

Science for Environment Policy

Presence of invasive American mink shifts the sex ratio of the European polecat across Europe

The invasion of the American mink (*Neovison vison*) is linked to a shift in the adult sex ratio of the native European polecat (*Mustela putorius*) across its entire range, a new study has discovered. Through aggressive competition, the American mink has decreased the number of reproductive female European polecats. This is the first study to identify such an effect upon a native species across its entire range in Europe.

Invasive species pose one of the largest threats to the world's biodiversity. They can enter new habitats through several avenues. In the case of the invasive American mink, many escaped from fur farms or were purposefully released in Europe in the early/mid-20th century. The species is now found in 30 European countries where it can have many negative effects on native species, such as outcompeting them for resources like food or territory.

However, they can also have more subtle effects. In particular, it has been observed at the local level that the presence of the invasive mink causes a shift in the adult sex-ratio of the native polecat, resulting in fewer female polecats and thus a ratio skewed toward males. The mink is more dominant, larger and aggressive than the female polecat, and is linked to an increase in female polecat mortality through different forms of competition. The female polecat can starve from being outcompeted for food resources or be killed during direct competition. However, the number of polecat males remains more stable. This skewed ratio can disrupt the mating system, dispersal and ultimately population size of the European polecat.

While these results have already been found at the local level, this study investigates if this correlation applies across all of Europe — the first study to investigate the effect at such a large scale. The researcher combined 71 datasets from 21 countries, from throughout the 20th century up to recent years, which included 10 847 polecats. Data on the polecats came largely from collections made from hunting, live trapping and road kills. While some of these methods may be biased toward males, the large dataset allowed the researcher to control for those differences.

The study found that the presence of the American mink was indeed correlated with a decrease in European polecat females across their entire geographical range. Whereas the range of natural variation (i.e. in datasets without American mink) was -56 to +80 (% adult males - % adult females, mean = 29), all polecat datasets in sympatry with American mink were male biased (range +9 to +90, mean = 43).

The reduction of females in the European polecat population can cause several conservation concerns, as it limits the overall population by offsetting breeding systems. Additionally, competition among males for females will increase. The author notes that a decrease in females can lead to more aggressive males and higher harassment of females, which can cause further female mortality — creating a situation with the potential to drive the species to extinction.

The researcher suggests that the indirect effects of invasive species on native population sizes, such as changes to adult sex-ratios, should be recognised as key issues in conservation. For example, future lines of research or [alleviation](#) before planning the introduction of new females, should guarantee removing the American mink.

The researcher notes that because controlled experiments at this level are extremely difficult, there is arguably some ambiguity over whether the mink is the precise factor affecting the polecat. However, they say it is still possible that there is a substantial effect. The researcher says sex-ratio variations over time could be monitored as a sentinel parameter in population conservation.



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