

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

**Fourth Report by the United Kingdom
under Article 17**

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the species:

S1363 - Wildcat (*Felis silvestris*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, <https://jncc.gov.uk/article17>, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	UK
1.2 Species code	1363
1.3 Species scientific name	<i>Felis silvestris</i>
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Wildcat

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2013-2018
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

Senn, H. , Ghazali, M. , Kaden, J. , Barclay, D. , Harrower, B. , Campbell, R. D., Macdonald, D. W. and Kitchener, A. C. (2018), Distinguishing the victim from the threat: SNP-based methods reveal the extent of introgressive hybridisation between wildcats and domestic cats in Scotland and inform future in-situ and ex-situ management options for species restoration. *Evol Appl.* Accepted Author Manuscript. . doi:10.1111/eva.12720

KILSHAW, K., MONTGOMERY, R. A., CAMPBELL, R. D., HETHERINGTON, D. A., JOHNSON, P. J., KITCHENER, A. C., MACDONALD, D. W. & MILLSPAUGH, J. J. 2016. Mapping the spatial configuration of hybridization risk for an endangered population of the European wildcat (*Felis silvestris silvestris*) in Scotland. *Mammal Research*, 61(1), 1-11.

Kilshaw K. 2016. Introgression and the current status of the Scottish wildcat (*Felis silvestris silvestris*). DPhil Thesis, University of Oxford

Littlewood, N.A., Campbell, R.D., Dinnie, L., Gilbert, L., Hooper, R., Iason, G., Irvine, J., Kilshaw, K., Kitchener, A., Lackova, P., Newey, S., Ogden, R., Ross, A. 2014. Survey and Scoping of Wildcat Priority Areas. Scottish Natural Heritage Commissioned Report No. 768

Kitchener, A.C., Yamaguchi, N., Ward, J.M., Macdonald, D.W. 2005. A diagnosis for the Scottish wildcat (*Felis silvestris*): a tool for conservation action for a critically-endangered felid. *Animal Conservation* 8, 223-237.
<http://www.scottishwildcattaction.org/>

Mathews F, Kubasiewicz LM, Gurnell J, Harrower CA, McDonald RA, Shore RF. (2018) A Review of the Population and Conservation Status of British Mammals. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.

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6. Population

6.1 Year or period	2010-2018	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	30
	c) Maximum	314
	d) Best single value	
6.3 Type of estimate	95% confidence interval	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2012-2018	
6.8 Short-term trend Direction	Uncertain (u)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	3500 with unit number of individuals (i)
	b) Operator	
	c) Unknown	
	d) Method	The FRP is the same as in 2013. The value is considered to be large enough for the population to be viable and no lower than the population estimate from when the Habitats Directive came into force in the UK. For further details please see the 2019 Article 17 UK Approach document and relevant country-level reporting information.
6.16 Change and reason for change in population size	Genuine change Improved knowledge/more accurate data Use of different method The change is mainly due to: Genuine change	

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6.17 Additional information

The short term trend is uncertain because camera surveys since 2015 have been concentrated on 6 wildcat priority areas, whereas surveys conducted between 2012-2013 were undertaken across the known range of the species. It seems likely the short term trend is declining, but there is some uncertainty. The current population estimate is more than 25% below the FRP and so the conclusion for population is Unfavourable-bad.

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat

a) Are area and quality of occupied habitat sufficient (for long-term survival)? Unknown

b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)? Unknown

7.2 Sufficiency of area and quality of occupied habitat Method used

Based mainly on expert opinion with very limited data

7.3 Short-term trend Period

2010-2018

7.4 Short-term trend Direction

Uncertain (u)

7.5 Short-term trend Method used

Based mainly on expert opinion with very limited data

7.6 Long-term trend Period

7.7 Long-term trend Direction

7.8 Long-term trend Method used

7.9 Additional information

There are very few data on changes in habitat availability. For a relatively generalist carnivore such as the wildcat, this is difficult to measure. There is no evidence that there has been a decline in habitat, while recent afforestation projects theoretically should provide new habitat for wildcats. However, the decline in rabbits over the past decade (Matthews et al. 2018) may represent a decline in the quality of some habitats (those where rabbits were present in the past). The conclusion is therefore unknown with an uncertain trend.

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H
Bycatch and incidental killing (due to fishing and hunting activities) (G12)	H
Illegal harvesting, collecting and taking (G11)	M
Other invasive alien species (other than species of Union concern) (I02)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M
Threat	Ranking
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H

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Bycatch and incidental killing (due to fishing and hunting activities) (G12)	H
Illegal harvesting, collecting and taking (G11)	M
Other invasive alien species (other than species of Union concern) (I02)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M

8.2 Sources of information Regarding pressure/threat G11, there is anecdotal evidence, for example that based on informal conversations by Scottish Wildcat Conservation Action Plan (SWCAP members) with land managers. Attitudes vary and while land management organisations are supportive of wildcat conservation activities, some individual land managers are not.

8.3 Additional information

9. Conservation measures

9.1 Status of measures

a) Are measures needed? Yes

b) Indicate the status of measures Measures identified and taken

9.2 Main purpose of the measures taken Increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population')

9.3 Location of the measures taken Both inside and outside Natura 2000

9.4 Response to the measures Short-term results (within the current reporting period, 2013-2018)

9.5 List of main conservation measures

Control/eradication of illegal killing, fishing and harvesting (CG04)

Reduce bycatch and incidental killing of non-target species (CG05)

Management, control or eradication of other invasive alien species (CI03)

Reinforce populations of species from the directives (CS01)

9.6 Additional information Conservation focuses on 5 (initially 6) priority areas under the Scottish Wildcat Action project. Work includes neutering and vaccinating feral and obviously hybridised cats, encouraging domestic cat neutering and working with land managers to reduce threats from accidental killing. Ultimately, there may be too few wildcats (as defined by pelage (i.e. fur)) remaining for such measures alone to have a reasonable chance of increasing the population of wildcats in these areas.

10. Future prospects

10.1 Future prospects of parameters

a) Range Bad

b) Population Bad

c) Habitat of the species Unknown

10.2 Additional information Future trend in Range is Very Negative - decreasing >1% (more than one percent)

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per year on average; Future trend in Population is Very Negative - decreasing >1% (more than one percent) per year on average; and Future trend in Habitat for the species is Unknown. For further information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.

11. Conclusions

11.1. Range	Unfavourable - Bad (U2)
11.2. Population	Unfavourable - Bad (U2)
11.3. Habitat for the species	Unknown (XX)
11.4. Future prospects	Unfavourable - Bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable - Bad (U2)
11.6 Overall trend in Conservation Status	Unknown (x)
11.7 Change and reasons for change in conservation status and conservation status trend	<p>a) Overall assessment of conservation status</p> <p>No change</p> <p>The change is mainly due to:</p> <p>b) Overall trend in conservation status</p> <p>Use of different method</p> <p>The change is mainly due to: Use of different method</p>
11.8 Additional information	<p>Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is decreasing and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.</p> <p>Conclusion on Population reached because: (i) the short-term trend direction in Population size is uncertain; and (ii) the current Population size is more than 25% below the Favourable Reference Population.</p> <p>Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is uncertain.</p> <p>Conclusion on Future prospects reached because: (i) the Future prospects for Range are bad; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are unknown.</p> <p>Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions are Unfavourable-bad.</p> <p>Overall trend in Conservation Status is based on the combination of the short-term trends for Range – decreasing, Population – uncertain, and Habitat for the species – uncertain.</p> <p>Overall assessment of Conservation status for this species has not changed since 2013.</p>

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Overall trend in conservation status has changed from deteriorating in 2013 to unknown in 2019. This is due to change in method and is not genuine change. Trends for Favourable parameter conclusions have been included in 2019 and were not included in 2013. In addition, the Future prospects trend for 2019 has been removed from the assessment of overall trend, whereas it was included in 2013. Without these changes the trend would continue to be deteriorating.

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)

- a) Unit
- b) Minimum
- c) Maximum
- d) Best single value

12.2 Type of estimate

12.3 Population size inside the network Method used

12.4 Short-term trend of population size within the network Direction

12.5 Short-term trend of population size within the network Method used

12.6 Additional information

13. Complementary information

13.1 Justification of % thresholds for trends

13.2 Trans-boundary assessment

13.3 Other relevant Information

The prospects for wildcats in Scotland appear worse than reported in 2013. However, much if this is due to the availability of better information. Recent genetic analysis (Senn et al. 2018) hints that hybridisation had already begun during the 1980s and introgressive hybridisation was well progressed in the following decades. A possible driver of this was small population size as spotlighting technology improved predator control efficiency prior to legal protection in 1988. The main recent change in the range is probably at least in part due to weather and prey availability.

Distribution Map

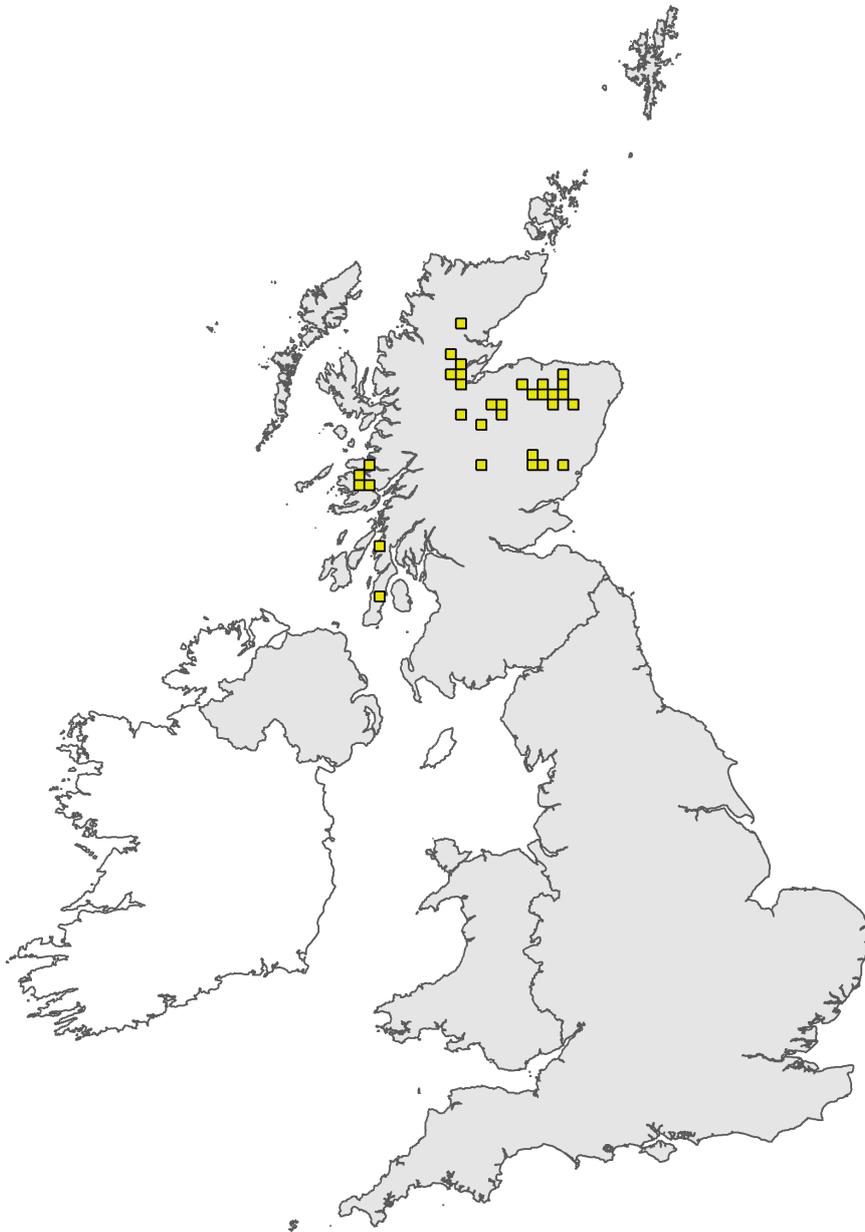


Figure 1: UK distribution map for S1363 - Wildcat (*Felis silvestris*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

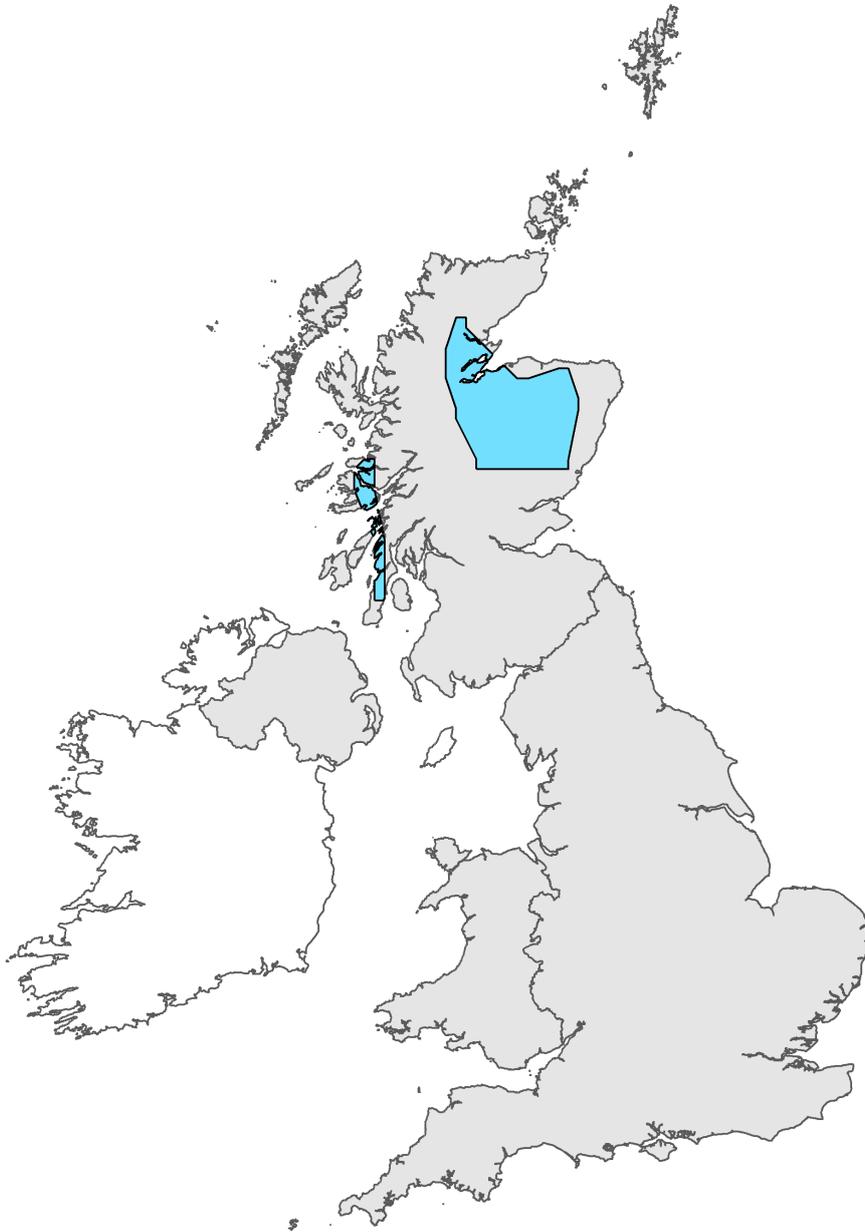


Figure 2: UK range map for S1363 - Wildcat (*Felis silvestris*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 45km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: Felis silvestris (1363) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	Available evidence suggest the range has shrunk since the last reporting period, but little evidence of wildcat remaining in the far north of the range. This is likely to be due in large part to better information on the extent of hybridisation and increased use of camera trap technology to assess presence of wildcats. Alongside this, the criteria for accepting a wildcat record has been hardened so that only photographic evidence or very clear descriptions from a good eye-witness are accepted as correct. However, the range decrease is also likely to reflect some real changes in the distribution, with very few cats of any type recorded during surveys led by K Kilshaw in 2012-2013 (Kilshaw 2016). This decline is possibly due to a series of unusually harsh snowy winters in 2009-2011 alongside declines in rabbit population, in turn from rabbit haemorrhagic disease (Mathews et al. 2018), but possibly also harsh winters in 2009-2012 (R Campbell, pers. obs). This may have operated in conjunction with persecution (pressures G11 and G12) though this is very difficult to measure.
6.3 Type of estimate	Based on surveys conducted by Kilshaw, Campbell and colleagues (using grids of baited paired trail cameras at 20 locations over 60 days at 27 locations across the known range of the wildcat (Hetherington & Campbell 2013; Kilshaw 2016; Kilshaw et al. 2016). Estimate reported from this was 115-314 individuals in Scotland. Note however this was based on a 'pelage score' of 14/21 (Kitchener et al. 2005), which is a 'relaxed' definition for wildcat. The Scottish Wildcat Action project (www.scottishwildcataction.org) adopts a higher threshold of 17/21, while recent genetic analysis (Senn et al. 2018) suggest most if not all wildcats have domestic cat ancestry (i.e. are hybrids). Therefore, depending on where you set the threshold for wildcat, there could be fewer than this. In any event, the estimate is likely to be inflated and the worst case scenario is that there are too few remaining to be viable. The most recent survey by Scottish Wildcat Action from winter 2017-2018 detected 15 possible wildcats in its priority areas (a minimum number alive estimate). The Mammal Society's most recent estimate suggests a total population of 30-430 (Mathews et al. 2018), but this is again based on a relaxed definition (pelage score 226514/21). Furthermore, the range used by Mathews et al. (2018) includes all records since 1995 whereas here we are using records since 2013. For the estimate, we take the narrowest range from Kilshaw 2016 and Mathews et al. 2018 to estimate 30-315, but stress that the real figure is likely to be at the lower end of this range.
6.8 Short term trend; Direction	Short term trend is uncertain because camera surveys since 2015 have been concentrated on 6 wildcat priority areas whereas surveys conducted 2012-2013 were across the known range of wildcat.

6.16 Change and reason for change in population size

Past estimates were based on extrapolations and therefore no estimate was provided in the last report. The the change in reported population therefore arises from better data. In this current report it is important to emphasise that the population number estimates (i.e. 30-314) applies data that was primarily generated using a method for scoring the pelage of observed cats. This is a practical and pragmatic methodology that can be applied in a field situation. However new genetic techniques are now available to assess wildcat genetics (Senn et al. 2018), and where it has been possible analyse samples then we have found most 'wildcats' defined on the basis of pelage have significant proportion of domestic cat ancestry. For the purposes of this Article 17 reporting exercise we are using data generated from pelage scoring as this is a more appropriate method when observing animals in the field, but it is important to highlight the new evidence we have of a 'hybrid swarm' in the Scottish environment, which appears to be a situation not found in other parts of the EU. However, as evidenced by a dramatic decline in range (see audit for 5.3) it is possible there may be a genuine decline in the numbers of wildcats resulting from recent weather and rabbit population declines, although detail is lacking. Furthermore, with recent work showing the extent of introgressive hybridisation in wildcats, it is highly likely that each annual offspring cohort is more hybridised than the last. It is not possible to attribute the population change exclusively to either genuine change or improved knowledge. To report that the main reason for the change is from improved knowledge may risk masking an underlying genuine decline in population.

7.4 Short term trend; Direction

There are very little data on changes in habitat availability. For a relatively generalist carnivore such as the wildcat, this is difficult to measure. There is no evidence that there has been a decline in habitat, while recent afforestation projects theoretically should provide new habitat for wildcats. However, the decline in rabbits over the past decade (Matthews et al. 2018) may represent a decline in the quality of some habitats (those where rabbits were present in the past). Anecdotal observations by R Campbell during wildcat surveys include the disappearance of wildcats from a location in Strathspey between 2009 and 2012 concomitant with a decline in the local rabbit population alongside two unusually snowy winters, and an absence of both wildcats and rabbits in Inshnadamp in 2012 when both were recorded there a decade earlier. However during similar surveys elsewhere over the same period (e.g. around Loch Hope) no wildcats were detected despite the presence of rabbit, illustrating that other factors also influence wildcat presence. In some areas, the decline in rabbits could mean that the habitat is not of sufficient quality to support viable populations in isolation, whereas in others, the loss of rabbits may have reduced carrying capacity but not to the extent that the population's viability would be threatened. Overall, it is likely there has been a decline in habitat quality as measured by prey availability across parts of the species range. In the absence of other pressures and threats, this decline alone may not have caused the decline in range/population observed.

8.1 Characterisation of pressures/ threats

Recent genetic work (Senn et al. 2018) highlight that introgressive hybridisation (L06) is extensive. From discussion with European counterparts, once this hybridisation process has been established, hybrids continue to act as a 'bridge' between wildcats and domestic cats, enabling continuing gene flow from the domestic cat population. Therefore feral cats and unneutered house cats continue to present a threat (I02). While the extent of killing (G11 and G12) is difficult to assess, Lionikatie (2016) found from a sample of 31 cats collected from roads that five cats identified by phenotype (pelage) as wildcat had been shot. Much of this might be due to mistaken identity from feral or hybrid cats (G12), but that they have been placed on roads post mortem suggests the persons responsible has known before (G11) or after (G12) killing that the shot cat might be a wildcat. Scottish Wildcat Action are alerted to road casuality cats and have picked up a number of wildcats from roads over the course of the project (e.g. see Lionikatie 2016). Hartman et al. (2015) has found some evidence that motorways act as a barrier to geneflow in wildcats in Germany. Therefore roads (E01) are highlighted here as a threat to wildcats.

10.1 Future prospects of parameters

Given the range contraction (Kilshaw 2016; <http://www.scottishwildcataction.org/how-you-can-help/> report), the extremely high levels of hybridisation (Senn et al. 2018) and the very low numbers of individuals detected in recent years by Scottish Wildcat Action, spontaneous recovery or stabilisation of the decline is unlikely without the intervention of significant conservation action. A draft review of wildcat status in Scotland conducted by the IUCN Cat Specialist Group highlights that the wildcat population in Scotland is not viable.

11.7 Change and reasons for change in conservation status and conservation status trend

The previous report in 2013 assessed the conservation status as Bad - declining. This is still the case and therefore the overall prospects for the species have not changed. Conservation work conducted by Scottish Wildcat Action has acted to reduce threats from hybridisation though neutering of feral cats and improved awareness of wildcat conservation in the five areas they work (and nationally though probably to a lesser extent). However, the number of wildcats remaining in these areas are likely too few to allow recovery of the population despite these actions and future work needs to bolster the wildcat population from elsewhere. This is also a recommendation of the draft IUCN Cat Specialist Group review. Furthermore, since the bulk of the data used in the last report in 2013 was collected, there appears to be a range contraction of wildcat. This is in part a real contraction and in part because we are more aware of the potential for misidentification. Overall, though there has been no change in the conservation status, the trend is for a worsening in status.