

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

**Second Report by the United Kingdom under
Article 17
on the implementation of the Directive
from January 2001 to December 2006**

**Conservation status assessment for :
S1357: *Martes martes* - Pine marten**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

Please cite as: Joint Nature Conservation Committee. 2007. *Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006*. Peterborough: JNCC. Available from: www.jncc.gov.uk/article17

S1357 *Martes martes* Pine marten

Audit trail compiled and edited by JNCC and the UK Inter-Agency Mammal Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers, accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

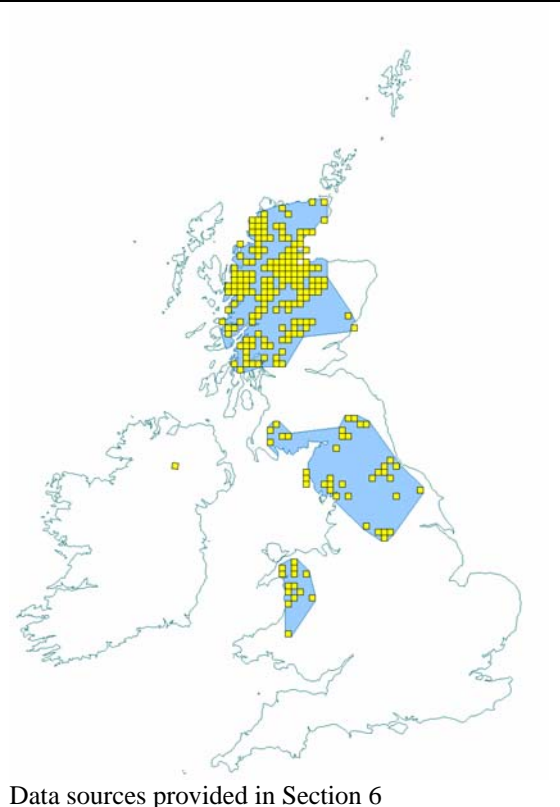
1. Range Information^{2,3}

Martes martes has a restricted distribution and is quite rare within its range. It is mainly found in the north and central belt of Scotland and Northern Ireland, with a few records suggesting small populations in northern England and parts of Wales (Macdonald & Tattersall 2001).

1.1 Surface area of range^{2,3,1} 69,036km²

The above estimate was calculated within Alpha Hull software, using extent of occurrence as a proxy measure for range (see Map 1.1). The value of alpha was set at 45 km to reflect the mobility of this species.

Map 1.1 Current extent of occurrence and occupied 10-km squares (1990-2006)



1.2 Date of range determination^{2.3.2}

1990 – 2006

Records from this time period provide the best representation of current range as it is understood by specialist knowledge.

1.3 Quality of range data^{2.3.3}

Moderate

The most recent *M. martes* survey in Scotland was undertaken in 1994, and although fairly comprehensive, is over a decade old (Balharry *et al.* 1996). In England and Wales distribution is based on reported sightings of *M. martes* (all reports are assessed for accuracy). The populations in these areas appear to be at such low densities that standard survey techniques such as scat surveys and trapping are ineffective and other methods are needed to assess status (Birks *et al.* 2004). A survey was undertaken in 2004, based on mapping existing records and surveying for scats in forests, to assess *M. martes* status in Northern Ireland (Tosh and McDonald, in press). Signs of *M. martes* were found in four counties - Fermanagh, Tyrone, Antrim and Down.

1.4 Range trend^{2.3.4} and range trend magnitude^{2.3.5}

Increasing

A survey in 1980–82 showed that the Scottish population had increased its range but revealed no evidence of populations in England and Wales (Velandar 1983). However, a field sign survey in 1987–88 found evidence of *M. martes* at several locations in north Wales and northern England (Strachan *et al.* 1996). In Scotland, a survey carried out in 1994 (Balharry *et al.* 1996) compared results with the 1980–82 survey (Velandar 1983) and suggested that the Scottish population had approximately doubled in 12 years. It also showed that the distribution of the species seemed to have consolidated and expanded during that time.

1.5 Range trend period^{2.3.6}

1982 – 2004

The time period selected is considered to reflect the current situation regarding range change for this species. There have been no surveys to assess *M. martes* distribution or population trends since 1994, but there is evidence to suggest the species range is still increasing.

1.6 Reasons for reported trend in range^{2.3.7}

3 = Direct human influence (restoration, deterioration, destruction)

Full protection under wildlife legislation, such as the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c) Regulations 1994, has resulted in the species recolonising some of its former range in Scotland, including the northern and western parts of Grampian, Tayside, Central and Strathclyde regions. The small populations in Dumfries and Galloway are the result of a release by the Forestry Commission in the early 1980s, but these remain isolated from populations in the north.

1.7 Favourable reference range^{2.7.1}

69,036km² (equal to current)

The favourable reference range value has been derived using 1994 as the baseline and making a judgement on whether the range in 1994 was sufficient to allow the long-term survival of the species, using the decision tree in Note 1 (of 'Assessing Conservation Status: UK Approach') as a guide. Historic and current information on range size and trends have been

used to assess this and, if the 1994 level was not sufficient, then consideration has been given to what would constitute a large enough range.

The current range is considered sufficient to support viable populations in the long term and has been set as the favourable reference value.

1.8 Range conclusion^{2.8}

Favourable

The range for this species is increasing and the favourable reference range has been assessed as equal to the current range. For these reasons the range assessment is Favourable.

2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

>3,500 individuals

160 in England; 3,350 in Scotland; 60 in Wales.

2.2 Date of population estimate^{2.4.2}

2004

2.3 Method of population estimate^{2.4.3}

1 = based on expert opinion

Population density is related to habitat and food availability, and values range from 1/400ha to 1/1,000ha; (Macdonald and Tattersall 2001).

Balharrie *et al.* (1996) estimated population size to be 2,600, based on average *M. martes* territory size and area of woodland the territory contained. Birks (unpublished data 2004) revised this estimate using additional radio-tracking data. *M. martes* density in lowland woodland was assumed to be between 122 and 294 ha per *M. martes* (Halliwell 1997; Bright and Smithson 1997) and in upland woodland between 403 and 806 ha per *M. martes* (Bright and Smithson 1997). Data from the Forestry Commission National Woodland Inventory (Forestry Commission 2002) were used to estimate the area of woodland in each region within Scotland where *M. martes* is found. Forestry Commission data (Forestry Commission 2000) suggested that there is a 50:50 split between upland and lowland woodland as defined by Birks, and woodland areas for each region were calculated on this basis.

The range of the species within Scotland has increased since the 1994 survey of Balharrie *et al.* (1996) and on the basis of discussions with naturalists and foresters in Scotland it was assumed that 100% of Highland Region woodland was occupied, 60% of woodland in Grampian and Tayside, 70% of Central, 50% of Strathclyde, and 25% of woodland in Dumfries and Galloway. The figure for Highland region was revised upwards to account for the fact that in this area in particular *M. martes* occupies mainly non-wooded habitats. The total population was thus estimated to be between 2,237 and 4,461 *M. martes*, with a mean of 3,350. It was further assumed that there are 120 *M. martes* in England and 60 in Wales, (although these figures are probably an over-estimate), giving a total current population estimate of c. 3,530.

2.4 Quality of population data^{2.4.4}

Moderate

Density estimates are based on radio-tracking studies, Forestry Commission woodland inventory and extrapolation of the existing information on home range. Quality of data is therefore assessed as moderate.

2.5 Population trend^{2.4.5} and population trend magnitude^{2.4.6} + 900 individuals

Recent surveys have shown that *M. martes* populations in Scotland are increasing. A survey carried out in 1994 (Balharry *et al.* 1996) compared results with the 1980-82 survey (Velandar 1983) and suggested that the Scottish population had approximately doubled in 12 years (1,200 adult *M. martes* in 1982 to 2,600 adult *M. martes* in 1994). The most recent population estimate of >3,500 individuals suggests the populations are continuing to increase, with an increase of 35% since 1994 and an overall increase of 190% since 1982. There is some evidence of existing populations in England and Wales, but at very low levels. There is no annual or regular surveillance for this species and so statistically analysed population trends are not available.

2.6 Population trend period^{2.4.7} 1994 – 2004

This is the time period used to assess range and covers the two surveys that assess population change and the most recent population estimate and covers the time period since the Habitats Directive came into force.

2.7 Reasons for reported trend in population^{2.4.8} 3 = Direct human influence (restoration, deterioration, destruction)

Full protection under wildlife legislation, such as the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c) Regulations 1994, and planting of coniferous and deciduous woodlands has resulted in the species recolonising some of its former range in Scotland.

2.8 Justification of % thresholds for trends^{2.4.9} Not applicable

2.9 Main pressures^{2.4.10}

243 Trapping, poisoning, poaching
160 General Forestry Management
167 Exploitation without replanting
166 Removal of dead and dying trees

2.10 Threats^{2.4.11}

243 Trapping, poisoning, poaching
160 General Forestry Management
167 Exploitation without replanting
166 Removal of dead and dying trees

Historical decline can be attributed to persecution and habitat loss. Predation on game birds and poultry has brought the species into conflict with gamekeepers and farmers and there may be a continued threat from illegal trapping and poisoning.

2.11 Favourable reference population^{2.7.2} 2,600 individuals (Equal to 1994 estimate)

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.

Surveys of range and population size have indicated that *M. martes* populations in Scotland have been increasing since the early 1980s and have continued to increase since 1994. It is probable that the population in 1994, although at a fairly low abundance, was viable. The abundance of a carnivore with a relatively large individual range is likely to be lower than for other species and yet still be viable. The 1994 estimate has, therefore, been set as the favourable reference value for this species.

2.12 Population conclusion^{2.8}

Favourable

The population of *M. martes* is increasing in the UK and is above the favourable reference population value. The conclusion is, therefore, Favourable.

3. Habitat for the Species in the Biogeographic Region or Sea^{2.5}

M. martes is generally found in deciduous and coniferous forest and rocky areas, but also lives alongside human habitation, occupying wood stacks, farm buildings and loft spaces (Macdonald and Tattersall 2001). Scarcity of arboreal cavities may result in a shortage of suitable den sites and could in turn limit populations (Birks *et al.* 2005).

3.1 Surface area of habitat^{2.5.2}

Unknown

The area of habitat being used by *M. martes* within each occupied 10-km square is unknown.

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

Although the habitat requirements of *M. martes* are reasonably well documented, habitat area is unknown.

3.4 Habitat trend^{2.5.5}

Increasing

The Countryside Survey 2000 (carried out in 1998) compared extent of woodland, both coniferous and broadleaved, with extent in 1990 and found that broadleaved woodland had increased by about 5% across the UK, although this increase was offset to some extent by decline in habitat quality. The increase was greater in Scotland and Northern Ireland at 9% (Haines-Young *et al.* 2000). The total area of coniferous woodland was unchanged. This suggests that the preferred habitat of *M. martes* is slowly increasing.

3.5 Habitat trend period^{2.5.6}

1990 – 1998

The time period selected reflects the results of two Countryside Surveys carried out in 1990 and 1998.

3.6 Reasons for reported trend in habitat^{2.5.7}

3 = Direct human influence (restoration, deterioration, destruction)

3.7 Suitable habitat for the species (in km²)^{2.7.3}

Unknown

Current area of habitat used by this species is unknown and it is not possible to suggest an area of 'suitable habitat' to support a favourable population.

3.8 Habitat conclusion^{2.8}

Unknown

The low percentage of woodland cover across the UK means that the area of habitat available for this species is relatively low, and could be limiting population recovery. Recent improvements in woodland extent in all countries suggest that the situation is improving. However, there is limited information on habitat area suitable for this species and so the conclusion is Unknown at present.

4. Future Prospects^{2.6}

Good prospects

The species is expected to survive and prosper.

Factors likely to affect the species over the next 12-15 years are considered below.

Legislation. *M. martes* has national and European legal protection. The species is listed on Schedules 5 & 6 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (and equivalent legislation in Northern Ireland) and is listed on Annex V of the Habitats Directive.

Conservation action. Since the early 20th Century the intensity of game keeping has declined, and the amount of woodland has increased. In Scotland, the species has re-colonised regions in the south and east. The species has been put forward as a priority species.

Threats. Physical barriers, interspecific competition with *Vulpes vulpes* and conflicts with man and continued low level of suitable habitat are thought to be limiting colonisation in the north and south east of Scotland.

There is some debate about whether the English and Welsh populations are still viable (MacDonald and Tattersall 2001). Although some areas of suitable habitat have been identified for potential re-introduction (Bright 2001) in England, a questionnaire revealed that a small proportion of land owners were in strong opposition to such a scheme. These issues would need to be resolved before any re-introduction programme could feasibly go ahead.

Good overall future prospects for this species, in terms of maintaining the current UK range and population, are dependent on the status of populations in England and Wales, given that the circumstances for these populations are very different to those in Scotland. Any loss of those populations would have a detrimental effect on the species status and cause the range to contract to include only Scotland.

4.1 Future prospects conclusion^{2.8}

Favourable

Range and population for this species are both increasing and the major threats have been addressed. There are some concerns for populations in England and Wales, which if lost would have a detrimental effect on range and population status. However, overall future prospects for this species are considered Favourable in the time frame considered.

5. Overall Assessment^{2.8}

Favourable

Species can be expected to prosper without any change to existing management or policies. Range, population and future prospects for this species are all Favourable. Habitat for the species is Unknown at this stage and the overall assessment is, therefore, Favourable.

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	Range is increasing and not smaller than the favourable reference range	2
Population	Favourable	Population(s) not lower than 'favourable reference population' and reproduction, mortality and age structure not deviating from normal (if data available)	2
Habitat	Unknown	No or insufficient reliable information available	N/A
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable on the long-term	2
Overall Assessment	Favourable	All 'Favourable' or three 'Favourable' and one 'Unknown'	2

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as “good”; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is “unknown”, on the basis of insufficient reliable information

6. References

- BALHARRY, D. 1993. *Factors affecting the distribution and population density of pine martens (Martes martes) in Scotland*. PhD Thesis, University of Aberdeen.
- BALHARRY, E.A., MCGOWAN, G.M., KRUK, H. AND HALLIWELL, E. 1996 *Distribution of pine martens in Scotland as determined by field survey and questionnaire*. Scottish Natural Heritage Research, Survey and Monitoring Report. No. 48.
- BATTERSBY, J (ed.) & TRACKING MAMMALS PARTNERSHIP. 2005. *UK Mammals: Species Status and Population Trends*. Joint Nature Conservation Committee/Tracking Mammals Partnership.
- BIRKS, J.D.S., MESSENGER, J.E., BRAITHWAITE, A.C., DAVISON, A., BROOKES, R.C. & STRACHAN, C. 2004. Are scat surveys a reliable method for assessing distribution and population status of pine martens? In HARRISON, D.J., FULLER, A.K. & PROULX, G. (eds.). *Martens and fishers (Martes) in human-altered environments: an international perspective*. Pages 235-252. Springer Science, New York, USA.
- BIRKS, J.D.S., MESSENGER, J.E. & HALLIWELL, E. 2005. Diversity of den sites used by pine martens *Martes martes*: a response to the scarcity of arboreal cavities? *Mammal Review* **35**: 313-320.
- BRIGHT, P. 2001. Should Pine Marten's be Re-introduced to England? In: Poland Bowen, C. (ed.) 2003 *Conference Proceedings 2001-2002: The Return of the Native – The Reintroduction of Native Species Back into their Natural Habitat*. p10. People's Trust for Endangered Species/Mammal Trust UK.
- BRIGHT, P.W. & SMITHSON, T.J. 1997. Species Recovery Programme for the Pine Marten in England: 1995-96. *English Nature Research Reports* **240**: 1-64. English Nature, Peterborough
- HAINES-YOUNG, R.H., BARR, C.J., BLACK, H.I.J., BRIGGS, D.J., BUNCE, R.G.H., CLARKE, R.T., COOPER, A., DAWSON, F.H., FIRBANK, L.G., FULLER, R.M., FURSE, M.T., GILLESPIE, M.K., HILL, R., HORNUNG, M., HOWARD, D.C., McCANN, T., MORECROFT, M.D., PETIT, S., SIER, A.R.J., SMART, S.M., SMITH, G.M., STOTT, A.P., STUART, R.C. & WATKINS, J.W. 2000. *Accounting for nature: assessing habitats in the UK countryside*. Countryside Survey 2000. DETR, HMSO, London.
- HALLIWELL, E. 1997. *The ecology of red squirrels in Scotland in relation to pine marten predation*. Unpublished PhD thesis, University of Aberdeen, Scotland.
- HARRIS, S., MORRIS, P., WRAY, S. AND YALDEN, D. 1995. *A Review of British Mammals*. Joint Nature Conservation Committee
- LANGLEY, P.J.W., & YALDEN, D.W. 1977. The decline of the rarer carnivores in Great Britain during the nineteenth century. *Mammal Review*, **7**: 95-116
- MACDONALD, D.W. & BAKER S. 2005. *The state of Britain's Mammals 2005*. Mammals Trust UK/WildCRU

MACDONALD, D.W. & TATTERSALL, F.T. 2001. *Britain's Mammals: The Challenge for Conservation*. Mammals Trust UK/WildCRU.

STRACHAN, C., JEFFERIES, D.J. & CHANIN, P.R.F. 1996. *Pine marten survey of England and Wales 1987–1988*. Joint Nature Conservation Committee.

TOSH, D. & MCDONALD, R. (in press) An assessment of the conservation status of the pine marten *Martes martes* in Northern Ireland. Quercus Project QU04-13.

VELANDER, K.A. 1983. *Pine marten survey of Scotland, England and Wales 1980-1982*. Vincent Wildlife Trust, London.

Map Data Sources

Biological Records Centre - Mammals & Irish Otter Databases; Highland Biological Recording Group - Mammals dataset; and Environment and Heritage Service - Species Dataset (via NBN Gateway)

BTO/JNCC/RSPB Breeding Bird Survey (mammal count and presence data 1995-2005).