Is there a case to allow snares to be used to undertake scientific research on foxes in Scotland?

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Background

The National Anti Snaring Campaign asked me to assess whether there is a case to permit the use snares to catch foxes for research purposes in Scotland.

In considering this issue, I have reviewed how often snares have been used to catch foxes for research in Scotland, the animal welfare implications of using snares to catch foxes for research, the ethical implications of using snares for research, and whether any study that used snares to catch foxes for research would be likely to meet the ethical standards for publication in a reputable scientific journal.

How often have snares been used for scientific research in Scotland?

To assess the need to use snares to undertake research on foxes in Scotland, I considered how often they have been used to catch foxes for research hitherto. Since fox snares only came into use in the 1960s, following the development of small-diameter steel cables (Harris 2022), I have only considered research published from 1970 onwards.

There is a long history of scientific research into all aspects of fox behaviour, biology and ecology in Scotland. I have listed the first hundred papers published since 1970 that came up in a search on Google Scholar (see Appendix). I have only included peer-reviewed primary studies, i.e., review papers were excluded. While most of the studies listed in the Appendix were based primarily or exclusively in Scotland, I have included studies where data collected in Scotland made a significant contribution to a wider British or UK study. While not comprehensive, this list of peer-reviewed research provides an overview of the types of studies undertaken on foxes in Scotland over the past 53 years, and how often snares were used to catch foxes for research.

Studies undertaken in the 1970s and 1980s showed that the major influence on fox population dynamics was food supply, not anthropogenic population control. More recent studies have included studies on the number and distribution of foxes in Scotland, the economic impact of fox predation on sheep, parasites of economic importance, and the impact of fox predation on ground-nesting birds. One study, not included in the Appendix because it was not on foxes *per se*, looked at the negative impacts of snaring foxes on capercaillie numbers (Grove & Oswald 2001).

None of these studies used snares to catch foxes for their research. Many of the studies into the impacts of predator control on ground-nesting bird populations relied on existing predator control measures that were already being undertaken undertaken in the area but the papers were unclear about the techniques that were

used, or the relative contribution of different predator control methods. For instance, in one study *fox, stoat, weasel, and some corvid species … were routinely killed year-round by full-time gamekeepers employed to maximise numbers of red grouse. Foxes were either shot by a rifle at night or caught and restrained by metal snares* (Appendix: reference 7). In one case, where predator control was undertaken specifically for the study, professional contractors located foxes using infra-red or thermal imaging devices and shot them using a rifle. Snares were not used (Appendix: reference 16).

So there is no need to use snares for studies of the impacts of predators on ground-nesting birds. In fact, other techniques that are available are more acceptable to practitioners, who rated shooting at night with a rifle significantly more effective than other methods of killing foxes. Practitioners considered snares to be the least acceptable way of catching and killing foxes (White *et al*. 2003).

Over the last half-century, a wide variety of research techniques have been employed to study foxes in Scotland, and a number of new research techniques, such as molecular genetics, stable isotopes, video recording and camera trapping, and identifying individual foxes from their physical appearance (Dorning & Harris 2019), have become available to scientists. None of these techniques require that a fox is caught.

Despite the number, and diversity, of studies undertaken on foxes in Scotland over the last 53 years, snares have rarely, if ever, been used to catch foxes for research purposes. There is no evidence that snares will be needed for future research studies, and a variety of new research techniques are becoming available to wildlife biologists that do not involve catching foxes.

Welfare issues associated with using snares for research

The principal law relating to animal welfare in Scotland (and the rest of the UK) is the Animal Welfare Act 2006 (https://www.gov.uk/guidance/animal-welfare#legislation). Among other things, this Act prohibits causing unnecessary suffering to a captive animal. Once an animal is caught in a snare, irrespective of whether it is a target or non-target species, it is captive and is covered by this Act.

The British Veterinary Association and the British Veterinary Zoological Society (a specialist group of the British Veterinary Association) issued a position statement in which they state that *Due to the nature of snares and the duration of time animals may legally be held in snares even when best practice is followed, the potential negative animal welfare impacts are significant*. They went on to say that *The speed at which welfare begins to be impacted is rapid (seconds from the moment of restraint) and suffering can be prolonged*, that *in some cases* [this occurs] *over a considerable length of time*, and that snares *can also be indiscriminate and may result in the capture and suffering of non-target species*. In view of their very significant welfare concerns over the use of snares, the British Veterinary Association and the British Veterinary Zoological Society called on the UK

governments to introduce *An outright ban on the use and sale of snares to both the general public and trained operators* (British Veterinary Association 2022, https://www.bva.co.uk/take-action/our-policies/snaring/).

The role of the Scottish Animal Welfare Commission (SAWC) is to provide advice on animal welfare, including, specifically, consideration of how policies take account of animal sentience, the wider welfare needs of animals and the type of improvements that could be made. They also concluded *that snares cause significant welfare harms to members of both target and non-target species*, and recommended that *the sale of snares and their use by both public and industry are banned in Scotland, on animal welfare grounds* (Scottish Animal Welfare Commission 2022).

In this respect, it should be remembered that, while many snare operators users would describe themselves as professionals, there is no such thing as professional use. As an example, in a Defra-funded study into the use of snares, the Game & Wildlife Conservation Trust staff member who undertook the field trials *had 20 years experience as a field-based wildlife biologist, working almost entirely on projects requiring the detection, capture, handling, tracking or humane dispatch of mammalian predator species. He has considerable experience of using snares to catch foxes for radio-tagging studies and … provides input into industry recognised best practice guidelines, training and other educational material on fox snaring* (Anon. 2012). Despite this expertise, 73% of his reported captures were non-target species (Harris 2022).

Elsewhere in the Defra-funded study, it is stated that a technician was used who was *fully competent in the use of snares because this focuses on the device as operated according to best practice (because it is difficult and unethical to emulate bad practice)*. In 211 snare nights in familiar areas, this technician caught 18 animals: 3 foxes, 13 hares, and 2 badgers. Five hares, 2 badgers and 1 fox escaped: 1 fox and 1 badger escaped with the snare attached. Three hares were severely injured/dead and 2 hares were predated. Both foxes that were held had haemorrhages on their necks extending into the deeper muscle. Although the snares were placed so as to avoid entanglement with fences or woody shrubs, three of the snares were entangled with non-woody vegetation (Anon. 2012). Assuming that the animals that escaped with the snare attached suffered significant adverse welfare impacts, 7/18 captures (39%) were severely injured, dead or predated; just 2 target species (11% of captures) were held and killed (Harris 2022).

There is no evidence that professional/highly experienced operators catch fewer non-target species than other users, or cause fewer deaths or injuries to both target and non-target species.

The Animal Welfare Act 2006 prohibits causing unnecessary suffering to a captive animal. There are very significant welfare concerns about the use of snares, even when set by professional/highly experienced operators.

Would it be ethical to use snares to catch foxes for research?

The Animals (Scientific Procedures) Act 1986 regulates the use of animals, both captive and free-living, in scientific research, and licenses are required for scientific purposes that may cause pain, suffering, distress or lasting harm to an animal. So a scientist is likely to require both a project and personal licence from the Home Office under the the Animals (Scientific Procedures) Act 1986 to undertake a study that involves catching, handling, sedating and/or marking a wild mammal (http://www.homeoffice.gov.uk/scienceresearch/animal-research/). Post 1986, all of my research that involved catching, handling, sedating and marking foxes was undertaken under Home Office licences. It also required approval from the University of Bristol's ethics committee – see below.

The Royal Society is the premier scientific organisation in Britain: its role is to recognise, promote, and support excellence in science. The Royal Society states that *all research should be carried out with a high regard for animal welfare*, and that *All research involving animals must have been reviewed and approved by an ethics committee prior to commencing the study and performed in accordance with relevant institutional and national guidelines and regulations* (https://royalsociety.org/journals/ethics-policies/research-ethics/).

The Royal Society of Edinburgh is Scotland's national academy: it states that good research conduct should only include *procedures that are aimed at avoiding unreasonable risk or harm to humans, animals or the environment* (https://rse.org.uk/funding-collaboration/codes-of-conduct/).

All reputable research institutions have an ethics committee: see, for instance those for the universities of Aberdeen, St Andrews and Stirling (https://www.University_of_Aberdeen_Statement_on_Use_of_Animals_in_Research.pdf, https://www.ed.ac.uk/research/animal-research, https://www.st-andrews.ac.uk/research/integrity-ethics/animals/policy/ and https://www.stir.ac.uk/research/research-ethics-and-integrity/animal-research-at-the-university-of-stirling/our-research-involving-animals/). It is extremely unlikely that any ethics committee would approve a research project that involved the use of snares to catch foxes for research when the British Veterinary Association, the British Veterinary Zoological Society and Scottish Animal Welfare Commission have all concluded that the use of snares raises significant animal welfare concerns and called for an outright ban on their sale and use both by the general public and trained operators/industry.

Furthermore, there has been considerable pressure to reduce the number of animals used in scientific research. The underlying principle, referred to as the 3Rs (Replacement, Reduction and Refinement), provides a framework for performing more humane animal research. The 3Rs have been embedded in national and international legislation and regulations on the use of animals in scientific procedures, as well as in the policies of organisations that fund or conduct animal research (https://www.nc3rs.org.uk/who-we-are/3rs). See, for instance, the policies

of Aberdeen and Edinburgh universities (https://www.abdn.ac.uk/staffnet/documents/policy-zone-research-and-knowledge-exchange/RGH-Section-3.pdf and https://www.ed.ac.uk/research/animal-research/animal-welfare-ethics/ethical-review-and-awerb).

It is extremely unlikely that the ethics committee of a reputable research organisation would sanction the use of snares to catch foxes for research.

Would studies that use snares to catch foxes meet ethical standards for publication?

As part of the drive to improve animal welfare standards in research, most reputable scientific journals have introduced ethics policies and/or ethical committees that review submitted papers and only consider them for publication if the research was conducted in accordance with the highest animal welfare standards.

For instance, the Association for the Study of Animal Behaviour (ASAB) and the Animal Behavior Society (ABS) have formed ethical and animal care committees, respectively, and each appoints an ethics editor to serve on the editorial board of their scientific journal *Animal Behaviour* (ASAB Ethical Committee/ABS Animal Care Committee 2023). Similarly, the *Journal of Mammalogy* states that investigators conducting research requiring live capture of mammals assume the responsibility for using humane methods that respect target and non-target species (Sikes and the Animal Care and Use Committee of the American Society of Mammalogists 2016).

It is unlikely that any reputable scientific journal would accept a paper for publication that used capture techniques such as snares that cause considerable harm to both target and non-target animals.

Conclusion

There is no scientific case to permit the use of snares to catch foxes for scientific research in Scotland.

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Appendix: peer-reviewed scientific studies on foxes in Scotland published since 1970

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3. Baines D, Warren P & Richardson M (2007) Variations in the vital rates of black grouse *Tetrao tetrix* in the United Kingdom. *Wildlife Biology* **13**: 109-116.
4. Baines D, Redpath S, Richardson M & Thirgood S (2008) The direct and indirect effects of predation by hen harriers *Circus cyaneus* on trends in breeding birds on a Scottish grouse moor. *Ibis* **150**: 27-36.
5. Baines D, Aebischer N, Macleod A & Woods J (2013) Pine marten *Martes martes* and red fox *Vulpes vulpes* sign indices in Scottish forests: population change and reliability of field identification of scats. *Wildlife Biology* **19**: 490-495.
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16. Douglas DJ, Tománková I, Gullett P, Dodd SG, Brown D, Clift M, Russell N, Warnock N, Smart J & Sanders S (2023) Varying response of breeding waders to experimental manipulation of their habitat and predators. *Journal for Nature Conservation* **72**: 126353.
17. Dyczkowski J & Yalden DW (1998) An estimate of the impact of predators on the British field vole Microtus agrestis population. *Mammal Review* **28**: 165-184.
18. Elliot RD (1985) The effects of predation risk and group size on the anti-predator responses of nesting lapwings *Vanellus vanellus*. *Behaviour* **92**: 168-187.
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