

**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:

S1341 - Common dormouse (*Muscardinus avellanarius*)

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 Resources Wales** and refers only to the state of the habitat/species in **Wales** - 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.

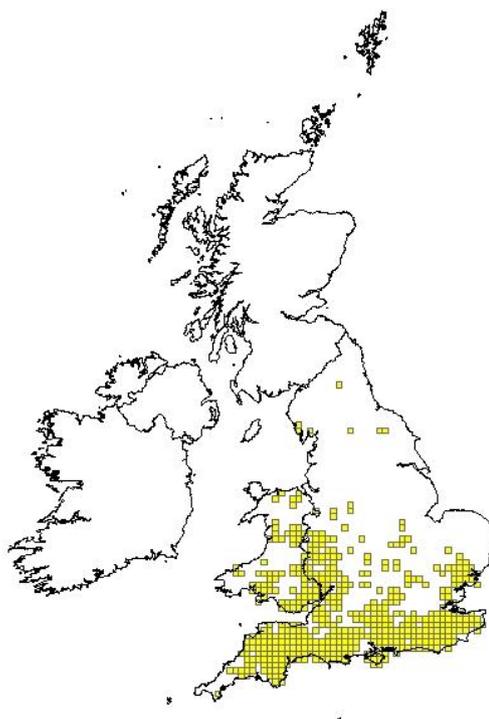
As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

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	S1341
	0.2.2 Species scientific name	<i>Muscardinus avellanarius</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Common Dormouse

1.1 Maps

1.1.1 Distribution map		Sensitive	False
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1.1.2 Method used - map	<p>Complete survey/Complete survey or a statistically robust estimate</p> <p>A number of national surveys since 1990, together with a national monitoring programme, mean that the current distribution of the dormouse is relatively well-understood. However, not all regions have been well surveyed and repeat surveys are required for some areas. Outlying points in England arise from an ongoing reintroduction programme (Mitchell-Jones & White, 2009). Data quality is considered 'moderate' as some areas are well-surveyed, but others need resurveying.</p>
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1.1.3 Year or period	1997-2012
	Data was collated from 1997-2012 to include the last two major surveys in Wales during 1997-2000 by VWT (Jermyn et al 2001) and CCW/PTES (Bright 2000).
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"BATTERSBY, J (Ed.). 2005. UK Mammals: Species Status and Population Trends. JNCC/Tracking Mammals Partnership.</p> <p>BRIGHT, P. 2000. Status and woodland requirements of M. avellanarius in Wales. CCW Science Report 406.</p> <p>BRIGHT, P. W. & MORRIS, P. A. 1990. Habitat requirements of dormice <i>Muscardinus avellanarius</i> in relation to woodland management in Southwest England. Biological Conservation 54(4): 307–326.</p> <p>BRIGHT, P. W. & MORRIS, P. A. 2008. Hazel dormouse <i>Muscardinus avellanarius</i>. Pp. 76-81 in HARRIS, S & YALDEN, D.W. Mammals of the British Isles: Handbook, 4th edition. The Mammal Society, Southampton.799pp.</p> <p>BRIGHT, P., MORRIS, P. & MITCHELL-JONES, T. 2006. Dormouse Conservation Handbook (2nd Ed.). English Nature, Peterborough.</p> <p>JERMYN, D.L., MESSENGER, J.E. & BIRKS, J.D.S 2001 The Distribution of the hazel dormouse <i>Muscardinus avellanarius</i> in Wales. Vincent Wildlife Trust, London.</p> <p>JUŠKAITIS, R. 2008. The Common Dormouse <i>Muscardinus avellanarius</i>: Ecology, Population Structure and Dynamics. Institute of Ecology of Vilnius University Publishers, Vilnius.</p> <p>NEWSON, S.E., JOHNSTON, A, RENWICK,A.R., BAILLIE, S. R, FULLER, R.J. 2011. Modelling large-scale relationships between changes in woodland deer and bird populations. J. Appl. Ecol. 49(1):278-286.</p> <p>People's Trust for Endangered Species. 2009. Managing small woodlands for dormice. PTES, London.</p> <p>PTES (2011) National Dormouse Monitoring Programme results for 2011.</p> <p>SANDERSON, F.J.2004 The Population Ecology and Monitoring of <i>Muscardinus avellanarius</i>. Unpublished PhD thesis. Royal Holloway, University of London"</p>

2.3 Range**2.3.1 Surface area**

Range		
2.3.2 Method used	Complete survey/ Complete survey or a statistically robust estimate	
Surface area of Range	A number of national surveys since 1990, together with a national monitoring programme, mean that the current distribution of the dormouse is relatively well-understood. However, not all regions have been well surveyed and repeat surveys are required for some areas. Data quality is considered 'moderate' as some areas are well-surveyed, but others need resurveying.	
2.3.3 Short-term trend		
Period		
2.3.4 Short term trend		
Trend direction	Comparison with the 2007 report suggests that the range in Wales has expanded. However, new records come primarily from areas where there has been increased survey effort, particularly in the north and southeast. There is no evidence to suggest that these are recently-established populations. Range is considered to be stable at present, probably as a result of conservation management and legal protection under wildlife legislation.	
2.3.5 Short-term trend		
Magnitude	a) Minimum	
	See 2.3.4	
	b) Maximum	
	See 2.3.4	
2.3.6 Long-term trend		
Period	Insufficient data available	
2.3.7 Long-term trend	unknown	
Trend direction	Insufficient data available	
2.3.8 Long-term trend		
Magnitude	a) Minimum	
Optional	Insufficient data available	
	b) Maximum	
	Insufficient data available	
2.3.9 Favourable reference		
range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by	False

	"true")	
	d) Method used to set FRR	
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...	a) Genuine change?	False
	b) Improved knowledge/ more accurate data?	True
	See 2.3.4	
	c) Use of different method (e.g. "Range tool")?	False

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	number of individuals
	Individual used as reporting unit, as per 2007 report	
	b) Minimum	7500
	The total adult population for England and Wales has been estimated to be 45,000, distributed among a variety of widely fragmented sites (Battersby 2005). Population densities vary with habitat quality: 4-10 individuals/ha in optimal habitat; 2/ha in oak dominated woodland (more if the habitat is appropriately managed); and 1-3/ha in conifer woodland (Bright, Morris & Mitchell-Jones 2006). It will always be difficult to provide good population estimates for small non-colonial mammals, but <i>M. avellanarius</i> ' dependence on woodland means that we can measure the extent of habitat reasonably well and extrapolate from that. See 2.4.5 for further explanation of method used to calculate population size.	
	c) Maximum	7500
	See 2.4.1c	
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	
2.4.4 Year or period	2005-2005	
	GB population size was estimated in 2005 (Battersby 2005).	
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling	
	Population size was estimated in 2005 by extrapolation using data from the National Dormouse Monitoring Programme (NDMP). The NDMP was established in 1991 with the aim of monitoring changes in dormouse distribution using data from dormouse nest box schemes established throughout England and Wales. Each site has a minimum of 50 nest boxes which are checked monthly between May and October. Data collected include number of dormice in each box, body weight, sex and breeding condition.	
	The GB estimate of 45,000 can be divided between England and Wales on the basis of the number of 10km squares occupied in each country. Of 485 squares, 412 lie wholly or partly in England, 82 wholly or partly in Wales. These proportions suggest a population of 37,500 for England and 7,500 for Wales. This estimate takes no account of habitat quality in the distribution area and could be improved by taking account of woodland area.	
2.4.6 Short-term trend Period	2000-2011	
	The period 2000-2011 was selected, as 2000 is the base year for analysis of data from the NDMP.	
2.4.7 Short-term trend Trend direction	decrease >1%/year	
	Data from the NDMP show a consistent decline in the dormouse population index over the period selected (PTES 2011).	
2.4.8 Short-term trend Magnitude	a) Minimum	13.91
	The NDMP population index for England and Wales declined by 13.91% between 2000 and 2011 (-1.35%/year; index baseline set at 100 in 2000, declined to 86.09 by 2011 - see 2.4.9).	
	b) Maximum	13.91
	See 2.4.8a	

	c) Confidence interval	
	Not possible to calculate confidence interval for trend magnitude, but 2011 population index of 86.09 (see 2.4.8a) had s.e. of 11.32, so lower and upper bounds (2 x s.e.) are 66.13 – 111.81	
2.4.9 Short-term trend Method used	Complete survey/ Complete survey or a statistically robust estimate	
	The population trend for England and Wales is based on an analysis of nest-box inspections carried out on a minimum of two months each summer, now at more than 300 sites (National Dormouse Monitoring Programme results for 2011. I White, PTES). Data for each month were analysed separately using Generalised Additive Modelling, with a baseline year of 2000. June was selected as the most representative month, though a similar trend is apparent in the data for all months analysed. In all cases, the trend was negative. Note that there are insufficient monitoring sites in Wales to provide separate England and Wales population trend data.	
2.4.10 Long-term trend – Period	1993-2011	
	Period set to 1993-2011 as no data prior to the start of the NDMP in 1993	
2.4.11 Long-term trend Trend direction	decrease 1% or less/year	
	Annual rate of population change from NDMP between 1993 and 2011 is -0.83%. Also see 2.4.13	
2.4.12 Long-term trend Magnitude	a) Minimum	53.12
Optional	Between 1993 and 2011 the NDMP population index for England and Wales declined by 53.12% (from 139.21 to 86.09; -0.83%/year).	
	b) Maximum	53.12
	See 2.4.12a	
	c) Confidence interval	
	No long term trend CI available	
2.4.13 Long term trend Method used	2	
	Data from the start of the NDMP indicate a decline of 53.12% in the dormouse population index for England and Wales (described above). This should be treated with some caution, as small sample sizes in the early years of the scheme mean that the confidence limits are wide. Nevertheless, the NDMP indicates a consistent negative change between 1993 and 2008, when some signs of a modest recovery could be noted.	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other	

	units	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	
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?	True
	<p>The dormouse is strongly associated with the early successional stages of woodland, which historically were mimicked by coppicing as a woodland management system and also hedgerows. Much former coppice has now turned to high forest, which supports lower dormouse populations.</p> <p>Deforestation, fragmentation and inappropriate management prior to 1994 have contributed to the species post-1994 population decline. During the 20th century 160,000ha of ancient woodland was converted to plantations of conifer (50%), broadleaf (28%) or mixed woodland (22%) (Bright, Morris & Mitchell-Jones 2006). Recent studies on the decline of woodland birds with similar ecological requirements to the dormouse have linked this to the expansion of the deer population (Newson et. al., 2011).</p>	
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species	
2.5.1 Area estimation	583
	See 2.5.3. There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.
2.5.2 Year or period	2010-2010
	2010 is the publication date of the National Forest Inventory - see 2.5.3

2.5.3 Method used Habitat for the species	Estimate based on partial data with some extrapolation and/or modelling	
	Area of habitat for dormouse has been assessed by calculating the area of suitable woodland in National Forest Inventory for each occupied 10km square. The woodland categories included were: broadleaved; mixed - predom conifer; mixed - predom broadleaved; coppice; coppice with standards; shrub land. This is likely to be an underestimate as it does not include hedgerows and areas of scrub.	
2.5.4 Quality of the habitat	a) Habitat quality	Unknown
	The current habitat quality is unknown. However, deforestation, fragmentation and inappropriate management prior to 1994 have contributed to the species post-1994 population decline. 160,000ha of ancient woodland was converted during the 20th century to plantations of conifer (50%), broadleaf (28%) or mixed woodland (22%) (Bright, Morris & Mitchell-Jones 2006). Recent studies on the decline of woodland birds with similar ecological requirements have linked this to the expansion of the deer population (Newson et. al., 2011).	
	b) Assessment method	N/A
	Unknown. See 2.5.4a	
2.5.5 Short-term trend Period	N/A - see 2.5.6	
2.5.6 Short-term trend Trend direction	unknown The 2007 report stated that area of habitat for the species was unknown and therefore it is not possible to report short or long term trends in the habitat for the species.	
2.5.7 Long-term trend Period	See 2.5.6	
2.5.8 Long-term trend Trend direction	unknown See 2.5.6	
2.5.9 Area of suitable habitat for the species	a) Value in km²	1343
	Calculated using total area in Wales of the NFI habitat types described in 2.5.3	
	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?	True
	The 2007 report stated that area of habitat for the species was unknown and therefore it is not possible to report short or long term trends in the habitat for the species.	

	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	
A10: Restructuring agricultural land holding	H	
B02: Forest and Plantation management & use	H	
B03: forest exploitation without replanting or natural regrowth	H	
B06: grazing in forests/ woodland	H	
B07: Forestry activities not referred to above	H	
I02: problematic native species	H	
D01: Roads, paths and railroads	M	
E01: Urbanised areas, human habitation	M	

M *avellanarius* is a species associated with the early successional stages of woodland, though it also uses other habitats, such as hedgerows and conifer plantation (Juškaitis, 2008). High species diversity and a dense shrub layer are both considered important in maintaining this species and so loss of hedgerows/hedgerow deterioration (A10) and a lack of woodland management, allowing woodland to progress towards closed-canopy high forest (B02), are considered to be an important pressure on dormouse populations (Bright et al, 2006). Grazing within woodlands reduces woodland suitability and there is increasing evidence that rising deer populations are having a negative impact on the structure of the understorey (Newson et al, 2011) – B06 and I02 (including non-native deer). Woodland fragmentation (B07) reduces the viability of habitat fragments.

D01 and E01 - licensing data shows that there are many cases of infrastructure development affecting dormice every year. More information is needed on the fragmentation impacts of roads and the effectiveness of 'dormouse bridges'.

2.6.1 Method used – Pressures	mainly based on expert judgement and other data
	Pressures information based on some evidence from research but also expert judgement.

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A10: Restructuring agricultural	H	

land holding		
B02: Forest and Plantation management & use	H	
B06: grazing in forests/ woodland	H	
B07: Forestry activities not referred to above	H	
I02: problematic native species	H	
M01: Changes in abiotic conditions	H	
D01: Roads, paths and railroads	M	
E01: Urbanised areas, human habitation	M	

Dormice will continue to be subject to the same pressures already described in section 2.6, although advice to woodland managers on appropriate management options to favour dormice is readily available (PTES, 2009) and may be supported by agri-environment schemes. The Deer Initiative is encouraging the formation of local deer management groups to improve the management of rising deer populations. In addition, dormice are vulnerable to the effects of climate change M01. Warmer winters may cause an increased frequency of energy-demanding arousals from hibernation and, unlike some hibernators (eg bats), dormice do not have access to food supplies during winter. This has the potential to cause increased over-winter mortality.

2.7.1 Method used – Threats**expert opinion**

Threats based on expert opinion.

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	f) Not evaluated