



Sterile squirrel could restore biodiversity

The grey squirrel, native to North America, is in danger of wiping out the red squirrel in the UK. This invasive species is currently being tackled by means of hunting, poison and traps – to no avail. But the grey squirrel could successfully be beaten back using a gene drive.

This claim is made by PhD student Nicky Faber in Scientific Reports. In a gene drive a wildlife manager releases grey squirrels into the wild that have been genetically modified to produce infertile offspring. 'Grey squirrels are more aggressive than red squirrels, they survive the winter better and they carry a virus

'Current pest control methods with poison and traps are inhumane and cause a painful death'

that is fatal to red squirrels,' says Faber. A successful gene drive,

in which you might release several hundred genetically modified squirrels into the wild, entails two important steps. Extra DNA is introduced

into the squirrels' female reproductive gene, which switches it off. According to classic genetics, the offspring then have a 50 per cent chance of inheriting this blocked gene. So a second adjustment – CRISPR-Cas scissors – ensures that the blocking gene gets into both copies of the chromosome, so that 100 per cent of the offspring get the blocked gene.

Inhumane

Is it safe and ethical to introduce this kind of gene drive? In the interests of safety, Faber built a brake on the gene drive into her model. That makes it possible to switch off the CRISPR-Cas scissors so that the blocking gene regains a 50 per cent chance of being passed on. 'Anyway,' says Faber, 'pest control methods in current use, with poison and traps, are inhuman and cause a painful death. If you use the gene drive, the animals become sterile so that we get the invasive species under control effectively and maintain biodiversity. Of course, we must test whether this really can be done in real life.' AS