



# Mountain hare management – position statement

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## Scope

1. This position statement sets out the Scottish Wildlife Trust’s views on the management of mountain hare. It outlines how the Trust will contribute to the protection of the mountain hare through advocacy work and delivery of overarching policies, such as the Scottish Wildlife Trust’s *vision* and Living Landscapes policy.
2. This position paper should be read in conjunction with the appendix, which contains a summary of mountain hare ecology.

## Context

3. The mountain hare (*Lepus timidus*) is native to the Highlands of Scotland. Although it is distributed throughout the Scottish uplands, mountain hare populations tend to be more numerous in central and eastern Scotland<sup>i</sup> and are strongly associated with the heather moorland that is managed for red grouse. In these areas they are likely to be benefiting from habitat management and predator control aimed at improving grouse densities.<sup>ii</sup> The mountain hare is an important part of the upland ecosystem and provides prey for other species of conservation importance such as golden eagle.<sup>iii</sup>
4. Mountain hare is listed in Annex V of the EC Habitats Directive, as a species “*of community interest whose taking in the wild and exploitation may be subject to management measures*”. Member States, including the UK, are legally required to make sure that management of Annex V species is “*compatible with their being maintained at a favourable conservation status*”.<sup>iv</sup>
5. Guidance from the European Commission on the Habitats Directive describes favourable conservation status as a situation “*where a species is doing sufficiently well in terms of quality and quantity and has good prospects of continuing to do so in future.*” In order to assess this, population dynamic data is necessary.
6. In Scotland, no comprehensive surveys of mountain hare distribution or abundance have taken place - in part due to the difficulty of estimating numbers. However, the Joint Nature Conservation Committee estimates that there are 350,000 mountain hare in the UK (1995 estimate) with Scotland containing 99% of the population. However, it is believed this figure is unreliable and may have been under or over estimated by as much as a 50%.<sup>v</sup> Mountain hare populations in Scotland appear to be cyclic with an average periodicity of 9 years.<sup>vi</sup>
7. Despite a lack of reliable data, there is some evidence that mountain hare populations are in decline.<sup>vii</sup> The species is under threat from habitat fragmentation, habitat loss, and rigorous control by some land managers. Added to this, the effects of climate change could lead to a reduction in the amount of mountain and sub-alpine scrub available to mountain hare. This type of habitat is likely to be the optimal habitat for mountain hare due to shelter and productivity but is now rare and threatened in the uplands of Scotland.<sup>viii</sup>

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8. On grouse managed moors, mountain hare can flourish because of other predator control measures carried out by land managers. However, many gamekeepers control mountain hare numbers (in the open season - see below) because they have been implicated in the transmission of the louping-ill virus (LIV)<sup>ix, x, xi</sup> which causes increased mortality in red grouse chicks. Gamekeepers see mountain hare as being the main agent for the spread of the disease and as such they believe they are a key threat to grouse numbers<sup>xii</sup> and bags<sup>xiii, xiv</sup>.
  9. However, a recent study conducted by the James Hutton Institute<sup>xv</sup> which assessed the evidence that culling mountain hares is an effective and practical way to control LIV in red grouse, concluded that there was no compelling evidence to suggest culling mountain hares might increase red grouse densities.
  10. The Wildlife and Natural Environment (Scotland) Act 2011 states that it is an offence to injure or take a mountain hare in the closed season (1 March to 31 July). The control of mountain hare in the closed season requires a licence from Scottish Natural Heritage.<sup>xvi</sup> Shooting by day during the open season does not require a licence. Permission to set a snare for a mountain hare requires a licence.
  11. As Scotland's total mountain hare population is not known it cannot be stated with certainty that the current levels of legal control by land managers are within safe limits.

#### **Position Statement**

12. The Scottish Wildlife Trust believes that reliable and accurate information regarding trends in Scotland's mountain hare populations should be collected to inform population management decisions that accord with the protected status of the species.
  13. It is the opinion of the Scottish Wildlife Trust that there is currently no convincing scientific evidence that culling of mountain hare will increase grouse numbers and bags.
  14. The Scottish Wildlife Trust accepts that in some cases mountain hare may act as a reservoir for the transmission of LIV. However, it is important to note that many other mammals, including sheep and deer, can also be infected by LIV. It should also be noted that whilst red deer are probably not involved in the transmission of LIV, they are a very important host for ticks (the vector of LIV) and can maintain high tick populations on grouse moors.<sup>xvii</sup>
  15. In those instances where culling for disease control is deemed absolutely necessary, the Scottish Wildlife Trust believes that this must be based on reliable scientific evidence that demonstrates the necessity for the cull and the effectiveness of the action in solving the problem.
  16. The Scottish Wildlife Trust would like to see further research regarding the role of the mountain hare and other tick hosts in the transmission of LIV, and the effectiveness of different methods of tick and LIV control, such as treating sheep or reducing deer numbers.
  17. The Scottish Wildlife Trust is against snaring as a method of control for mountain hare, or other species, and that snaring is contrary to European law (Habitats Directive Article 15) as it is an indiscriminate means of taking, capturing or killing.
  18. The Scottish Wildlife Trust believes Scottish Government and its agencies should produce a restoration strategy for montane and sub-alpine scrub habitat in Scotland, including effective measures to reduce grazing pressure from red deer and, in some areas, sheep.
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## The Scottish Wildlife Trust's Priorities for Action

19. The Scottish Wildlife Trust will take action to support this position statement by:
- i. Supporting current research and proposed future research into mountain hare distribution and methods for estimating changes in population numbers in Scotland <sup>xviii</sup>
  - ii. Advocating an ecosystem based approach to mountain hare conservation in Scotland
  - iii. Encouraging Scottish Land and Estates to make a “zero snaring policy” a requirement for entry into stage two of the Wildlife Estates scheme
  - iv. Encouraging Scottish Land and Estates to ensure that land managers make available numbers of all mountain hares they have killed as a requirement for entry into stage two of the Wildlife Estates scheme
  - v. Pressing for better enforcement of the ban on culling during the closed season
  - vi. Advocating our 25-year *vision* for Scotland’s ecosystems – this will create healthy ecosystems that are beneficial to sustainable mountain hare populations

### Links to other policies

This policy should be read in conjunction with the following Trust policies:

- a) Policy Futures 1: Living Landscapes - Working towards ecosystem-based conservation in Scotland
- b) Wild deer
- c) Killing of wild animals

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## Appendix 1 – Mountain hare ecology in Scotland

### Conservation status

1. Mountain hare is listed in Annex V of the EC Habitats Directive. This conservation status means that certain methods of capture are prohibited or restricted.
2. The Wildlife and Natural Environment (Scotland) Act 2011 introduced a closed season for the killing or taking of wild hares. As a result, it is an offence to kill a mountain hare in the closed season without a licence.

### Ecology

3. Mountain hare is native to Scotland. It is commonly associated with heather moorland managed for red grouse.
4. Population densities of mountain hare fluctuate cyclically, varying at least 10-fold,<sup>xxix</sup> and reaching a peak in numbers approximately every 9 years.<sup>xxx</sup> The breeding season occurs between February and August. Between one and four litters are produced each year consisting of one to five young (leverets), although up to eight have been recorded.<sup>xxxi</sup>
5. Mountain hare rest up during the day using features and scrapes which provide shelter; they also make burrows in the earth or in snow, particularly when young. Their runs usually go up slopes, as opposed to traversing slopes like those of sheep and deer.
6. They are mainly active at night. Being herbivores, their preferred diet is grass (which is most palatable in spring and summer) although they also browse woody plants such as heather, dwarf shrubs and trees. During periods of snow cover they gather in groups on leeward hill slopes to shelter or feed where the snow depth allows scraping to reveal underlying heather.
7. The young are preyed upon by predators such as foxes, stoats, cats, buzzards and eagles; eagles are also major predators of adults.<sup>xxii</sup>

### What impacts may the removal mountain hare have?

8. Mountain hare provide an important food source for predators in the uplands, especially golden eagle.<sup>xxiii</sup> The impacts on the environment of the practice of large scale culling of mountain hares by some land managers for the prevention of LIV virus is not known but it will undoubtedly affect upland predators.

### Mountain hares and Louping - ill virus (LIV)

9. Like many other mammals (including sheep, cattle, pigs, red deer, roe deer, short tailed voles and humans) mountain hares may become infected with louping-ill virus (LIV), but they do not build up levels of virus in their blood that are sufficient to allow feeding ticks to acquire the virus and transmit it to other hosts.<sup>xxiv, xxv</sup> However, laboratory studies have shown that ticks feeding on mountain hares can acquire the virus from neighbouring infected ticks feeding on the same animals.<sup>xxvi</sup> This has led to the suggestion that mountain hares may act as a reservoir for LIV, allowing it to persist on grouse moors, even when infection of sheep is controlled by the use of acaricides. A study in Morayshire, conducted between 1993 and 2001,<sup>xxvii</sup> found that tick burdens on red grouse chicks declined to very low levels and the number of chicks raised by each hen grouse increased when mountain hare density was dramatically reduced. These results have been used to infer that reducing mountain hare numbers on grouse moors

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will increase grouse densities and improve red grouse bags. However, Laurenson et al.<sup>xxviii</sup> found no evidence of an increase in summer grouse densities at the site where mountain hare numbers were controlled. A recent review by Harrison et al.<sup>xxix</sup> concluded that the results of Laurenson et al's study are probably not applicable to most Scottish grouse moors because there were no red deer, which can maintain high populations of ticks even when mountain hares are absent, at their experimental study site. In addition, the review noted that sheep on the experimental site were intensively managed to reduce ticks and LIV, whereas the same intensive management was not implemented at all of the control sites.

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<sup>i</sup> <http://www.hutton.ac.uk/research/groups/ecological-sciences/landscape-and-spatial-ecology/mountain-hares>

<sup>ii</sup> Scottish Natural Heritage (SNH). 2011. *Commissioned Report No. 444 Development of a reliable method for estimating mountain hare numbers*. The Macaulay Land Use Research Institute

<sup>iii</sup> *Op. cit.* <sup>iv</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0043:EN:HTML>

<sup>v</sup> Harris, S., Morris, P., Wray, S. & Yalden, D. (1995). A review of British mammals: population estimates and conservation status of British mammals other than cetaceans. Joint Nature Conservation Committee, Peterborough. 176pp.

<sup>vi</sup> Newey S., Willebrand T., Haydon D.T., Dahl F., Aebischer N.J., Smith A.A., Thirgood S.J. (2007). Do mountain hare populations cycle? *Oikos*. 2007b;116:1547–1557

<sup>vii</sup> Scottish Natural Heritage (SNH). (2008). *Commissioned Report No. 287 The conservation status and management of mountain hares* The Macaulay Land use Research Institute and the Game & Wildlife Conservation Trust.

<sup>viii</sup> J. Hughes, pers. obsv

<sup>ix</sup> Louping Ill is an acute virus disease which affects the brain and causes varying signs of in-coordination, paralysis, convulsions and death. The disease is primarily associated with sheep and red grouse, but man, cattle, goats, pigs, horses, farmed red deer, llamas and dogs can all be affected. For more information see: <http://www.moredun.org.uk/research/practical-animal-health-information/disease-summaries/louping-ill-sheep>

<sup>x</sup> Jones, L.D., Gaunt, M., Hails, R.S., Laurenson, K., Hudson, P.J., Reid, H., Henbest, P. & Gould, E.A. (1997). Transmission of louping ill virus between infected and uninfected ticks co-feeding on mountain hares. *Medical and Veterinary Entomology*, 11, 172–176

<sup>xi</sup> Gilbert, L., Norman, R.A., Laurenson, K., Reid, H. & Hudson, P.J. (2001). Disease persistence and apparent competition in a three-host community: an empirical and analytical study of large-scale, wild populations. *Journal of Animal Ecology*, 70, 1053–1061.

<sup>xii</sup> Grouse numbers found on the hill

<sup>xiii</sup> Number of grouse shot

<sup>xiv</sup> <http://www.hutton.ac.uk/research/groups/ecological-sciences/landscape-and-spatial-ecology/mountain-hares/management>

<sup>xv</sup> Harrison A., Newey S., Gilbert L. & Thirgood S. (2010). *Culling wildlife hosts to control disease: mountain hares, red grouse and louping ill virus*. *Journal of Animal Ecology*, 47, 926-930.

<sup>xvi</sup> <http://www.snh.gov.uk/protecting-scotlands-nature/species-licensing/mammal-licensing/hares-and-licensing/>

<sup>xvii</sup> *Op cit* 9

<sup>xviii</sup> Newey, S., Potts, J., Baines, D., Castillo, U., Duncan, M., Harrison, A., Ramsay, S., Thirgood, S. and Iason, G. (2011). Development of a reliable method for estimating mountain hare numbers. *Scottish Natural Heritage Commissioned Report No.444*.

<sup>xix</sup> The Mammal Society *Mountain Hare Fact Sheet* :

[http://www.mammal.org.uk/sites/default/files/factsheets/mountain\\_hare\\_complete.pdf](http://www.mammal.org.uk/sites/default/files/factsheets/mountain_hare_complete.pdf)

<sup>xx</sup> *Op cit* 6

<sup>xxi</sup> Macdonald, D.W. and Tattershall, F.T. (2001) *Britain's mammals- the challenge for conservation*. The Wildlife Conservation research unit, Oxford

<sup>xxii</sup> Corbet, G.B. & Harris, S. (1991) *The handbook of British mammals*. Blackwell Scientific Publications, Oxford. 588pp.

<sup>xxiii</sup> <http://www.hutton.ac.uk/research/groups/ecological-sciences/landscape-and-spatial-ecology/mountain-hares/conservation>

<sup>xxiv</sup> Beasley, S. J. Campbell, J. A. Reid, H. W. (1978): Threshold problems in infection of *Ixodes ricinus* with the virus of louping ill. In: Tick-borne diseases and their vectors. Ed. Wilde, J. K. H. Centre for Tropical Veterinary Medicine, University of Edinburgh, Edinburgh, UK. Pp 497-500.

<sup>xxv</sup> Reid, H. W. (1978): The epidemiology of louping-ill. In: Tick-borne diseases and their vectors. Ed. Wilde, J. K. H. Centre for Tropical Veterinary Medicine, University of Edinburgh, Edinburgh, UK. Pp 501-507

<sup>xxvi</sup> *Op cit* 9

<sup>xxvii</sup> Laurenson, M.K., Norman, R.A., Gilbert, L., Reid, H.W. & Hudson, P.J. (2003) *Identifying disease reservoirs in complex systems: mountain hares as reservoirs of ticks and louping-ill virus, pathogens of red grouse*. *Journal of Animal Ecology*, 72, 177–185.

<sup>xxviii</sup> *Ibid*

<sup>xxix</sup> *Op cit* 12