) for longer than they were monitored
${ }^{\mathrm{b}}$ Calculated from biannual live-trapping (data from Table 2 in Maran et al. 2009). These data underestimate survival of animals that were lost and did not survive the following year, or evaded capture in the following yearly live-trap census
${ }^{\mathrm{c}}$ For known dead animals (that were not predated), cause of death is indicated in brackets, unk: unknown; animals known to have been predated are listed as such. 'Lost' animals are those whose status and location are unknown; 'Lost collar' are animals that were known to have lost their radiocollar (i.e. the collar was retrieved); these individuals are also of unknown status and location (it is also possible that other 'lost' animals have lost their radiocollars)

## LITERATURE CITED

Maran T, Põdra M, Põlma M, Macdonald DW (2009) The survival of captive-born animals in restoration programmes-case study of the endangered European mink Mustela lutreola. Biol Conserv 142:1685-1692

