Protecting Scotland's wild mammals

A proposal for a Bill to improve the protection and conservation of wild mammals by: ending the hunting of wild mammals with dogs; protecting foxes and hares; and tightening the criteria for issuing a licence for the killing of certain wild mammals.

Consultation response

From

Game & Wildlife
CONSERVATION TRUST
Scotland

Response to consultation questions

1. Aims and approach:

Which of the following best expresses your view of the proposed Bill's aim to improve the protection and conservation of wild mammals by: ending the hunting of wild mammals with dogs; protecting foxes and hares; and tightening the criteria for issuing a licence for the killing of certain wild mammals?

Fully opposed – We feel that the proposed bill is based on anecdotal, circumstantial and selective evidence. We feel there is no net value in such a bill and that it would represent a thoroughly retrograde step in conservation terms, appearing to render matters down to issues around single species instead of considering balanced, functioning ecosystems. The consultation fails to acknowledge the full economic impact on farmers with regard to loss of livestock or crops and it fails to recognise the very important role that control of foxes has in recovering or sustaining vulnerable ground nesting bird populations.

The impact of the changes proposed in the consultation would not only affect thousands of gamekeepers and farmers managing their own land, but nature reserves and public policy too.

Rejection of the consultation proposals does not preclude adherence to animal welfare principles which must remain central to all activity and management.

We previously contributed a response during review of the Protection of Wild Mammals (Scotland) Bill[1]. Since then, we have built up additional research insight, yet the views expressed in 2000 remain relevant to the current consultation. In particular, the response noted threats to wildlife conservation and biodiversity, rural employment and game conservation.

2. Hunting with dogs

Which of the following best expresses your view of clarifying the offence of hunting (under the Protection of Wild Mammals (Scotland) Act 2002) so that:

• "deliberately hunts" becomes "intentionally or recklessly hunts", and
• "includes to search for or course" becomes "includes to search for, stalk, flush, chase, pursue or course"?

Fully opposed - We are not convinced that a change to "intentionally or recklessly hunts" materially assists the determination as to whether a crime has been committed in the circumstances that the proposed Bill intends to legislate for. The specific conditions to be tested under law would be improved if "deliberately hunts" was linked to ***hunting with dogs***.

Extending "search for or course" to include "stalk, flush, chase, pursue or course" could effectively terminate predation control in areas where other forms of management cannot be safely exercised, for instance, use of rifle in areas of dense, commercial woodland or

[1] Game Conservancy Trust response to consultation on the Protection of Wild Mammals (Scotland) Bill August 2000 https://www.gwct.org.uk/media/1038018/gct-response-protection-of-wild-mammals-scotland-bill-aug-2000-.pdf

vegetation. We are concerned that with a general presumption in favour of increased woodland in Scotland (particularly commercial forestry), the facility to control predators for balanced ecosystems will be made more difficult. That restriction would be further constrained if the offence of hunting were to be extended to "stalk, flush, chase or pursue". We believe the current wording is satisfactory, but we do consider that adherence to suitable codes of practice and production of evidence to demonstrate clear intention to avoid deliberate hunting (such as provision of instructions, deployment of guns) to provide an audit trail is an important and necessary requirement.

3. Which of the following best expresses your view of prohibiting the use of fox-based scents in recreational activities, such as trail hunting?

Fully opposed – prohibition as described, seems unnecessary. The Protection of Wild Mammals (Scotland) Act 2002 made the chase and kill of a wild mammal illegal, whilst allowing for stalking and flushing. If a trail hunt ended with a fox kill other than by shooting, the hunt would immediately put itself at risk of prosecution. That might explain why "there is no history" of trail hunting in Scotland. Given these aspects, we think it would be better to give full support to the Scottish Mounted Foxhound Packs Code of Practice, and particularly to the maintenance of records and notification to police.

4. Which of the following best expresses your view of removing the current exceptions to the offence of hunting wild mammals with dogs (as defined in the Protection of Wild Mammals (Scotland) Act 2002)?'

Fully opposed - We have previously explained our concern about limiting the ability to maintain balanced, functioning ecosystems. We fear that removal of the exceptions exposes this maintenance to serious risk.[2]

GWCT believes that effective predator control must be rational, achievable, proportionate, focused and humane.

Our research suggests that predation can be a common limiting factor for breeding success for many species in the UK, especially where there is limited habitat extent, quality and connectivity. This research has described how effective predator control can raise species' local abundance to levels higher than in the absence of predator control, resulting in improved conservation status given suitable habitat.

[2] Game Conservancy Trust response to consultation on the Protection of Wild Mammals (Scotland) Bill August 2000 (https://www.gwct.org.uk/media/1038018/gct-response-protection-of-wild-mammals-scotland-bill-aug-2000-.pdf)

The impact of predators is now generally recognised by a wide range of bodies at both policy and practical levels[3],[4] . As a result, predator control is used not just by farmers and gamekeepers, but on a wide range of designated sites and nature reserves around the country and in some places, it is supported by public-sector finance[5],[6]

5. Which of the following best expresses your view of providing one new, narrowly defined exception to the offence of hunting wild mammals with dogs, which would allow a maximum of two dogs to be used?

Fully opposed – If we recognise the importance of predator control to maintain functioning ecosystems, then it seems illogical to make it as difficult as possible to exercise that control. Any such restriction would be particularly challenging when attempting to reduce predation occurring around large forestry or woodland blocks, where it may be necessary to use more resources to stalk or flush a fox to waiting guns.

6. Which of the following best expresses your view of implementing the following Bonomy Review recommendations:
   • to make the landowner who gives permission for hunting on his/her land vicariously liable for any offences committed,
   • to put the onus on the accused to show that hunting fell within an exception to the ban, and
   • that the time limit for bringing prosecutions should start from six months from the date on which sufficient evidence came to the knowledge of the prosecutor, rather than six months from the date the offence was committed

Neutral – GWCT is not expert in matters of law.

Vicarious Liability

The introduction of Vicarious Liability is relatively recent in Scotland and there have been only a handful of cases on which to base a view as to its effect. We are aware that its introduction has led to considerable activity in relation to updating contracts of employment, leases, training and administration. We are less certain about whether its introduction could be leading to an increase in vexatious incidents which, if not intended to secure convictions, may be designed to intervene, delay and confuse the authorities in relation to perfectly legitimate land management. This should be avoided in any application of Vicarious Liability.

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[3] Smith, R.K., Pullin, A.S., Stewart, G.B. and Sutherland, W.J. (2010), Effectiveness of Predator Removal for Enhancing Bird Populations. Conservation Biology, 24: 820–829.

[4] Fletcher et al. (2010) Changes in breeding success and abundance of ground-nesting moorland birds in relation to the experimental deployment of legal predator control. Journal of Applied Ecology 47, 263–272 https://www.gwct.org.uk/media/249256/waders_on_the_fringev2.pdf

[5] Sotherton, N.W. & Reynolds, J.C. (2011). Managing the UK's wildlife: Must we intervene to regulate numbers? Journal of the Royal Agricultural Society of England, 172: 1-9

[6] https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/agri-environment-climate-scheme/management-options-and-capital-items/predator-control

Burden of proof

There seems to be a vogue at present in relation to land management activities that because it is difficult to achieve a conviction (which may simply reflect the policing resources available), there is a case to transfer the burden of proof to the accused. This seems illiberal as a matter of principle. As observed for Vicarious Liability, such transfer may also provide the opportunity for diverting and harassing claims that impact on the person(s) accused, with intent to restrict or prevent law-abiding activity. At the least, this should be considered, particularly if this impacts on biodiversity and thus, public benefits.

Time limit

The consultation argues that an extension on time limit "…reflects developments made in wildlife crime investigative techniques and would be welcomed by Police Scotland and the Crown Office and Procurator Fiscal Service (COPFS)." We would respectfully point out that the developments may also help to reduce the time it takes to produce evidence appropriate for prosecution purposes. The Acts referred to by the Bonomy Report in support of an extension are up to 38 years old. It would at least be worth considering whether investigative techniques are now more efficient, enabling prosecutors to proceed more swiftly than in the past.

7. Which of the following best expresses your view of increasing the maximum penalty for hunting a wild mammal with a dog to a £40,000 fine or 5 years imprisonment?

Neutral – GWCT notes the current Wildlife crime penalties review and consultation. Wildlife crime is totally unacceptable. However, GWCT also observes that the trend in wildlife crime in Scotland over a number of years is downward, which suggests that current deterrence is broadly effective. It is nevertheless appropriate that penalties should be periodically reviewed.

8. **Additional protections for certain wild mammals**
   Which of the following best expresses your view of protecting mountain hares, so that any killing at any time would require a licence?

Fully opposed – the proposal to licence is built on the assumption that mountain hare management currently imperils their conservation status ("…the extremely serious concerns around …this species in Scotland."). GWCT's reasons for opposition to the proposal to licence are contained in the briefing from 2018 attached at the end of this response. We emphasise some key observations from the briefing, and more recent research findings, below:

- The recent change in conservation status for mountain hares reflects the natural variability of their numbers and SNH's recent administrative decision that a statutory estimate of mountain hare abundance is now a requirement rather than any clear evidence of major declines resulting from hunting.

- Data from hunting records across Europe have shown that mountain hare numbers tend to fluctuate in cycles[7]. The characteristics of these cycles vary, but typically the population can fluctuate from below half to almost double the average population size every 4 -15 years. The most recent population estimate in the UK ranges between 81,000 and 526,000 hares[8].
- The Game & Wildlife Conservation Trust (GWCT) has found robust mountain hare numbers using SNH approved count methods close to sites that the Watson and Wilson (2018) report states as having zero hare abundance.
- It is widely agreed that mountain hares thrive on heather moorland managed for driven red grouse shooting, that their numbers can increase quickly in such areas and that the long-term threat to their population is from landscape scale habitat change, especially coniferous tree planting, which also brings the spread of generalist predators.
- In Scotland, mountain hares occur at the highest densities recorded in Europe. On Scottish grouse moors, their numbers show cyclical fluctuations, but appear to be stable over the long-term (National Gamebag Census 1954-2015, as reported to, and referenced by Scottish Natural Heritage). This is also set out in the 2018 briefing at the end of this response.
- Research published in 2019 indicates that the mountain hare index on driven moors was 35 times higher than on moors not managed for shooting, and more than twice as high as on walked-up moors[9].
- Habitat change resulting from loss of moorland to forestry and increasing predation in areas where no control takes place should be the primary concern to everyone with an interest in the conservation status of mountain hares. Even the 2018 Watson Wilson paper, much quoted with regard to serious declines in mountain hares, comments in relation to forestry that "Our data support this interpretation, with evidence that the presence of conifer plantations and, especially, the absence of heather burning were associated with the highest rates of decline, whilst sites that maintained heather burning (i.e., grouse moors) until the turn of the century, and were not affected by conifer plantations."[10]

GWCT has made it clear for many years that moorland managers should show voluntary restraint in their culling of mountain hares and that any management should be in the context of a demonstrable assessment of mountain hare abundance. This would aid their own decision making, and if publicly presented, allay fears about mountain hare conservation. The introduction of reliable counting methodology since production of SNH Report 1022 will assist the process of plans, assessment and review before taking management decisions. Such management decisions may increasingly need to take into

[7] Newey et al. (2007) Do mountain hare populations cycle? Oikos 116: 15471557

[8] Mathews F, Kubasiewicz LM, Gurnell J, et al (2018) A review of the population and conservation status of British mammals: technical summary

[9] Hesford, N., Fletcher, K., Howarth, D. et al. Eur J Wildl Res (2019) 65: 33. https://doi.org/10.1007/s10344-019-1273-7 Spatial and temporal variation in mountain hare abundance in relation to red grouse management in Scotland

[10] Watson, A. and Wilson, J. Journal of Applied Ecology (2018), DOI: 10.1111/1365-2664.13235 Seven decades of mountain hare counts show severe declines where high-yield recreational game bird hunting is practised

account past and future impact of habitat and management loss on hares, especially through woodland expansion.

The environmental impact of mountain hare culls also forms part of the Scottish Ministers' review of grouse moor management[11], due in the Autumn of 2019. It would be practical to absorb the detailed assessment in the report and Ministers' response rather than pre-empt this review through a separate and far less exhaustive consultation document. Given the content of questions 1-7 of this consultation - which are chiefly about reducing the ability to control foxes – such reduction would have a negative effect on mountain hare populations whose numbers are greatest where predator control is undertaken.[12],[13]

9. Which of the following best expresses your view of protecting brown hares, so that any killing at any time would require a licence?

Fully opposed – A close season was introduced in the Wildlife and Conservation (Scotland) Act 2011 to address concerns. This operates during a period when both brown and mountain hares are at their most vulnerable in conservation terms and helps to minimise the welfare impact of shooting when they with dependant young. It is nevertheless still possible to apply for a license for control out of season culling of both Brown and Mountain hares, and it is therefore already a licensable activity. Indeed, licenses are issued.

Currently, brown hares are a minor shooting quarry in Scotland. Hares are widely famed for their culinary value, but most hare shoots are undertaken to prevent crop damage. Typically, such shoots are organised in response to observed high hare density, and therefore may not take place every year on a given landholding.

As indicated above, brown hares are protected by a close season, introduced only in 2011 through the Wildlife and Natural Environment (Scotland) Act. The fact that bags declined in Scotland and then stabilised appears to be in tune with the population of brown hares, such that more are shot when the pop is increasing and less when declining.[14]

The British population estimate of brown hares is 579,000 (95%CI = 427,000–1,990,000)[15]. Harris et al. (1995)[16] estimated a British population size of 817,000, which falls within the confidence limits of the current estimate. Their population status is regarded as stable.

[11] https://www.gov.scot/groups/grouse-moor-management-group/
[12] Hewson R (1984). Mountain hare Lepus timidus bags and moor management. Journal of Zoology, 204, 563-565.
[13] Hudson, P.J. (1992) Grouse in space and time. Game Conservancy Trust, Fordingbridge.
[14] GWCT annual review, 2014, p 41
[15] A Review of the Population and Conservation Status of British Mammals: Technical Summary Natural England Joint Publication JP025 June 2018
[16] A Review of British Mammals: Population Estimates and Conservation Status of British Mammals Other Than Cetaceans.: Harris, Stephen & Morris, Pat & Wray, Stephanie & Yalden, Derek. (1995).

GWCT research conducted at our Leicestershire Demonstration Farm points to the benefits of fox control for brown hare.[17]

Although the GWCT does not regard a licensing regime for brown hares as appropriate, similar to our views on mountain hare populations, it will be important to take into account potential drivers of change when considering localised management. These include agricultural practice changes and the impacts of climate change.

10. Which of the following best expresses your view of protecting red foxes, so that any killing at any time would require a licence other than in an emergency situation?

Fully opposed – GWCT's principal concern, already expressed, is that the introduction of a licensing scheme would severely restrict efforts to recover or sustain vulnerable ground nesting bird and hare populations. These include many birds which contribute to the Scottish Government's Natural Capital (Biodiversity) indices, including red and amber-listed species such as Curlew, Lapwing, Black Grouse, Capercaillie[18] and Hen Harrier[19]. The Ludwig paper on long-term trends in abundance and breeding success of red grouse and hen harriers in relation to changing management of a Scottish grouse moor identifies that Hen Harriers benefit from fox control and that foxes increase in abundance quickly when their control is stopped. It is also worth pointing out that the RSPB suggest that foxes are at a high density in the UK compared to the rest of Europe and that they have an impact on prey species.[20]

The prospect of applying for licences may seem like a simple process to implement but the effect is a significant burden, which can reduce applications and therefore risk the type of response observed at Berwyn in Wales[21]. Between initial surveys in 1983-5 and a further survey in 2002, Lapwing were lost, Golden Plover declined by 90% and Curlew by 79%. In contrast, increases were seen in Carrion Crow (529%), Raven (308%), Buzzard (150%) and Peregrine (700%). Numbers of Hen Harriers declined by 49%. Targeted moorland management including habitat enhancements and the control of generalist predators were recommended to address these impacts.

[17] Fields for the future – The Allerton Project – A winning blueprint for farming, wildlife and the environment Stoate, c., Leake, a., Jarvis, P., Szczur, J. https://www.gwct.org.uk/media/474011/allerton-20thanniversary-report2017.pdf

[18] Baines et al. (2016) Increased mammalian predators and climate change predict declines in breeding success and density of Capercaillie Tetrao urogallus, an old stand specialist, in fragmented Scottish forests Biodivers Conserv (2016) 25:2171–2186

[19] Ludwig et al. (2017) Long-term trends in abundance and breeding success of red grouse and hen harriers in relation to changing management of a Scottish grouse moor. Wildlife Biology: https://doi.org/10.2981/wlb.00246

[20] Roos et al. (2018) A review of predation as a limiting factor for bird populations in mesopredator-rich landscapes: a case study of the UK. Biological Review doi: 10.1111/brv.12426

[21] Warren & Baines (2014). Changes in the abundance and distribution of upland breeding birds in the Berwyn Special Protection Area, North Wales 1983- 2002. Birds in Wales, 11: 32-42

We have cited research earlier in this consultation regarding the risks of limiting predator control and these are repeated here [22],[23]

We also recognise the potential for predation of livestock. The consultation document questions whether predator control is the most effective option, and indeed whether it works at all. It quotes a Technical Report from October 2015 by Professor Stephen Harris of Bristol University (commissioned by League Against Cruel Sports Scotland), which in turn cites the work of Ray Hewson (1990) in a document published by the League Against Cruel Sports. This work attempted to address the influence of fox culling by estimating lamb losses in a 70 km² area where foxes were not culled during the three-year study period. The work undertaken by Dr Hewson on foxes and lambs involved radio-tagging foxes. We note that neck snares were used to catch foxes for radio-tagging and were evidently considered both necessary and humane**.**

Although this study has never been submitted to a refereed scientific journal, it has often been cited as key evidence that lamb predation is not reduced by fox culling (e.g. Is the fox a pest? The ecological and economic impact of foxes in Britain; McDonald, R, Baker, P & Harris, S 1997 ; LACS submission to the Burns Inquiry, p. 26), so it is important to consider its value as evidence.

- The estate chosen, Eriboll in north-west Scotland, was contrasted with the adjacent Balnakeil estate where fox culling took place, which allegedly acted as an experimental control. In fact, no quantitative data on lamb losses or fox density were presented from Balnakeil (Hewson 1990), so this was an investigative study, not a controlled experiment in any accepted sense.
- The majority of lambing on both Eriboll and Balnakeil was carried out, not on the open hill, but 'in-bye' (on enclosed ground close to the farm), where supervision was intensive, and predation would be expected to be less. Radio-tracking showed that tagged foxes did not enter the in-bye land. Ewes were returned to the hill with their lambs already 3-5 days old. By this time, twinned or orphaned lambs would have been fostered onto ewes that had lost their own lambs, avoiding much of the previously identified risk of predation. Other studies have made clear that the bulk of lamb predation is focussed around the birth process itself (Saunders *et al.* 1995) and enhanced by twinning and poor maternal care. Hewson (1990) himself states that most predation by foxes on lambs is at 1-5 days old, though they will also kill lambs up to 4 weeks old.
- Quantification of lamb losses after return to the hill was dependent on the researcher regularly searching 70 km² of difficult terrain for evidence. Although an aim of the study, there was no real possibility that losses could be accurately quantified in this way or changes between years measured. Similarly, the availability of sheep carrion at

[22] Smith, R.K., Pullin, A.S., Stewart, G.B. and Sutherland, W.J. (2010), Effectiveness of Predator Removal for Enhancing Bird Populations. Conservation Biology, 24: 820–829.

[23] Fletcher et al. (2010) Changes in breeding success and abundance of ground-nesting moorland birds in relation to the experimental deployment of legal predator control. Journal of Applied Ecology 47, 263–272 https://www.gwct.org.uk/media/249256/waders_on_the_fringev2.pdf

Eriboll was not determined in the field but was estimated on the basis of losses on the hill in another study. No information on hill losses of either lambs or ewes was presented for the comparison area of Balnakeil.

Overall, we consider the strong conclusions drawn from Eriboll study to be weak evidence in scientific terms, and therefore that they have little relevance regarding the impact of predation on livestock. The study did recommend intensive supervision of lambing as the best solution to lamb losses of all kinds, but it should be noted that this is simply not an option for most remote hill flocks.

Fox population in Scotland

The 2018 Review of the population and conservation status of British mammals indicates that the Red Fox range is increasing in Scotland. National Gamebag data from 2009 has not yet been published to identify trends that might indicate this. The Review estimates the British population to be around 357,000 (95%CI = 104,000–646,000)[24], an increase of 48% over the 1995 Technical Summary.

Trends in the Scottish sheep flock

"Overall trends in the sheep population show the total decreasing by 800,000 (10.5 per cent) from 7.63 million in 2006 to 6.83 million in 2016."[25]

We might reasonably assume that an increasing fox population is likely to have more impact on a reduced number of lambs, particularly if this is compounded by any policy that restricts predator control.

There is no evidence to suggest that predator control in Scotland is having more than a local impact on the abundance of the Red Fox, nor that there is any impact on its conservation status. With wading birds such as Curlew, Lapwing and Golden Plover increasingly restricted to moorland and hill edge, any reduction in management of foxes may place these waders in a vulnerable position, particularly where the predator range is extended by a presumption in favour of woodland planting across Scotland. In the case of Curlew, they are in serious danger of extinction.

Taking into account the evidence for impact of foxes on both birds and mammals and the responses observed when fox control is relaxed or ceases, the GWCT is clear that all current, legal means for taking foxes should be retained.

In common with the training and registration required for snaring, we would support training in other means of fox control. We believe that such statutory training is an

[24] Mathews F, Kubasiewicz LM, Gurnell J, et al (2018) A review of the population and conservation status of British mammals: technical summary

[25] Agriculture Statistics Tables by Topic: Sheep - gov.scot,www2.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/agritopics/Sheep)

appropriate step to ensure that predator control is rational, achievable, proportionate, focused and humane.

11. The Bill proposes tightening the criteria for issuing a licence to kill foxes, hares or other wild mammals. Which of the following would you support? (Choose all that apply):

☐ Licences should not be issued unless the licensing authority is confident that there will be no negative impact on the local or national conservation status of the species in question.
☐ Licences should not be issued unless the licensing authority is confident that the proposed method and timing of killing will not have an unacceptable impact on animal welfare.
☐ Licences should not be issued where there is a risk that dependant young will suffer.
☐ Licences should be issued for specific purposes; these purposes should be stated in the legislation and should be purposes that are in the public interest.
☐ Licences should not be issued unless they are a last resort measure and non-lethal measures have been shown to be ineffective.
☐ The licensing scheme should be transparent and publicly accountable.
☐ Any use of a licence must be conditional on reporting how many animals have been killed/hunted and that they have been killed in accordance with the licence. This information should be published by the licensing authority.
☐ Fees should be charged for licences, with the level of fees set so as to fully cover the costs involved in issuing licences.
☒ **None of the above**
☐ Unsure

Please explain the reasons for your response

In the case of foxes, no licences exist to tighten. For hares, we observe that licences have not long been introduced following the Wildlife and Natural Environment (Scotland) Act 2011. As previously observed, these operate during a period when both brown and mountain hares are at their most vulnerable in conservation terms and help to minimise the welfare impact of shooting when they with dependant young. The introduction of licensing with regard to other species will hamper conservation initiatives such as Saving Scotland's Red Squirrels[26].

12. **Financial implications**

Taking account of both costs and potential savings, what financial impact would you expect the proposed Bill to have on:

(a) Government and the public sector

[26] https://scottishsquirrels.org.uk/about/

- [x] **Significant increase in cost**
- [ ] Some increase in cost
- [ ] Broadly cost-neutral
- [ ] Some reduction in cost
- [ ] Significant reduction in cost
- [ ] Unsure

(b) Businesses

- [x] **Significant increase in cost**
- [ ] Some increase in cost
- [ ] Broadly cost-neutral
- [ ] Some reduction in cost
- [ ] Significant reduction in cost
- [ ] Unsure

(c) Individuals

- [x] **Significant increase in cost**
- [ ] Some increase in cost
- [ ] Broadly cost-neutral
- [ ] Some reduction in cost
- [ ] Significant reduction in cost
- [ ] Unsure

Please explain the reasons for your response

For Government and public sector, the costs of administration and diversion of resources to expand a licensing system may be considerable. The cost to public benefits through the negative impacts on vulnerable natural heritage following reduction of predator management also appear to be considerable, particularly if certain 'at risk' species such as Curlew or Lapwing are lost entirely.

The future intent on the part of EU and UK administrations to incentivise land managers through payment for maintenance or improvement of environmental and species outcomes may be hampered by disincentives created by limiting predator control.

For business, the cost of additional planning, assessment and oversight will have to be accounted for. This increased burden on landowners would occur at the same time they are encouraged - and in public opinion, probably seen as increasingly responsible - for maintaining or improving public benefits when the tools at their disposal for predator control are severely restricted. There would also be loss of revenue to sporting interests and farming following reduction in predator controls.

For individuals, the cost of additional compliance, employment opportunity costs and the possible transfer of any costs from government or public sector to offset central licence administration costs will disincentivise residual predator control. AS already

referenced, this will further exacerbate efforts to maintain or improve the conservation status of a range of species.

The current Grouse Moor Management review established by Scottish Government[27] and the ongoing work focusing on economic insights following the recent SEFARI summary report assessing socioeconomic and biodiversity impacts of driven grouse[28] may contain information that is relevant to any fiscal drag and burden of licensing and training for land management activities.

13. **Equalities**

What overall impact is the proposed Bill likely to have on equality, taking account of the following protected characteristics (under the Equality Act 2010): age, disability, gender re-assignment, maternity and pregnancy, marriage and civil partnership, race, religion or belief, sex, sexual orientation?

- ☐ Positive
- ☐ Slightly positive
- ☒ **Neutral (neither positive or negative)**
- ☐ Slightly negative
- ☐ Negative
- ☐ Unsure

Please explain the reasons for your response.

We suggest neutral because we have no information to evaluate any impacts with regard to equality.

14. **Sustainability**

Do you consider that the proposed Bill can be delivered sustainably, i.e. without having likely future disproportionate economic, social and/or environmental impacts?

- ☐ Yes
- ☒ **No**
- ☐ Unsure

Please explain the reasons for your response.

For all the reasons that we have provided in answer to questions 1-12, we do not think that the proposed Bill can be delivered sustainably without disproportionate economic, social or environmental consequences. We envisage economic impacts in terms of direct administrative, monitoring and training costs. We can expect biodiversity costs in terms of attempts to restore degraded natural capital. Social costs are likely to occur as restrictions in predator control reduce the scope and value of the gamekeeping role for both habitat and species diversity benefits. This would manifest itself in terms of reduced employment impacting social cohesion in local, often remote areas.

[27] https://www.gov.scot/groups/grouse-moor-management-group/

[28] https://sefari.scot/research/socioeconomic-and-biodiversity-impacts-of-driven-grouse-moors-in-scotland

15. **General**

Do you have any other comments or suggestions on the proposal and are there any other wild mammals that you believe should be afforded greater protection than they currently have?

The proposed Bill is partial. It does not recognise or seek to measure the negative consequences of any reduction in predator control. It is based on anecdotal, circumstantial and selective evidence.

Strengthening of statutory training in support of codes of practice has led to demonstrable improvement in other aspects of land management. We believe that an extension of these approaches is appropriate in ensuring continuous development in animal welfare principles.

We note the recent introduction of close seasons for both brown and mountain hares following the 2011 Wildlife and Natural Environment (Scotland) Act, the effects of which should be fully evaluated.

We have assisted in launching new counting techniques to help understand the current status of mountain hares. We believe these hares are primarily threatened by changes in habitat and land use rather than species management.

We believe it is sensible to absorb both the comprehensive and detailed assessment carried out by the Grouse Moor Management Review Group's report to Scottish Government, due for publication shortly (September 2019), and the Government's response, particularly in relation to commentary on mountain hares.

Based on our own and other research evidence, we are greatly concerned about the impact of any predator control restrictions on bird species, specifically ground-nesting waders, raptors and game birds.

With any restrictions in predator control options, farming interests would likely face increased predation of young lambs. Set against a background of reduced sheep flock populations and the likelihood of increasing fox numbers in the wake of any restrictions, such constraints will be more severe in impact.

Our overriding concern is that without consideration of the likely impacts on biodiversity, the proposed limitation of predator control facilities is a retrograde step for conservation management. As such, we feel there is no net value in the proposed bill.

Additional documents:

Mountain Hare Management in Scotland

– a Game & Wildlife Conservation Trust (Scotland) briefing

Summary

- Mountain hares are an important part of Scotland's moorlands and the species must be maintained in a favourable conservation status.
- It is widely agreed that mountain hares thrive on heather moorland managed for driven red grouse shooting, that their numbers can increase quickly in such areas and that the long-term threat to their population is from landscape scale habitat change, especially coniferous tree planting, which also brings the spread of generalist predators.
- Mountain hare national distribution showed no overall change between 1997 and 2007 and highlighted an association with moorland managed for grouse shooting. Results of a comparable re-survey are expected by late 2018.
- In Scotland, mountain hares occur at the highest densities recorded in Europe. On Scottish grouse moors, their numbers show cyclical fluctuations, but appear to be stable over the long-term (NGC 1954-2015, BBS 1995-2015).
- A paper published in 2018 by Watson & Wilson reports contrary patterns, suggesting a 99% reduction in hare abundance in north-east Scotland, ascribing this decline largely due to hare culling to help prevent disease spread amongst grouse. Surprisingly, hare bag data were not considered to test this claim.
- GWCT hare counts in the last two decades, using a method described by Watson & Wilson are used in a paper currently being reviewed for publication. We found robust hare numbers (minimum 15-70 hares per 100ha) at sites close to where Watson & Wilson observed very few.
- Research using SNH approved count methodologies found hare abundances of 4-48 (depending on method) hares per 100ha in 2015, these abundances being on areas <3km from sites Watson & Wilson counted as having zero hare abundance the same year.
- The disparity between these datasets needs further assessment in a peer review forum and consideration there of the role that monitoring method, climate change (loss of snow cover and habitat quality), habitat change (loss of moorland to forestry), increasing predation pressure (specialist and generalist predators associated with woodlands and moors) and harvest levels have in affecting hare abundance on individual sites.
- Assessing hare numbers accurately is challenging, especially when trying to ensure consistency of standards across a long time-period and across highly variable sites and hare densities.
- SNH have concluded that observational counting of hares along defined transects at night using lamps or thermal imaging equipment can provide more consistent abundance indices. Consistent counting effort is highlighted within the 'Principles of Moorland Management' best practice guidance for mountain hare management, for which training will be rolled out this Autumn.
- Hare culls have been linked to the control of ticks and tick-borne diseases in red grouse. More robust testing of this perceived relationship should be a priority research topic and hares should not be widely shot for this purpose until the results of such work are available and agreed.
- Past and future impact of habitat and management loss on hares especially through woodland expansion means the upland land management community need to take on the challenge of

assessing hare numbers and acknowledge public concerns about the management of this charismatic species ahead of the Scottish Ministers' review of grouse moor management in 2019.

1. Introduction

The Game & Wildlife Conservation Trust (GWCT) is a research body with an active interest in upland land management; our work on mountain hares (*Lepus timidus*) extends back to the 1980s. GWCT are working with SNH (Scottish Natural Heritage), Scotland's Moorland Forum, the James Hutton Institute (JHI) and others to meet Scotland's need for sustainable management of mountain hares.

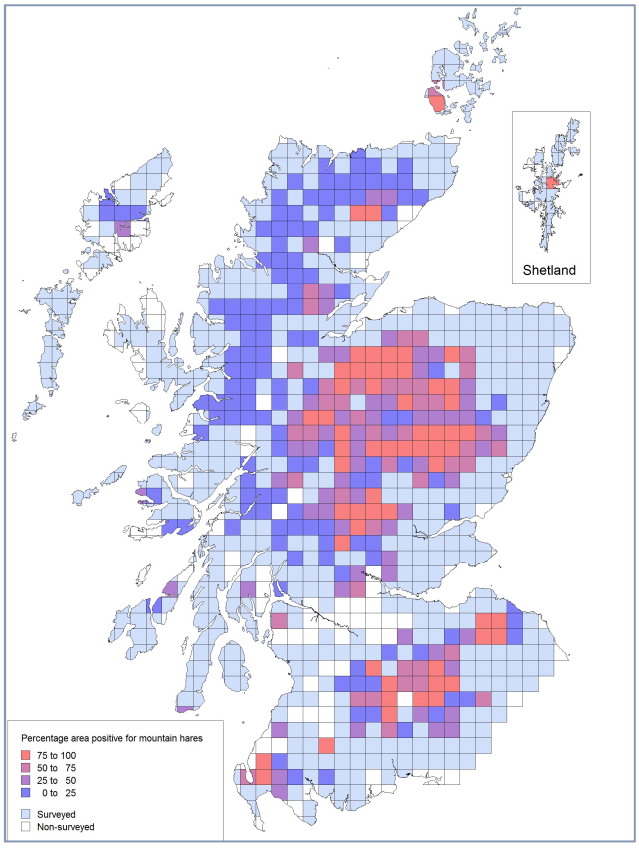
In 2017 GWCT prepared a briefing on mountain hare status and management order to inform the inquiry into Petition PE1664. We have updated this briefing since the publication of Watson & Wilson (2018)[30] because that paper is at odds with the long-term consistency in mountain hare trends provided by other assessments. It is important to consider this anomaly and what it may mean in terms of conservation management.

2. Mountain Hares in Scotland

Mountain hares are an important part of Scotland's moorland heritage. They are a valued quarry species and a locally important grazer/browser. They can be an important prey species for predators such as golden eagles, and are enjoyed as a wildlife spectacle.

When GWCT, SNH and JHI surveyed for hares we found that over 80% of the UK's mountain hare population are widely distributed in Scotland (Figure 1) and most of these are on now grouse moors[1] (Figure 1). This research also shows fewer hares in habitats without grouse management. Research has also shown that Scottish mountain hare densities can be up to ten times higher than are typical in other European countries [2].

Figure 1: The percentage of 10x10km squares where mountain hares were present in 2006/07 in Scotland. The use of a 10x10-km square scale resulted in some areas appearing to have mountain hares when in fact they were reported as absent: Yell (Shetland), Mainland (Orkney), and Islay.



This pattern of range and abundance in this study indicated that intensive fox control and habitat management by gamekeepers appears to benefit both red grouse and mountain hares[3,4]. The Mammal Society, picking up on previous reports[24], states on its website: "*Their [mountain hare] numbers have declined locally where favorable habitat such as former grouse moors has been afforested or heather has been removed by excessive grazing by other animal*."
Papers that might be perceived as critical of grouse managers' management of hares accept that mountain hares do best in areas managed for red grouse and that these areas seem likely to be future refuges for them in Scotland[30].

3. Current trends Mountain Hare population status

Legislation and good practice with respect to sustainable culling require that Scottish Government and land managers need to monitor mountain hare population status and understand the effects of hunting of the species. This approach does not require knowledge of abundance if reliable indices can be generated and to date this is how the statutory 'Article 17' reporting has been achieved.

The National Game Census (NGC) [6,27] has collected data on the numbers of hares shot on Scottish moors since 1954; 213 shoots contributed data for at least 2 years during this period. These data, assuming more hares are taken when more are available, have been used by the UK's Joint Nature Conservation Committee to represent an index of mountain hare abundance for the purposes of statutory reporting[34]. The data suggest that mountain hare populations are 'quasi-cyclical'; that is their abundance fluctuates up and down in a reasonably predictable manner over time (Figure 2). Cyclical fluctuations appear normal, with average abundances in peak years probably being around

four times higher than in low years. In Scotland, the reasons for these fluctuations may include food quality and gut parasites[9].

Figure 2: National Game Bag Census data from 213 shoots show a cyclical pattern of peaks and troughs (red line) in numbers of hares in the bag between 1954 and 2015. The pattern of change is relative to the starting point in 1954. Bars are 95% CL

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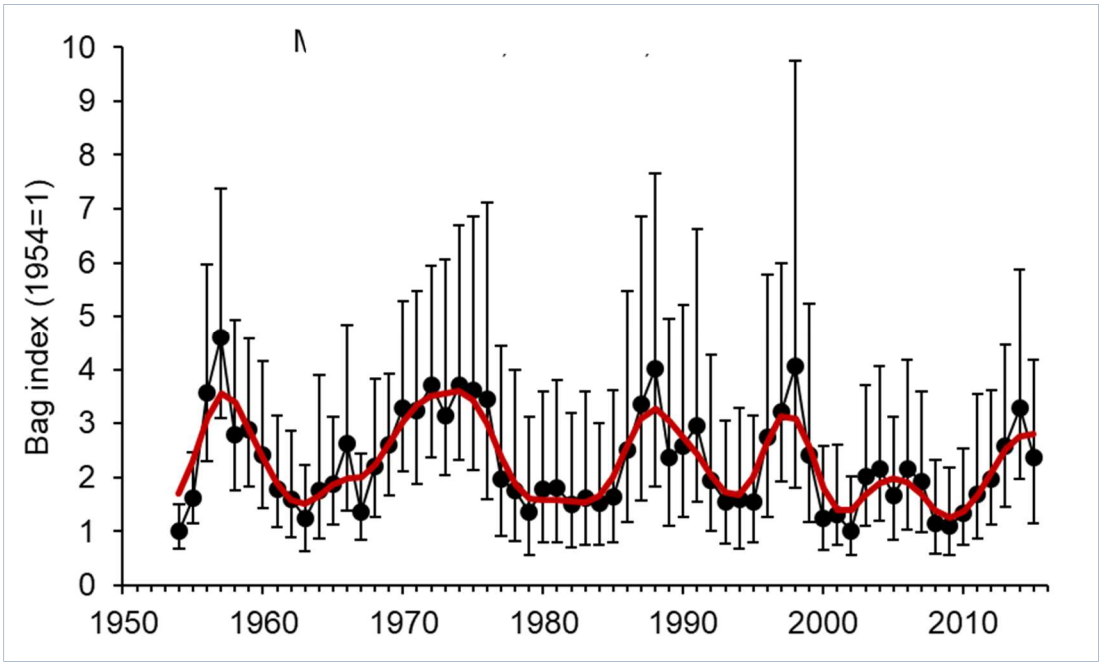
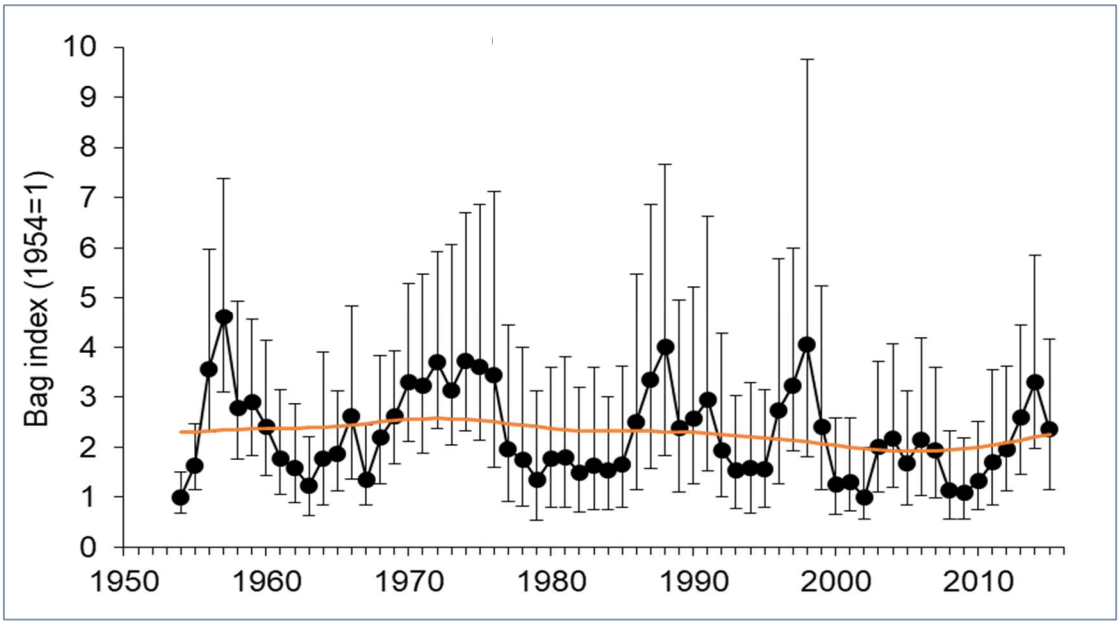


Removing the cyclical effect using GAM (generalized additive modelling) shows there is no long-term trend, either up or down, in these data (Aebischer pers comm; Figure 3).

Figure 3: National Game Bag Census data of hares taken suggest that despite large short- and medium-term changes, there is no discernable *long-term* trend (orange line) in numbers of hares in the bag between 1954 and 2015.



4. Other data on trends

In 2008 SNH, GWCT and JHI established that the Scottish range of mountain hares has not shrunk since the mid-1990s[1]. This is important as range contraction is often the first sign of a population in conservation concern.

The British Trust for Ornithology's annual Breeding Bird Survey (BBS) data on hare sightings align closely with NGC data[34]. The shorter BBS database indicated a decline of 37% in the UK and Ireland hare sightings between 1995 and 2015[7], with a 15% increase in sightings from 2010. Recent modelling of these data suggests that this short-term decline may be significant.[31] however the methods used in these counts are not thought to accurately assess hare abundance[10].

A recent paper published by Watson and Wilson[30] reports a 99% decline in hares between1954 and 2017, with the decline being steepest from 1999 onwards. The authors attribute this to increased hare culls by grouse moor managers to help combat ticks and tick-borne diseases by reducing hares as tick hosts, but they do not consider including an analysis of hare bag data to either support or refute their hypothesis.

There are challenges reconciling the main finding of the Watson and Wilson study with observations from others, either within or outside of their north-east Scotland study areas. The severe decline described by Watson & Wilson is not reflected at a national level by either the GWCT's National Game Census shooting bag data, nor by the volunteer collected data from the BTO's Breeding Bird Survey. This is despite the significant sample sizes, being assembled by either participating estates or volunteers respectively, underpinning these two national schemes, and the inclusion of several of the same sites in north-east Scotland surveyed by Watson & Wilson. While Watson & Wilson highlight that: "*… the severe recent decline on grouse moors in our study area should not be assumed to be replicated across all grouse moors or other habitats occupied by mountain hares in the UK*" the vast discrepancy between this dataset and others including the NGC and BBS, and the absence of cyclical changes in abundance in the Watson & Wilson dataset, is perplexing and concerning.

Examining other hare count data from the north-east of Scotland to increase insight into these gross differences is work in progress with one paper submitted by GWCT for peer review. The data show noteworthy differences with Watson & Wilson's counts. In north-east Scotland in 2015, research into improving count methodologies found hare abundances of 4 - 48 (depending on method) hares per 100ha, these abundances being on areas less than 2km from sites Watson & Wilson determined as having zero hare abundance the same year. GWCT hare counts in the last two decades, using similar methods as those described by Watson & Wilson, found robust hare numbers (minimum 15 - 70 hares per 100ha in 2017) at moorland sites close to where Watson & Wilson reported almost none in 2017 (Hesford et al. pers comm).

Evidence from gamekeepers and other land managers can be a valuable source of 'Practitioner Knowledge'. The value of such 'co-produced' information is recognised in some SNH supported projects[28]. GWCT have identified at least 40 sites across Scotland where hare abundance has been assessed by sporting managers in some way in 2018. Data analysis is at an early stage but counts in 2018 from areas where Watson & Wilson also had count sites have indicated 14 hares per km of transect.

The variance noted between studies in hare trends highlights the need for a reliable, widespread, long-term monitoring system for mountain hares in Scotland to help us understand what is happening to the population, as well as which factors are associated with any changes. There are a number of methodological issues in the Watson & Wilson approach (especially use of multiple count methods, some known to underestimate or inadequately assess hare presence and which are inaccurate at low densities, but also: inconsistent study site areas and locations; study site sizes being smaller than ideal; low sample sizes for sites that have been continually assessed; unknown numbers of observers or correction for observer variation, use of non-randomly chosen alpine sites as control areas for trends on different moorland habitats, use of indices for grouse management rather than direct data, no linkage of reported trend to hare bag or harvest data) which now require further assessment to see if they can explain why this study does not match the other available data.

5. Future monitoring

Many of the methodological issues noted above are more evident now SNH, JHI and GWCT have improved the accuracy of mountain hare abundance assessments and SNH Report 1022 identifies that some of the methods used by surveys to date generate unreliable or low estimates of abundance[32]. The most reliable option seems to be transect counts at night with lamps or thermal imaging equipment. However, this has not been used as a standard method until comparatively recently, so there are no long-term data with which to compare it, meaning that data from older counts cannot be compared with the newer methods.

We are working with SNH and local moorland groups to train moorland managers in counting hares using these new approaches as part of a National Monitoring Scheme that would contribute to both statutory reporting requirements and estate good harvesting practice. We have also completed the 'Principle of Moorland Management' guidance document for Scotland's Moorland Forum.[33] These reports provide a formal framework for the informed and updatable assessments of current and future mountain hare management.

6. Current management of Mountain Hares

Upland management influences mountain hare numbers. Predator control, especially that of foxes and habitat management, notably burning heather, are positively associated with hares and are typically practiced on moors managed for red grouse.

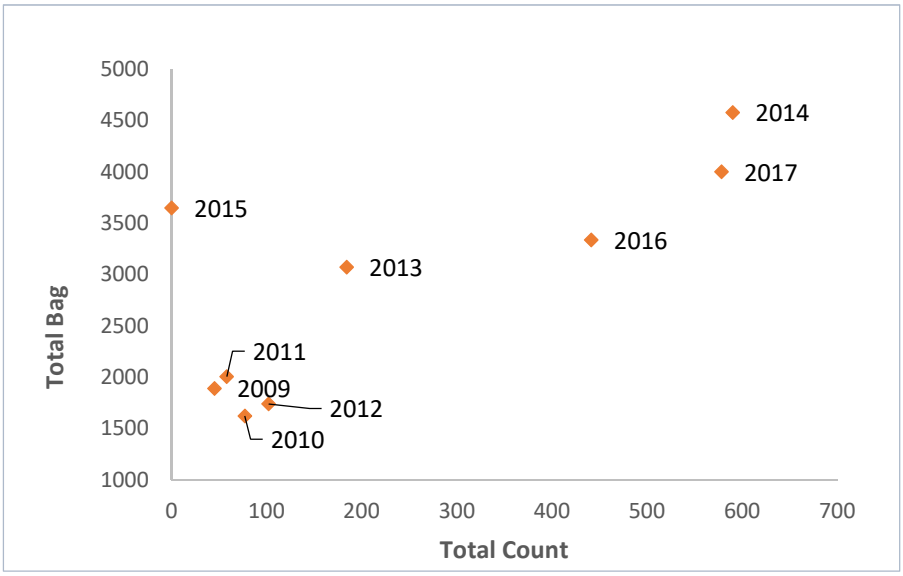
Declines in hare abundance are predicted from Scottish Government's intentions for new woodland creation and the expansion of existing woodlands as hares typically do not use dense conifer woods, especially following canopy closure[37]. Furthermore, these habitats will favor generalist predators such as corvids and foxes, an effect noted in work on other species such as curlew[35], which will exert increased predation pressure on hares remaining in adjacent moorland areas. The local extinction of mountain hares from Langholm Moor during a period without keepering and a maturing adjacent forest is a case example. Climate change may also affect hare distribution and abundance through loss of snow cover and habitat quality, increasing predation risk and disease transmission[37].

Hares have been shot for sport and food for over 100 years, a practice where sustainability is a core condition so that there is a future opportunity to take a bag. The National Game Bag census suggests

an average of 25,207 hares shot p.a. (mean 2010-2015) from a population that current density and distribution estimates suggest may exceed the 350,000 population estimate based on former count methods. In the past estates have been able to gross £10 per hare shot, a strong incentive to manage sustainably.

Practitioner commentary is that the hare's population dynamics may be more robust than is commonly thought, with harvesting allowing improved breeding success[22]. Critically there are notable numbers of hares in these areas even after harvesting of hares takes place (Figure 3). This is the repeated experience of Scottish moors land managers who undertake the hare shooting on land where predators are controlled and suitably habitat managed.

Figure 3. Estate data indicating the number of mountain hares counted in July (2009 -17) by men and dogs on transects on moorland in Inverness-shire in relation to the bag of hares shot on the areas where the transects were located in the season following the count. Hare numbers and bag are pooled across transects and sites. Visual evidence of the sightings of hares in Figure 3 was provided in March 2015 to SNH staff during a field visit.



Data;Mackenzie, pers comm.

Hare numbers may be deliberately reduced for two reasons; for habitat protection in woodland expansion areas and statutorily designated sites such as SSSIs, and to reduce tick hosts as part of disease management in red grouse[1]. Habitat protection may be an issue on designated sites where 'control of grazing pressure' does not specify which species exert this pressure. Hares remain during winter, when many hill sheep flocks are removed to protect important moorland habitats, and seven mountain hares have the same dry matter food requirement as one blackface ewe[29]. Young woodland areas can support high numbers of hares which graze on and amongst trees. To protect woodlands, hares may be controlled to prevent both economic and ecological damage to trees [21].

7. Tick & Disease Control

Disease control in red grouse has been an important reason for culling mountain hares in recent years. Hares are shot to reduce the overall number of tick (*Ixodes ricinus*) hosts on a moor that might impact grouse chicks. The rationale underpinning this activity is based upon studies GWCT undertook between the late 1970s and 1990s in Morayshire, which showed a positive association between hare abundance and tick biting rates on grouse[11]. Mountain hares, along with other

mammals, provide a blood meal for ticks, thus hosting ticks whilst they complete their life cycle. Ticks are increasing in Scotland[18] and it is likely that disease transmission is also increasing. Ticks can carry a virus called *Louping-ill* which can cause high mortality in sheep and red grouse, with 79% of infected grouse chicks dying from the virus in laboratory and field conditions[14]. Upland wader chicks (lapwing, golden plover and curlew) have been observed with high numbers of ticks which may reduce their overall fitness, though there is no incidence of viral infection being detected in these chicks from the relatively small sample tested[15].

GWCT see a case for more experimental work to inform the modelled connection between tick, LIV transmission and mountain hare[23]. In the meantime, stabilising grouse numbers through disease management helps underpin the continued private investment in conservation, providing wider biodiversity and public benefits which include; protecting and enhancing moorland habitat and sensitive ground nesting bird populations, such as waders,[35] an increase in upland farm economics through improved sheep productivity[16] and possible, though untested, benefits for public health, as ticks also transmit Lyme disease[17]. We maintain that by limiting tick hosts and treating sheep with acaricidal pour-ons and anti-viral vaccination it is possible to suppress tick and louping-ill to levels where their impact on sheep flock health and red grouse is reduced to a minimum[19].

8. <u>Future Conservation of Mountain Hares</u>

GWCT believe mountain hares benefit from grouse moor management. Constraint on grouse moor managers, including dis-incentivising management by restricting the harvesting of hares, may be ill-advised at a time when hares have retreated to the moors in the face of predation, forestry and farming practice. Biologically implausible statements about the current population status in parts of Scotland do not reflect past, current or future reality and potential for management of this national asset.

However, GWCT stands by its declared joint position with SNH and SLE on the need for restraint[25], both to ensure compliance with the law and for best practice. These views were also upheld by a 2015 review for SNH[26] and are being incorporated into the 'Principles of Moorland Management' guidance on mountain hares being produced by Scotland's Moorland Forum. There are good reasons for taking mountain hares on Scottish moors, but GWCT has always been clear that hare culls cannot be justified for disease control where there are significant numbers of other tick hosting species, particularly deer, or where tick and disease levels are low[12, 20]. In these cases, the priority for disease control should be deer management, whilst treating sheep. Additionally, we believe that if hares are locally at lower than peak numbers, moor managers should consult their neighbours to make sure natural declines and harvest offtake for sporting or other purposes are not coupled across large landscape areas.

Finally, we have made it clear for many years[36] that moorland managers should act in the context of some demonstrable assessment of mountain hare abundance. This would aid their own decision making, and if publicly presented, allay fears about mountain hare conservation. We understand from keepers and others that 2017 was a good breeding year for mountain hares across their range and 2018 a variable year in terms of productivity. Putting this practitioner knowledge into an indexed context is of critical importance.

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