

**European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)**

Supporting documentation for the
Third Report by the United Kingdom under
Article 17

on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

Species:

S1334 - Mountain hare (*Lepus timidus*)

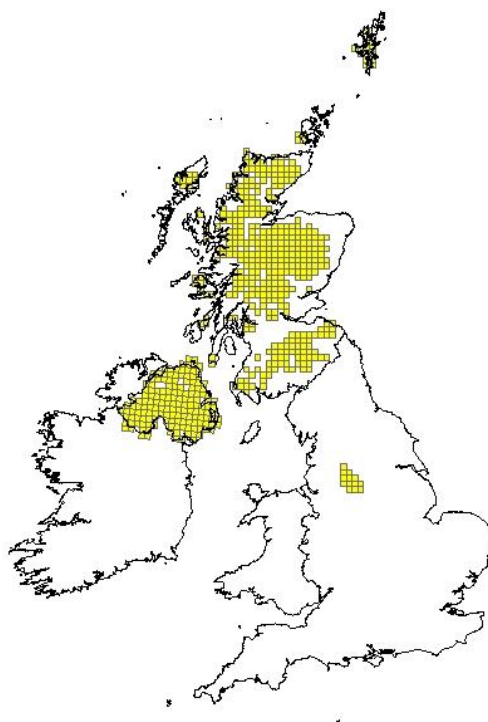
IMPORTANT NOTE – PLEASE READ

- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural England** and refers only to the state of the habitat/species in **England** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
0.2 Species	0.2.1 Species code	S1334
	0.2.2 Species scientific name	<i>Lepus timidus</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Mountain hare

1.1 Maps			
1.1.1 Distribution map		Sensitive	False



1.1.2 Method used - map	Complete survey/Complete survey or a statistically robust estimate
1.1.3 Year or period	2007-2012
	L. timidus is widespread in Scotland, but natural populations are absent from England and Wales. However, the species was introduced into the Peak District, Derbyshire in the 19th Century and that population still survives.
1.1.4 Additional	False

distribution map	
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"AEBISCHER, N.J., DAVEY, P.D. & KINGDON, N.G. 2011. National Gamebag Census: Mammal Trends to 2009. Game & Wildlife Conservation Trust, Fordingbridge (http://www.gwct.org.uk/ngcmammals)</p> <p>BATTERSBY, J. (Ed.) & TRACKING MAMMALS PARTNERSHIP. 2005. UK Mammals: Species Status and Population Trends. Joint Nature Conservation Committee/Tracking Mammals Partnership.</p> <p>DAVIS, S.E., NEWSON, S.E. & NOBLE, D.G. 2007. The production of population trends for UK mammals using BBS mammal data: 1995-2005 update. BTO Research Report No. 462.</p> <p>HARRIS, S., MORRIS, P., WRAY, S. & YALDEN, D. 1995. A Review of British Mammals. Joint Nature Conservation Committee.</p> <p>HARRISON, A., NEWHEY, S., GILBERT, L., HAYDON, D.T. & THIRGOOD, S. 2010. Culling wildlife hosts to control disease: mountain hares, red grouse and louping ill virus. <i>Journal of Applied Ecology</i>, 47: 926 -930.</p> <p>IAISON, G.R., HULBERT, I.A.R., HEWSON, R. & DINGERKUS, K. 2008. Mountain Hare. Pages 220-228 In HARRIS, S. & YALDEN, D.W. <i>Mammals of the British Isles: Handbook 4th edition</i>. The Mammal Society, Southampton. 799pp.</p> <p>MALLON, D.P. 2001. <i>The Mountain Hare in the Peak District</i>. Derbyshire Wildlife Trust, Belper.</p> <p>MALLON, D.P., WHEELER, P., WHITELEY, D. & YALDEN, D.W. 2003. Mountain Hares in the Peak District. <i>British Wildlife</i>, December 2003.</p> <p>NEWHEY, S., WILLEBRAND, T., HAYDON, D.T., DAHL, F., AEBISCHER, N.J., SMITH, A.A. & THIRGOOD, S.J. 2007. Do mountain hare populations cycle? <i>Oikos</i>, 116, 1547-1557.</p> <p>NEWHEY, S., DAHL, F., WILLEBRAND, T. & THIRGOOD, S.J. 2007. Unstable dynamics and population regulation in mountain hares: a review. <i>Biological Reviews</i>, 82, 527-549.</p> <p>TAPPER, S. 1987. Cycles in game-bag records of hares and rabbits in Britain. <i>Symposia of the Zoological Society of London</i>, 58:79-98.</p>

	<p>TAPPER, S. 1996. Distribution and level of take of native mountain hares <i>Lepus timidus</i>. Joint Nature Conservation Committee unpublished report, Peterborough.</p> <p>THULIN, C.G. 2003. The distribution of mountain hares <i>Lepus timidus</i> in Europe: a challenge from brown hares <i>L. Eurpaeus</i>? <i>Mammal Rev.</i> 33:29-42.</p> <p>YALDEN, D.W. 1984. The status of the mountain hare, <i>Lepus timidus</i> in the Peak District. <i>Naturalist</i>, 109:55-59."</p>

2.3 Range	
2.3.1 Surface area Range	
2.3.2 Method used Surface area of Range	Estimate based on partial data with some extrapolation and/or modelling
2.3.3 Short-term trend Period	2001-2012
2.3.4 Short term trend Trend direction	<p>increase</p> <p>TAPPER, S. 1996. Distribution and level of take of native mountain hares <i>Lepus timidus</i>. JNCC unpublished report, Peterborough.</p> <p>MALLON, D., WHEELER, P., WHITELEY, D. & YALDEN, D.W. 2003. Mountain Hares in the Peak District. <i>British Wildlife</i>. Dec 2003.</p> <p>In England, a series of surveys has shown that the hare has increased its range in the Peak District, though this remains a small isolated population, with little opportunity for further expansion.</p>
2.3.5 Short-term trend Magnitude	a) Minimum
2.3.5 Short-term trend Magnitude	b) Maximum
2.3.6 Long-term trend Period	
2.3.7 Long-term trend Trend direction	
2.3.8 Long-term trend	a) Minimum

Magnitude	Optional	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
	a) Genuine change?	True
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...		

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	number of individuals
	b) Minimum	10000
	The estimate is based on the original estimate by Harris et al (1995) which was based on either 1) the area of heather moorland (the hare's main habitat) or 2) the area of distribution multiplied by an average density figure from published studies. For England, the estimate has been amended to reflect the most recent survey of the population (Mallon et al, 2003). Large between year fluctuations make data difficult to interpret. Harris	

	<p>et al's reliability rating of the above estimate was three meaning that the estimated margin of error is +/- 50%.</p> <p>HARRIS, S., MORRIS, P., WRAY, S. & YALDEN, D. (1995) A Review of British Mammals. Joint Nature Conservation Committee.</p> <p>MALLON, D., WHEELER, P., WHITELEY, D. & YALDEN, D.W. 2003. Mountain Hares in the Peak District. British Wildlife, Dec 2003.</p>	
	c) Maximum	10000
2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	In England, long-term counts of the only population provide a firmer basis for estimating population size.
2.4.4 Year or period	2002-	
2.4.5 Method used Population size	Estimate based on expert opinion with no or minimal sampling	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	increase	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence	

	interval	
2.4.9 Short-term trend Method used	Estimate based on partial data with some extrapolation and/or modelling	
2.4.10 Long-term trend – Period	1984-2009	
2.4.11 Long-term trend Trend direction	stable	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used	2	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	10000
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	The favourable reference population value has been derived using 1994 as the baseline and making a judgement on whether the population in 1994 was viable in the long-term, using the decision tree in Note 1 (of 'Assessing Conservation Status: UK Approach') as a guide. Historic and current information on population size, distribution and trends have been

		used in order to assess viability and if the 1994 level was not viable, then consideration has been given to what would constitute a viable population.
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	True
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species		
2.5.1 Area estimation	1300	
	<p>L. timidus favours upland dwarf shrub heath. A dense understorey is thought to be important for food and shelter. L. timidus populations are localised and population densities range from 3-46 per km², depending upon habitat type. The highest densities occur on heather moors overlying base-rich rocks, with the lowest densities where there are acidic rocks. Locally, densities may reach 300 per km² (Iaison et al, 2008).</p> <p>The area of habitat used by L. Timidus has been estimated by looking at the number of occupied 10km squares. This methodology was agreed upon by all SNCO specialists for generalist species.</p> <p>IAISON, G.R., HULBERT, I.A.R., HEWSON, R. & DINGERKUS, K. 2008. Mountain Hare. Pages 220-228 In HARRIS, S. & YALDEN, D.W. Mammals of the British Isles: Handbook, 4th edition. The Mammal Society, Southampton. 799pp.</p> <p>It is unknown whether the amount of habitat in the UK is sufficient to support a viable population of the species.</p>	
2.5.2 Year or period	2012-	
2.5.3 Method used Habitat for the species	Estimate based on expert opinion with no or minimal sampling	
2.5.4 Quality of the habitat	a) Habitat quality	Unknown
	b) Assessment	This species relies largely on heather

	method	moorland, which is in decline. However, there has been no recent assessment of the quality of habitat available to the mountain hare in the areas in which it has been recorded in England.
2.5.5 Short-term trend Period	2001-2012	
2.5.6 Short-term trend Trend direction	stable	
2.5.7 Long-term trend Period		
2.5.8 Long-term trend Trend direction		
2.5.9 Area of suitable habitat for the species	a) Value in km²	1300
	The same estimated figure that was used for 2.5.1 has been used for area of suitable habitat. It was agreed with all SNCO specialists that the same figure would be used for generalist species.	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A04: grazing	H	
B07: Forestry activities not referred to above	H	
A02: modification of cultivation practices	M	

B01: forest planting on open ground	M	
F03: Hunting and collection of wild animals (terrestrial)	M	
M02: Changes in biotic conditions	L	

Hares benefit from moorland management, including areas of sustainably managed grouse moor. However, they also suffer from harvesting in the same areas. In addition, hares are culled in an effort to limit luping ill, a virus that affects red grouse (Harrison et al. 2010). There is currently no significant evidence that harvesting has driven a change in distribution or population.

Loss or fragmentation of open moorland through afforestation could also affect hare density. *L. Timidus* will rarely cross more than 20km of unsuitable habitat.

L. Timidus may also be susceptible to replacement by *L.europaeus* if climate change leads to warming/drying (Thulin, 2003).

HARRIS, S., MORRIS, P., WRAY, S. & YALDEN, D. 1995. A Review of British Mammals. Joint Nature Conservation Committee.

HARRISON, A., NEWHEY, S., GILBERT, L., HAYDON, D.T. & THIRGOOD, S. 2010. Culling wildlife hosts to control disease: mountain hares, red grouse and louping ill virus. *Journal of Applied Ecology*, 47: 926 -930.

IAISON, G.R., HULBERT, I.A.R., HEWSON, R. & DINGERKUS, K. 2008. Mountain Hare. Pgs 220-228 In HARRIS, S., & YALDEN, D.W. *Mammals of the British Isles: Handbook*, 4th edition. The Mammal Society, Southampton. 799pp.

THULIN, C.G. 2003. The distribution of mountain hares *Lepus timidus* in Europe: a challenge from brown hares *L. Europaeus*? *Mammal Review* 33: 29-42.

2.6.1 Method used – Pressures

mainly based on expert judgement and other data

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A04: grazing	H	
B07: Forestry activities not referred to above	H	
A02: modification of cultivation practices	M	
B01: forest planting on open ground	M	
F03: Hunting and collection of wild animals (terrestrial)	M	

M02: Changes in biotic conditions	L	

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2.7.1 Method used – Threats	expert opinion
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2.8 Complementary information

2.8.1 Justification of % thresholds for trends

2.8.2 Other relevant information

2.8.3 Trans-boundary assessment

2.9 Conclusions (*assessment of conservation status at end of reporting period*)

Please refer to the United Kingdom assessment for this species.

3 Natura 2000 coverage & conservation measures - Annex II species

(only applies to species listed under Annex II of the Directive)

3.1 Population	
3.1.1 Population size Estimation of population size included in the SAC network	a) Unit
	b) Minimum
	c) Maximum
3.1.2 Method used	
3.1.3 Trend of population size within the network (short-term trend)	

3.2 Conservation measures														
Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.														
3.2.1 Measure	3.2.2 Type					3.2.3 Ranking H = high importance M = medium importance L = low importance	3.2.4 Location where the measure is PRIMARILY applied			3.2.5 Broad evaluation of the measure				
	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown

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