

The impact of a man made habitat on the density and habitat use of American mink (*Mustela vison*)

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1. Introduction

The American mink (*Mustela vison*) was first introduced into Iceland in 1931 for fur farming. Soon it escaped and now occupies most of the Icelandic lowlands. The mink is primarily found in habitats associated with water and is thought to be an opportunistic generalist in food choice. Minks are believed to live solitary lives, defending home ranges against other minks of the same sex [1].

We estimated the impact of a new causeway crossing the fjord Kolgrafafjörður in the Snæfellsnes peninsula, W-Iceland, on the local population density and land use of feral mink, following the expression of concerns about a possible increase in mink numbers as the causeway might be ideal for mink dens.

2. Methods

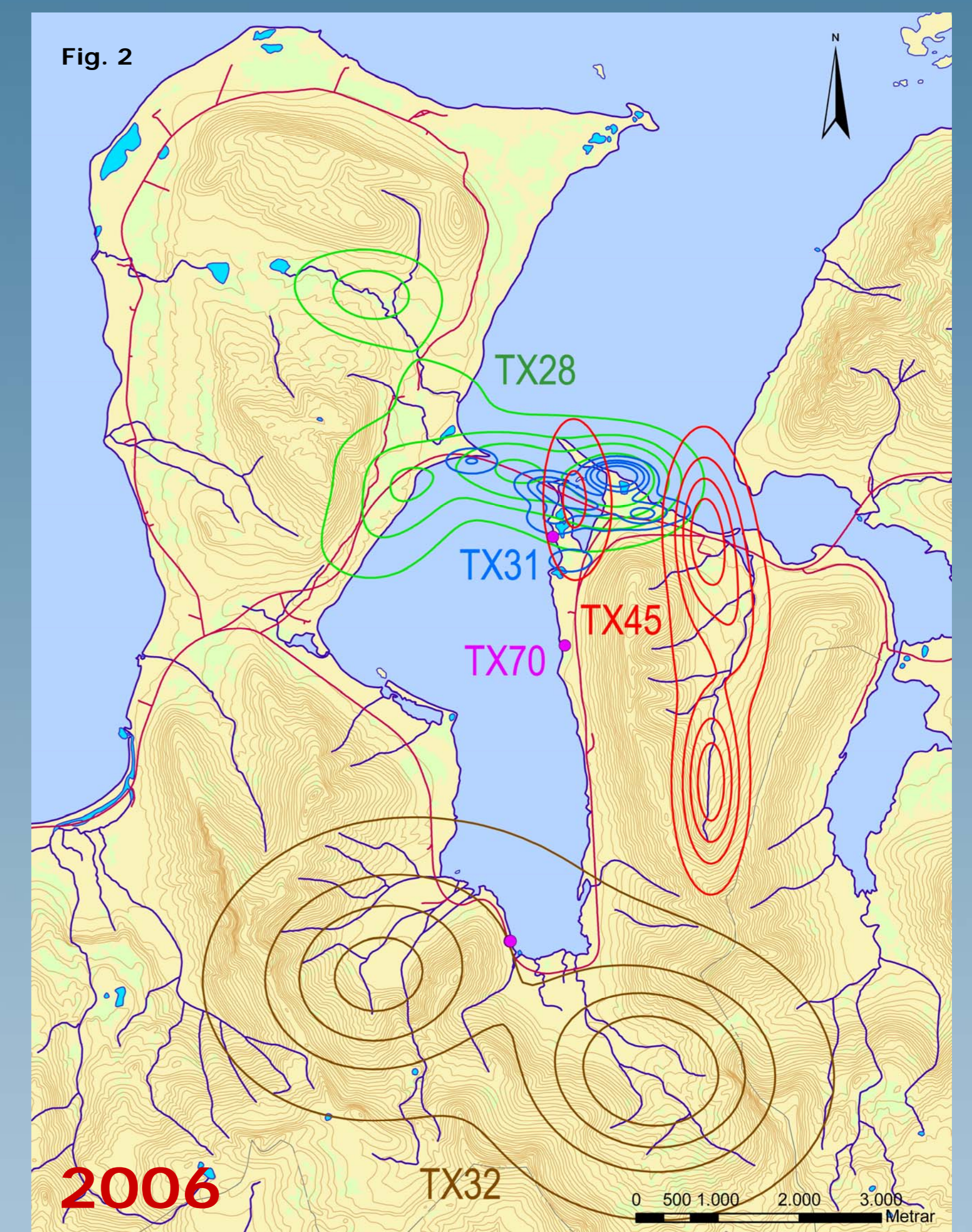
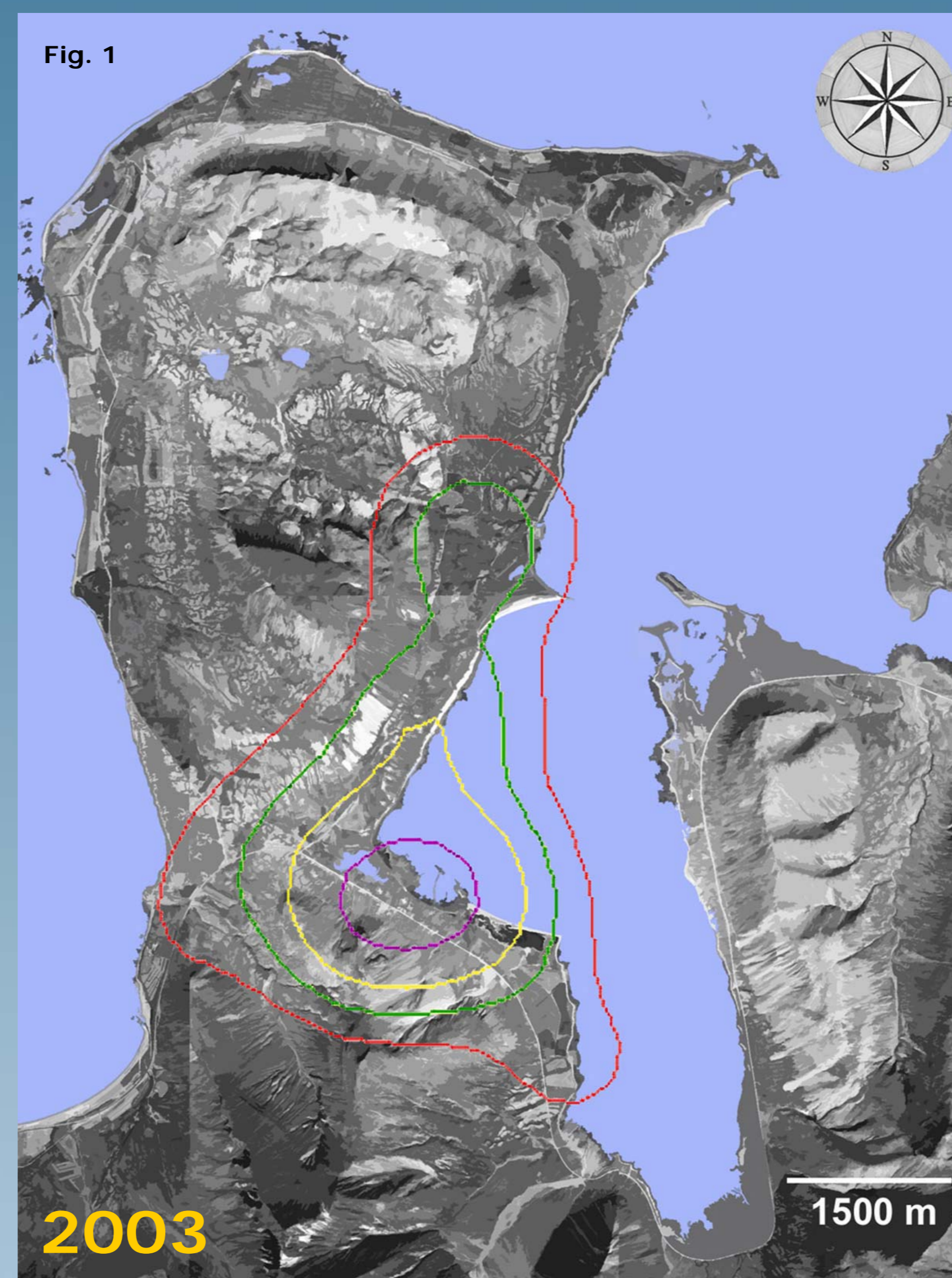
Mink habitat in the study area consists primarily of rocky shores with a few minor streams. Birdlife, especially seabirds, is relatively abundant. The causeway is covered with big boulders and rocks on both sides.

The population density and habitat use of mink were studied by tracking mink tagged with intraperitoneal radio transmitters before and after the construction of the causeway, which took place in the period from the end of the year 2003 until mid-year 2004. Home ranges were calculated using the fixed kernel method with *href* smoothing [2].



Fig. 1. Land use of the only mink occupying Kolgrafafjörður in autumn 2003, before the construction of the causeway. The isopleths represent 25, 50, 75 and 95% kernel probability estimates.

Fig. 2. Land use of 4 minks (TX28, TX31 and TX45 were resident) in Kolgrafafjörður in autumn 2006, after the construction of the causeway. The isopleths represent 25, 50, 75 and 95% kernel probability estimates. All resident minks were using the causeway and surrounding area. (Map printed with license © L07090030).



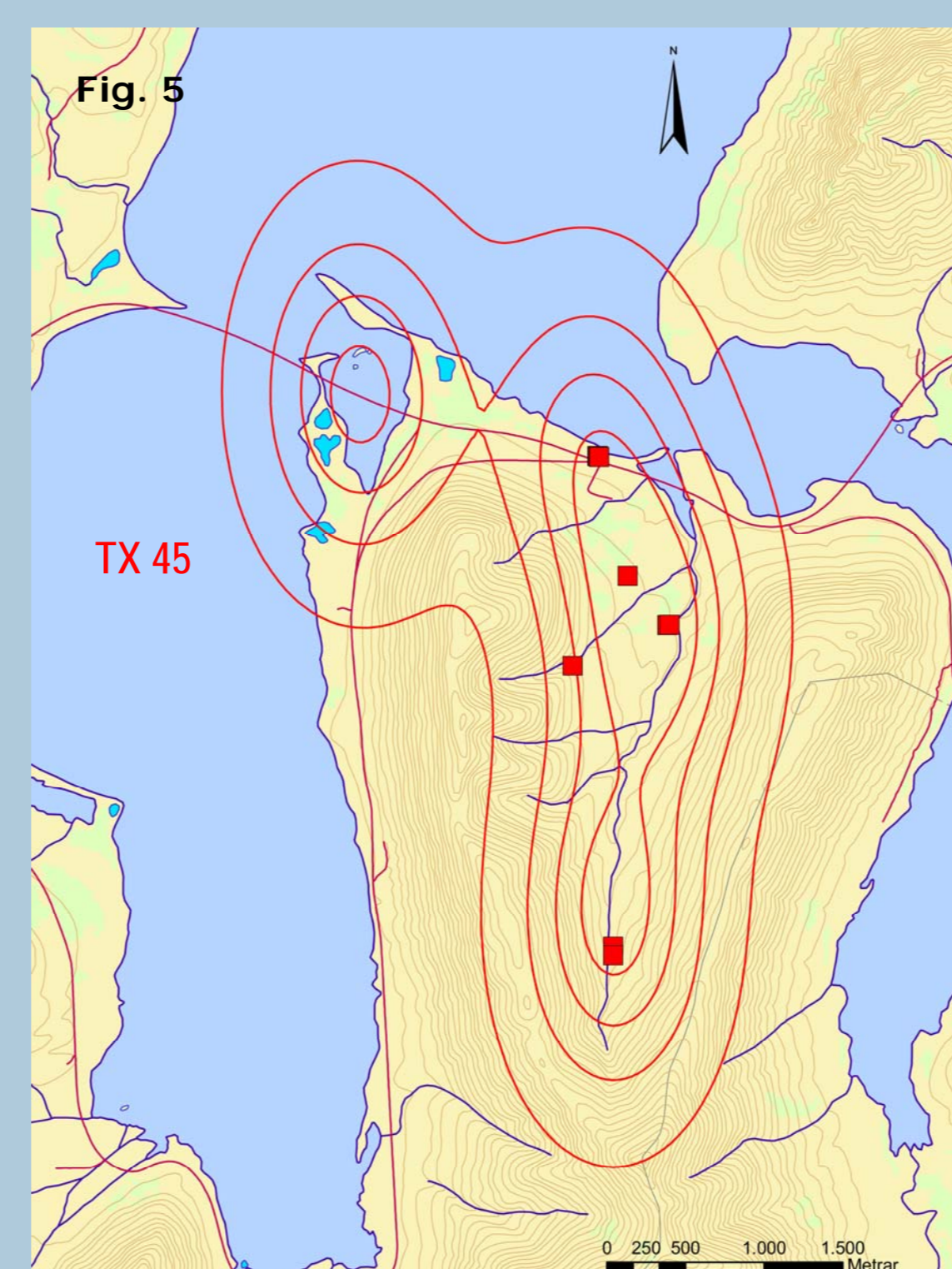
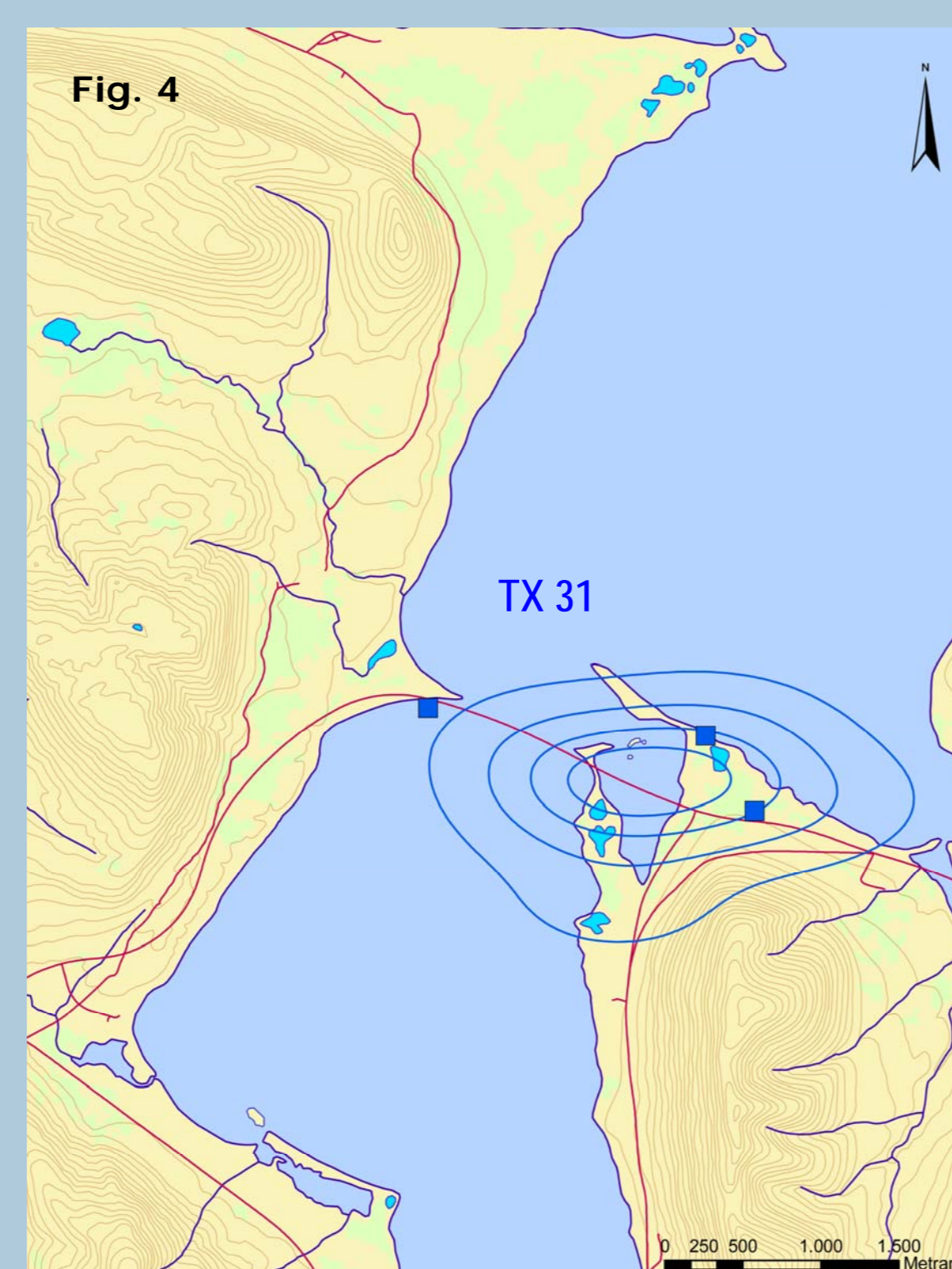
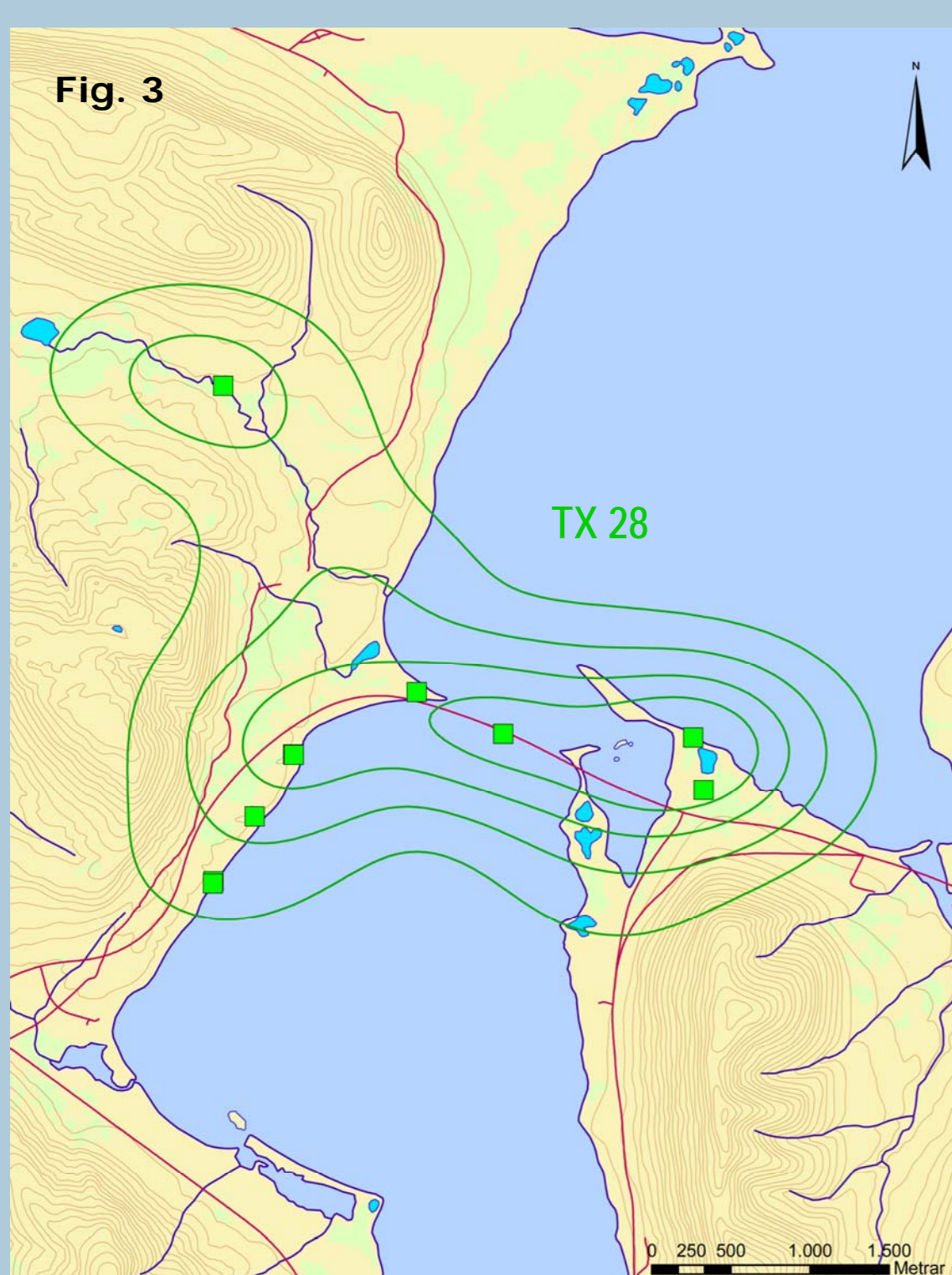
3. Results

In autumn 2003, only one mink (male) occupied the area. Its home range was limited to the western coast of the fjord. The part of the fjord in which the causeway was to be built was not a crucial part of its territory (Fig. 1).

In autumn 2006, approximately two years after the construction was completed, at least three mink (two males and one female) were resident in the area. All of them

had home ranges overlapping the causeway. The area used by the single mink in 2003 was apparently not used by any mink in 2006 (Fig. 2).

The causeway did not seem to be an important area for dens in this study ($\chi^2 = 18.9$, $p < 0.001$). However, including only radio fixes when mink were active in the analysis, showed that the causeway or part of it was included in the active core area of all three radio tagged mink in 2006, indicating an importance when foraging (Figs. 3-5).



Figs. 3-5. Kernel probability estimates (25, 50, 75 and 95%) calculated from active locations only, indicating important areas when foraging. Squares represent dens. (Map printed with license © L07090030).

4. Discussion and conclusions

Even though it can not be concluded with certainty that the increase in mink numbers in autumn 2006 compared to 2003 is due to the new causeway, the change in land use observed strongly indicates an importance of the causeway and its surroundings for mink.

The foraging behaviour of mink in the area suggests that the causeway may provide more abundant food resources, where road kills and shelter for birds may play an important role. This change in land use of mink in Kolgrafafjörður reveals the ability of this species to respond quickly to changes in its environment and underlines its opportunistic behaviour.

See Menja *et al.* 2007 [3] or www.nsv.is for details.

5. Acknowledgements

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6. References

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