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

Supporting documentation for the
conservation status assessment for the species:

S1358 - Polecat (*Mustela putorius*)

ENGLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to 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.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- 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; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-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 (England information only)**
1.2 Species code	**1358**
1.3 Species scientific name	**Mustela putorius**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Polecat

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1995-2016
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?	Yes	
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

Mathews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C., McDonald, R.A., Shore, R.F (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.
Langley, P.J.W. and Yalden, D.W. (1977). Decline of rarer carnivores in Great Britain during 19th century. Mammal Review, 7 (3-4), 95-116.
Birks, J.D.S. (2008). The Polecat Survey of Britain 2004-2006. A report on the Polecat's distribution, status and conservation. The Vincent Wildlife Trust.
Croose, E. (2016). The Distribution and Status of the Polecats (Mustela putorius) in Britain 2014-2015. The Vincent Wildlife Trust.
Birks, J.D.S. (2015). Polecats. Whittet Books Ltd.
Harris, S.J., Massimino, D., Newson, S.E., Eaton, M.A., Balmer, D.E., Noble, D.G., Noble, D.G., Musgrove, A.J., Gillings, S., Proctor, D. and Pearce-Higgins, J.W. (2015). The Breeding Bird Survey 2014. BTO Research Report 673. British Trust for Ornithology.

5. Range

5.1 Surface area (km²)

5.2 Short-term trend Period

5.3 Short-term trend Direction

Increasing (+)

5.4 Short-term trend Magnitude

a) Minimum

b) Maximum

5.5 Short-term trend Method used

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5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	85377
	b) Operator	
	c) Unknown	
	d) Method	Range is based on presence data collected between 1995 and 2016. Areas that contain very isolated records may not have been included in the area of distribution. The range has been taken from Mathews et al (2018), whereby an alpha hull value of 20km was drawn around the presence records, which represented the best balance between the inclusion of unoccupied sites (i.e. where records are sparse but close enough for inclusion) and the exclusion of occupied areas due to gaps in the data (i.e. where records exist but are too isolated for inclusion). An additional 10km buffer was added to the final hull polygon to provide smoothing to the hull and to ensure that the hull covered the areas recorded rather than intersecting them. This differs from the approach taken in 2013 and 2007 whereby a 45km alpha hull value was used for all species with a starting range unit of individual 10km squares. The new method has led to much finer detail maps being produced underpinned by data gathered at a much finer resolution, leading to the production of a more accurate FRR.
5.11 Change and reason for change in surface area of range	Genuine change Improved knowledge/more accurate data Use of different method The change is mainly due to: Use of different method	
5.12 Additional information		

6. Population

6.1 Year or period	1995-2016	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	53900
	c) Maximum	79000
	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	

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	d) Best single value
6.5 Type of estimate	
6.6 Population size Method used	Based mainly on extrapolation from a limited amount of data
6.7 Short-term trend Period	2004-2015
6.8 Short-term trend Direction	Increasing (+)
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 b) Operator c) Unknown d) Method
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
6.17 Additional information	Also, use of of a different methodology by Mathews et al (2018). Although there has been a change in methodology, the current estimate represents a significant increase in population size which appears to be entirely due to a genuine increase in range.

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?	Yes
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on extrapolation from a limited amount of data	
7.3 Short-term trend Period	2004-2015	
7.4 Short-term trend Direction	Stable (0)	
7.5 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
7.6 Long-term trend Period		
7.7 Long-term trend Direction		

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7.8 Long-term trend Method used

7.9 Additional information

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Use of plant protection chemicals in agriculture (A21)	H
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Illegal shooting/killing (G10)	H
Poisoning of animals (excluding lead poisoning) (G13)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M
Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (F01)	M
Other invasive alien species (other then species of Union concern) (I02)	M

Threat	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Use of plant protection chemicals in agriculture (A21)	H
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Illegal shooting/killing (G10)	H
Poisoning of animals (excluding lead poisoning) (G13)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M
Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (F01)	M
Other invasive alien species (other then species of Union concern) (I02)	M

8.2 Sources of information

8.3 Additional information

9. Conservation measures

9.1 Status of measures

a) Are measures needed? No

b) Indicate the status of measures

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9.2 Main purpose of the measures taken

9.3 Location of the measures taken

9.4 Response to the measures

9.5 List of main conservation measures

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range
b) Population
c) Habitat of the species

10.2 Additional information

Since the 2004-2006 survey (Birks, 2008), the polecat's range has continued to expand in England (Croose, 2016). The polecats recovery has been due to the reduction in trapping pressures, legal protection, a post-myxomatosis increase in the rabbit population and the polecats ability to utilise a diverse range of habitats. However, the expansion of the polecats range has also been aided by releases of polecats, which masks the true
extent of natural range expansion in parts of Britain.There is also difficulty in separating true polecats from polecat-ferrets and this presents challenges for accurately recording polecats, particularly in areas in which polecats are newly re-establishing. There is evidence to support the theory that polecats will out-compete polecat-ferrets or feral ferrets in the long-term, resulting in a population in which true polecats are dominant, which would suggest that the long-term impact of hybridisation is not a cause for concern (Croose, 2016).
Although the methodology has changed since the last reporting round, the current population estimate concurs with previous estimates and represents a significant increase in population size (Croose, 2016; Mathews et al, 2018). Habitat for this species is considered to be stable due to their ability to utilise a wide range of habitats across Britain.

11. Conclusions

11.1. Range

11.2. Population

11.3. Habitat for the species

11.4. Future prospects

11.5 Overall assessment of Conservation Status

11.6 Overall trend in Conservation Status

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

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

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No change

The change is mainly due to:

11.8 Additional information

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

Distribution Map

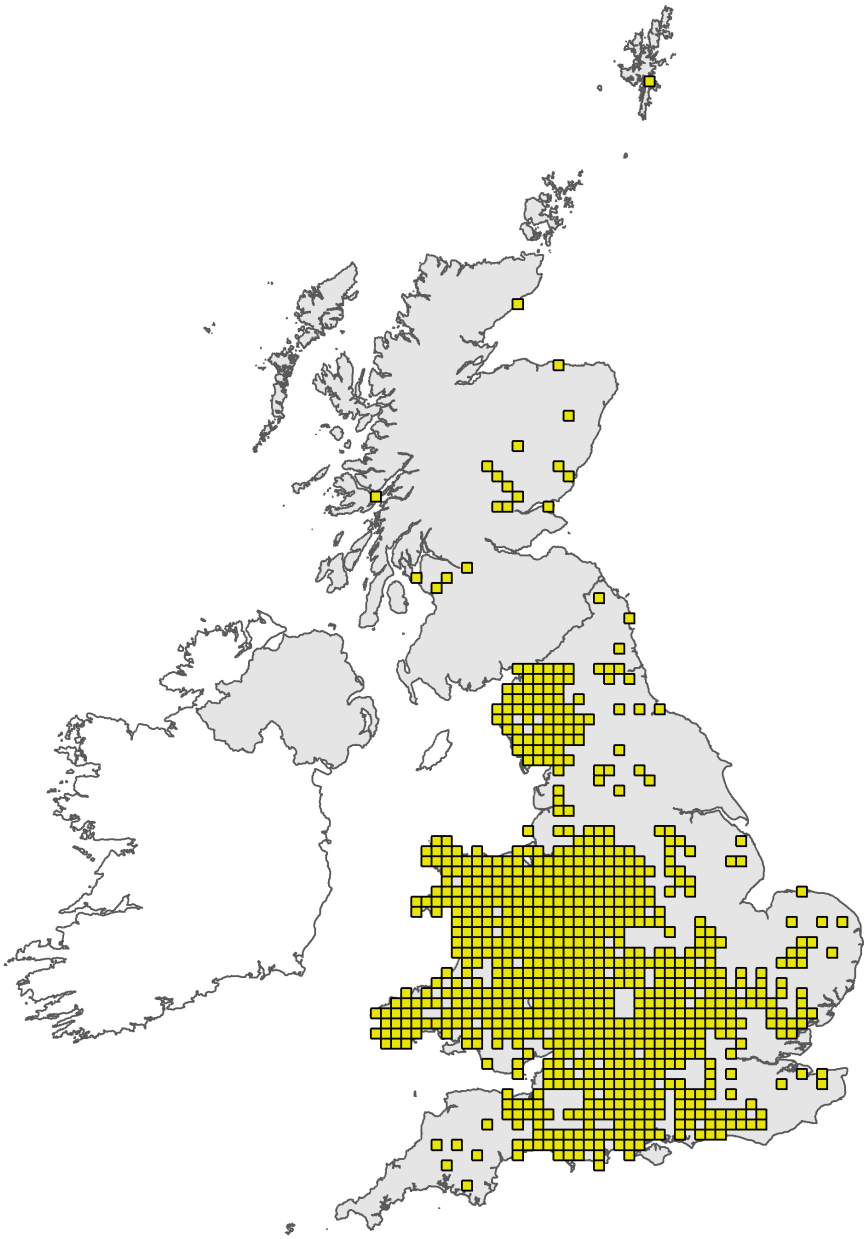

Figure 1: UK distribution map for S1358 - Polecat (*Mustela putorius*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

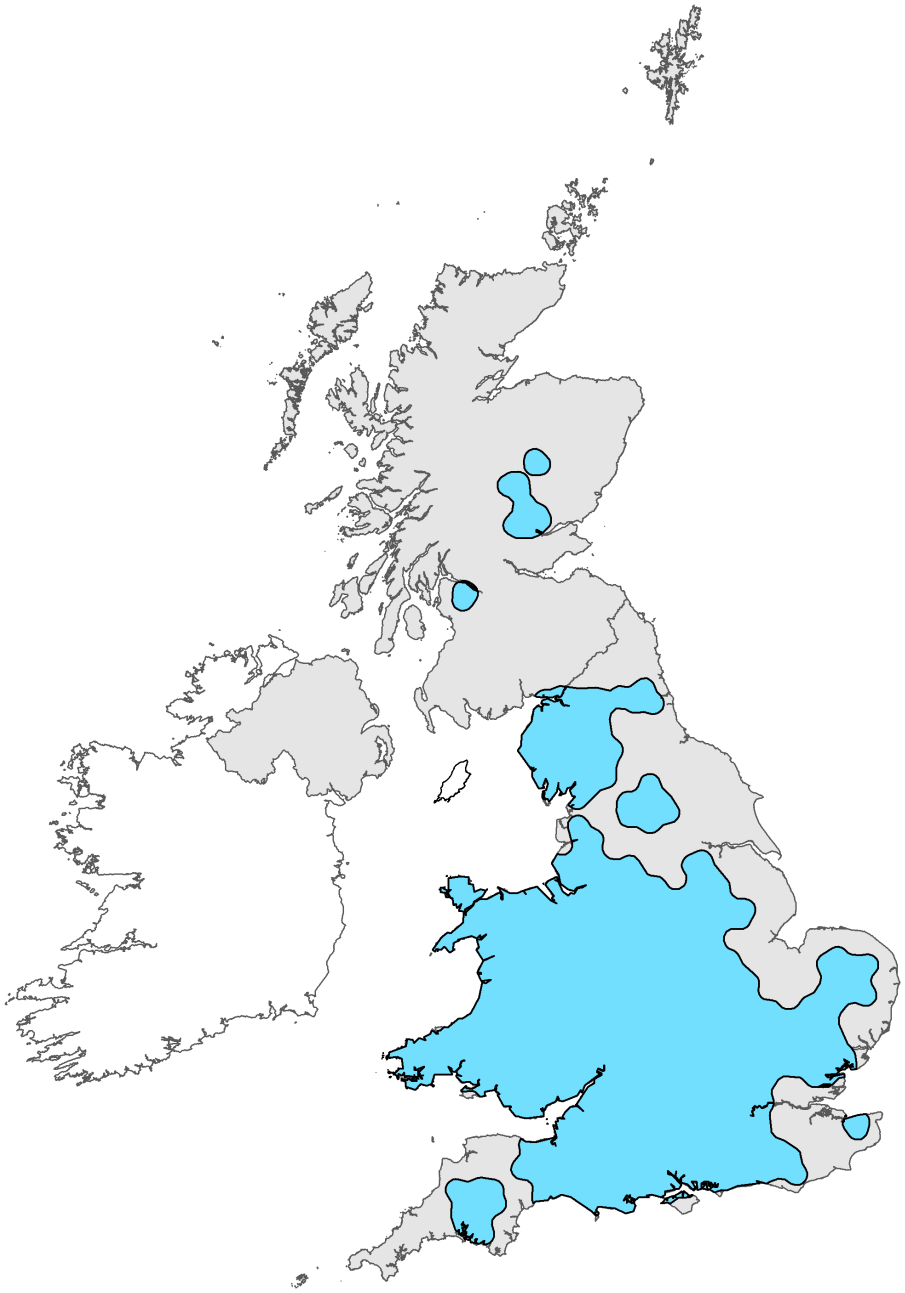

Figure 2: UK range map for S1358 - Polecat (*Mustela putorius*).Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by The Mammal Society applying a range mapping tool as outlined in Matthews et al. (2018), to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: Mustela putorius (1358)

Field label	Note
1.5 Common name	The polecat is now present throughout Wales and is continuing to extend its range eastwards from Wales and the Welsh borders, though this process may have been assisted by covert reintroductions, notably in Cumbria. Distribution recording is complicated by confusion with polecat-ferret hybrids, but methods for identifying true polecats by pelage characteristics are well-established. Nevertheless, it is likely that some hybrids are still reported as true polecats, particularly when independent verification is not possible (e.g. sightings) and records outside the main distribution should be treated with caution.
3.1 Is the species take in the wild/ exploited	Although the polecat's initial recovery was driven by a reduction in trapping pressure in the early 20th century (Langley & Yalden, 1977), there are still pressures from trapping and secondary rodenticide poisoning. Records recorded from traps set for other species were received for both the 2004-2006 and 2014-2015 surveys (Birks, 2008; Croose, 2016).

Species name: Mustela putorius (1358) Region code: ATL

Field label	Note
6.2 Population size	Population size estimates were taken from Mathews et al (2018). Estimates were based on 136 individual density estimates from one study. These density estimates were area, rather than habitat-specific and so an assessment of the proportion of population size and area accounted for by each habitat is not possible. Surveys were conducted between 1997 and 1999 and more up-to-date estimates would be beneficial.
6.6 Population size; Method used	As polecats are generalists and can be found in most habitats, population density estimates from the literature refer to the density of polecats, regardless of a specific habitat type. Previous population density estimates have been calculated based on the total area of occupied 1km squares, rather than being applied to a specific habitat type. In order to reflect the species' generalist behaviour, Mathews et al (2018) calculated population sizes by multiplying the population density by the total area of the species' distribution. Adjustment was made for the unlikely occurence of polecats in urban areas by removing areas classed as urban in the LCM 2007 data.
6.7 Short term trend; Period	2004 - 2015. This is the period of time based on the 2004-2006 (Birks, 2008) and 2014-15 (Croose, 2016) distribution surveys.
6.16 Change and reason for change in population size	Genuine change, but also use of of a different methodology by Mathews et al (2018). Although there has been a change in methodology, the current estimate represents a significant increase in population size which appears to be entirely due to a genuine increase in range.
7.1 Sufficiency of area and quality of occupied habitat	Polecats are a generalist species in terms of their habitat. However, there is some evidence of a preference for woodland edge, field boundaries and farm buildings, with an avoidance of more open areas, as well as suburban and urban areas (Birks, 2015). Unlike elsewhere in Europe, polecats in Britain do not show a preference for riparian habitats and this is likely to be due to the avoidance of competition with mink and due to the abundance of rabbits throughout their range which provides a source of food away from riparian habitats (Birks, 2015).
7.2 Sufficiency of area and quality of occupied habitat; Method used	The habitable area has been taken from Mathews et al (2018), which, given the generalist nature of this species, defined the area of suitable habitat as the total range size minus the area of urban and garden habitats. The area of suitable habitat in England is 78,100 km2.

8.1 Characterisation of pressures/ threats	Issues which continue to threaten polecats include road accidents, trapping mortality, secondary rodenticide poisoning, changes in agricultural practices and the loss of genetic integrity through hydridisation with feral domestic ferret M. furo. The status of the rabbit population in Britain may also have some impact with the British Trust for Ornithology's Breeding Bird Survey reporting a 57% decline in the rabbit population between 1995-2014 (Harris et al, 2015). It is not currently known how this will impact on the polecat population in the long-term.