

# Strategy for dormouse reintroductions in England and Wales

people's  
trust for  
endangered  
species

Report by Ian White  
Dormouse Officer PTES

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## Introduction

The first recorded dormouse reintroduction was undertaken in 1992 at a wood in Hertfordshire and the methodology and early success of the project has been documented by Eaton (2014). In 1993 the dormouse reintroduction programme was initiated as part of the English Nature (EN) Species Recovery Programme. This was after a survey carried out by The Mammal Society (Hurrell and McIntosh 1984) had indicated that dormice were in decline and it had become apparent, as a result of the *Great Nut Hunt* in the same year and repeated in 2001, that the hazel dormouse *Muscardinus avellanarius* had been lost from approximately half its former range in England (Fig 1.). The original aim of the programme was to restore the dormouse back to its native range.

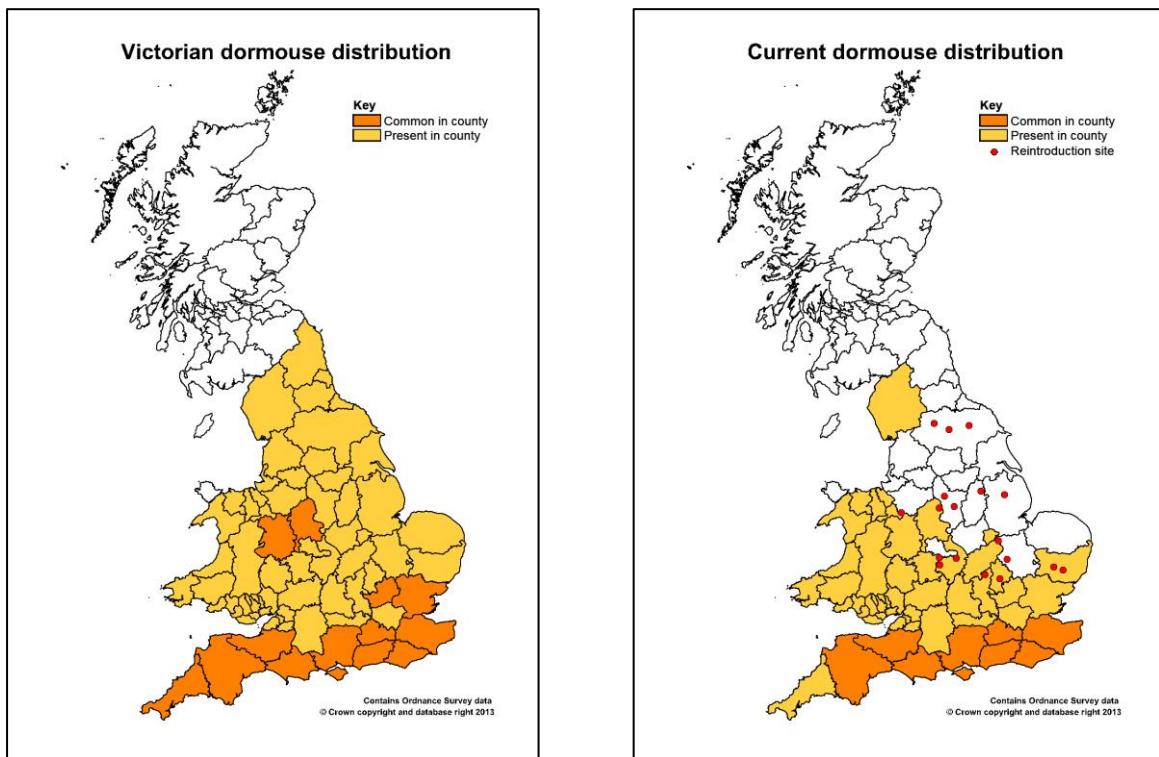


Fig. 1 The range of the hazel dormouse in 1885 compared with the range in 2013. The dormouse is now considered to be extinct in at least seven counties where it occurred in the past century.

The methodology of the EN supported reintroduction programme was devised by Morris and Bright (1994) and success of the programme was reviewed in 2002 by Bright and Morris and again in 2009 by Mitchell Jones and White. In addition an annual report for People's Trust for Endangered Species (PTES) on the state of the dormouse populations at the reintroduction sites, has been produced since 2006.

In 2013 Natural England (NE) commissioned a review of the dormouse reintroduction programme (Chanin 2014) with an aim of defining a future strategy for the programme.

As of 2014 there have currently been a total of 24 dormouse reintroductions to 19 sites in 12 counties in England. There have been no reintroductions in Wales.

## **Original Reintroduction Strategy**

The reasons for the dormouse decline and the cause of their extinctions in some counties in England has been relatively well documented (Bright and Morris 1990, Bright and Morris 1996, Bright, Morris and Wiles Morris 1996). It is considered to have been caused by:

- Inappropriate or lack of long-term management in woodland
- Inappropriate or lack of long-term management in hedgerows
- Fragmentation of woodland and hedge habitats
- Climatic factors

The inappropriate or lack of long-term woodland and hedgerow management is likely to have been instrumental in driving some local dormouse extinctions. As dormice are considered to be poor dispersers even in good habitat, the issue of habitat fragmentation suggests that even if management improves in specific woodlands, the species is highly unlikely to be able to naturally recolonize these areas.

Originally the aim of the dormouse reintroduction programme was to restore dormice to their native range and a specific objective was to re-establish them in five counties. This may, or may not have been achieved as the parameters by which ‘re-establishment’ could be measured were never identified.

The programme makes use of captive animals bred by members of the Common Dormouse Captive Breeders Group (CDCBG). These animals are quarantined for approximately six weeks by the Zoological Society of London (ZSL) and Paignton Zoo, before they are released into a pre-selected woodland. Dormouse reintroductions are undertaken in woodlands that have a long-term plan to be appropriately managed for the species. The aim is that once the population has become established in the wood, they will then start to disperse into the wider countryside.

In June, approximately 34-40 animals are placed in mating pairs in large release cages sited in the woodland and allowed to familiarise themselves with their new home. After about 10 days small openings are made in the cages and the dormice are then

free to leave their release cage. Food is supplied for approximately two months after which time it is anticipated that they will be finding their own food sources.

It is important that there is an interested and active team of volunteers at the reintroduction site to help with the reintroduction itself, and to continue long-term monitoring.

The programme is part-funded and managed by PTES, part-funded and overseen by NE and involves active participation by Paignton Zoo, ZSL, the CDCBG and local volunteers.

### **Status at existing reintroduction sites**

When the dormouse reintroduction programme was started in 1993 the success of the reintroductions could be measured by identifying if, and when, the following stages had been reached (Bright & Morris 2002):

- Stage 1      Release accomplished by July, with animals returning to feed in the cages, even if they do not live in them all the time*
- Stage 2      Young born at the new site, preferably by September of the first year.*
- Stage 3      Some animals survive the first winter, being present in nest boxes in Year 2.*
- Stage 4      Birth of second generation young (i.e. born to females who themselves were born at the site). This is difficult to demonstrate unless members of the original release cohort are permanently marked. It is assumed that this stage has been reached if young are born 3 years after the release*
- Stage 5      More adults present than were originally released (i.e. survival now exceeds losses; this is the number of animals recorded in either May or June).*
- Stage 6      Evidence of dispersal found*
- Stage 7      Evidence of dispersal from the original reintroduction woodland.*

*(Stage 7 was added by White to differentiate between dispersal within the release site woodland (Stage 6) and dispersal beyond the release site woodland)*

The stages reached at each reintroduction site by 2013 are shown in Table 1.

Table 1. The NE supported dormouse reintroductions in England (see above for guide to stages)

Site No	NDMP site number	Year	Site	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
1	84	1993/95	Brampton Wood	1993/95	1994	1994	Yes	No	2002	No
2	144	1994/95	Treswell Wood	1994/95	1995	1996	Yes	No	No	No
3	78	1996/97	Stockton Dingle	1996/97	1997	1997	Yes	No	Yes	2000
4	73	1998	Linfold Wood	1998	2000	1999	Yes	No	Yes	2008
5	137	1998	Bubbenhall Wood,	1998	2002	2000	Yes	No	No	No
6	132	1999	Rivaulx	1999	2000	2000	Yes	No	No	2009(?) A possible dormouse nut was found in a local coppice woodland
7	40	2000	Priestly Wood	2000	2000	2001	Yes	No	2002	2004
8	167	2001	Maulden Wood	2001	2004	2003	Yes	No	2011/12	2014 A dormouse nest was found in a hedge approximately ½ km
9	103	2001	Bedford Purlieus	2001	2004	2003	Yes	No	2009	No
10	208	2002	Hamps Valley	2002	2003	2003	Yes	No	2005	No
11	209	2002	Chambers Wood	2002	2003	2003	Yes	No	2006	2012
12	234	2003	Leashaw Wood	2003	2004	2004	No	No	No	No
13	260	2004	Hes & Peter Wood	2004	2004	2005	Yes	No	2005	No
14	293	2005	Monsal Dale	2005	2005	2006	Yes	No	No	No
15	317	2006	Bradfield Woods	2006	2006	2007	Yes	No	2009	2012
16	373	2008	Freeholders Wood	2008	2008	2009	Yes	No	2009	No
17	442	2010/11	Windmill Naps	2010/11	2010	2011	2013	No	No	No
18		2012	Alne Wood	2012	No	No	No	No	No	No
19		2013	Treswell Wood	2013	2013	No	No	No	No	No

## **Dormouse Reintroduction Strategy: Review**

In the review of the Dormouse Reintroduction strategy (Chanin 2014) all aspects of the dormouse reintroduction programme were considered. It was felt that the CDCBG was working well, as was the quarantine process with a key suggestion of greatly increasing the number of animals released at any one time. Similarly the release management and future monitoring of the dormice at site was considered appropriate.

The report considered that there was a problem with the original 'Measures of Success' approach as it gives a multiplicity of success points, some over a very short timescale. This makes it very difficult to make simple comparisons between sites at which dormice have been released at the rate of one per year between 1994 and 2012. Chanin's proposals are shown below and his measure of success as applied to the reintroduction sites in 2013 are shown in Table 2.

### **Assessing success in the short, medium and long term**

#### **Short-term success:**

Short-term: did dormice survive the first two winters and breed in the third year (i.e. reach stage 4)?

#### **Medium-term success:**

Medium-term: did the dormouse population at the release site remain stable over a period of 5-10 years and disperse from there into adjacent areas outside the original wood?

#### **Long-term success:**

In the long-term what is required is for the dormouse population to increase in size and expand its range to reach a level where the probability of long-term survival of the population is high. Determining criteria for this is not easy but one approach would be to aim for the dormouse population to be found in an area of sufficient size to substantially reduce the risk of extinction due to stochastic processes

#### **Summary:**

All sites were successful in the short-term (up to stage 4).

Two thirds of sites were successful in the medium-term (5-10 years) and by this time one third had spread beyond the release wood.

In the long-term, four of the nine sites failed (extinct or declining populations) and dormice have only dispersed from the release wood at two sites

Table 2. The NE supported dormouse reintroductions in England – Chanin proposals

No.	Site No	Year of release	Site name	Short-term	Medium-term	Long-term
1	84	1993/95	Brampton Wood	Yes	Stable	Not known
2	144	1994/95	Treswell Wood	Yes	NO	n/a
3	78	1996/97	Stockton Dingle	Yes	Decline	Dispersing
4	73	1998	Linford Wood	Yes	Stable	Dispersing
5	137	1998	Bubbenhall Wood,	Yes	NO	n/a
6	132	1999	Rivaulx	Yes	NO	n/a
7	40	2000	Priestly Wood	Yes	Stable	Dispersing
8	167	2001	Maulden Wood	Yes	Stable	Dispersing
9	103	2001	Bedford Purlieus	Yes	Stable	Not known
10	208	2002	Hamps Valley	Yes	NO	n/a
11	209	2002	Chambers Wood	Yes	Stable	Dispersing
12	234	2003	Leashaw Wood	No	NO	
13	260	2004	Hes & Peter Wood	Yes	Stable	
14	293	2005	Monsal Dale	Yes	Decline	
15	317	2006	Bradfield Woods	Yes	Stable	Dispersing
16	373	2008	Freeholders Wood	Yes		
17	442	2010/11	Windmill Naps	2013		
18		2012	Alne Wood	No		
19		2013	Treswell Wood	No		

It has become apparent that, whichever measure of success is used, there is a difficulty assessing the long term success of a reintroduced population. Dormice are small, nocturnal, arboreal rodents that are difficult to survey for. In addition the programme makes extensive use of volunteer effort which while extremely valuable, may not always be consistent.

The assessment of short term success is relatively straightforward and can be determined the third year after the reintroduction.

As dormouse populations fluctuate widely by year; even deciding whether a site has a stable population to enable an assessment of medium term success may be difficult. It may also be difficult, due to lack of survey effort or landowner permission, to ascertain whether the dormice have started to disperse from the woodland in which they were released.

An assessment of long term success is similarly difficult as, although it is possible to surmise whether the dormouse population has attained a sufficient size and range to substantially reduce the risk of extinction due to stochastic processes, it may be difficult to provide dormouse records, for the reasons given above, to reinforce this.

It has therefore been decided to include an annual assessment of the long term success of each dormouse reintroduction site based on both fact and subjective opinion (Table 3). It should be recognised that the assessment of each site may vary by year in the light of new information. For example, dormice were released at Stockton Dingle in Cheshire in 1996/97. The population appeared stable and small numbers of dormice have been recorded beyond the release wood. However very few dormice are now recorded at the original site and hence, although the Short, Medium and Long term criteria many have been satisfied, the site is not considered a Long term reintroduction site success, due to the low numbers of dormice being recorded. It is possible however, that this situation could change in a single year if more dormice are recorded.

Table 3. The NE supported dormouse reintroductions in England (Chanin 2014) assessed 2015/16

Site No	NDMP site number	Year	Site	Short term (1 – 3 years)	Medium term (5 to 10 years)	Long term (population dispersal from release site)	Long term reintroduction site success (assessed 2015/16)
1	84	1993/95	Brampton Wood	Yes	Stable	Dispersing	YES
2	144	1994/95	Treswell Wood	Yes	NO	n/a	NO
3	78	1996/97	Stockton Dingle	Yes	Stable	Dispersing (?)	NO
4	73	1998	Linford Wood	Yes	Stable	Dispersing	YES
5	137	1998	Bubbenhall Wood	Yes	NO	n/a	NO
6	132	1999	Rivaulx	Yes	NO	n/a	NO
7	40	2000	Priestly Wood	Yes	Stable	Dispersing	YES
8	167	2001	Maulden Wood	Yes	Stable	Dispersing	YES
9	103	2001	Bedford Purlieus	Yes	Stable	Dispersing	YES
10	208	2002	Hamps Valley	Yes	NO	n/a	NO
11	209	2002	Chambers Wood	Yes	Stable	Dispersing	YES
12	234	2003	Leashaw Wood	Yes	NO	n/a	NO
13	260	2004	Hes & Peter Wood	Yes	Stable	Dispersing (?)	NO
14	293	2005	Monsal Dale	Yes	Decline	Dispersing (?)	NO
15	317	2006	Bradfield Woods	Yes	Stable	Dispersing	YES
16	373	2008	Freeholders Wood	Yes	Stable	Dispersing	YES
17	442	2010/11	Windmill Naps	Yes	Stable		
18		2012	Alne Wood	NO	NO		
19		2013	Treswell Wood	Yes			
20		2014	Eaton Wood	Yes			
21		2015	Gamston Wood	Yes			

## **Site selection**

Site selection was identified as a key area for attention. It was suggested that individual, or landscape sites should be large (at least 100ha), there should be a number of possible release sites at one reintroduction location and the geographical location of the sites should be restricted to one at the edge of the current range (Fig. 2 and Table 4). The review recommended that the reintroduction programme should become one of consolidation rather than expansion.

Chanin made four key recommendations in his review of the programme

1. The reintroduction programme should not continue in its present form. The strategy should change from one of expansion to consolidation.
2. Rather than disperse sites widely they should be clustered in small groups in order to create viable metapopulations.
3. A Project Coordinator should be appointed from outside the existing participating organisation and a small Advisory Group formed.
4. In addition to ongoing monitoring of progress by the Coordinating Management Group and Advisers, there should be more formal reviews after three and ten years.

Table 4. Target areas for the dormouse reintroduction programme

Species Recovery Programme English Nature (updated 2009)	The Dormouse Reintroduction Programme: A review (Chanin 2014) – Priority counties	Year reintroduction undertaken in county (S=currently considered success; E=currently considered failed)
Bedfordshire <sup>2</sup>	Bedfordshire	2001(S)
Berkshire <sup>3</sup>		
Buckinghamshire <sup>3</sup>	Buckinghamshire	1998(S) 2005(S)
Cambridgeshire <sup>1</sup>		1993/1995(S)
Cheshire <sup>1</sup>	Cheshire (south)	1996/1997(S)
Derbyshire <sup>1</sup>		2003(E)
Essex <sup>3</sup>		
	Hertfordshire	
Lancashire <sup>1</sup>		
Leicestershire <sup>1</sup>		
Lincolnshire <sup>1</sup>		2002(S)
Norfolk <sup>1</sup>		
Northamptonshire <sup>2</sup>	Northamptonshire	2001(S)
Nottinghamshire <sup>1</sup>		1994/1995(E) 2013(S) 2014(S)
Oxfordshire <sup>3</sup>	Oxfordshire	
	Shropshire (north)	
Staffordshire <sup>2</sup>	Staffordshire	2002(E)
Suffolk <sup>2</sup>		2000(S) 2006(S)
Warwickshire <sup>2</sup>	Warwickshire	1998(E) 2010/2011(S) 2012(S)
Wiltshire <sup>3</sup>		
Yorkshire <sup>1</sup>		1999(E) 2004(S) 2008(S)

1. Counties with no known natural populations, which are adjacent to counties within the core range and are within the known historical range of the dormouse
2. Counties with isolated populations, which require strengthening
3. Counties with scattered populations, where some gaps may exist

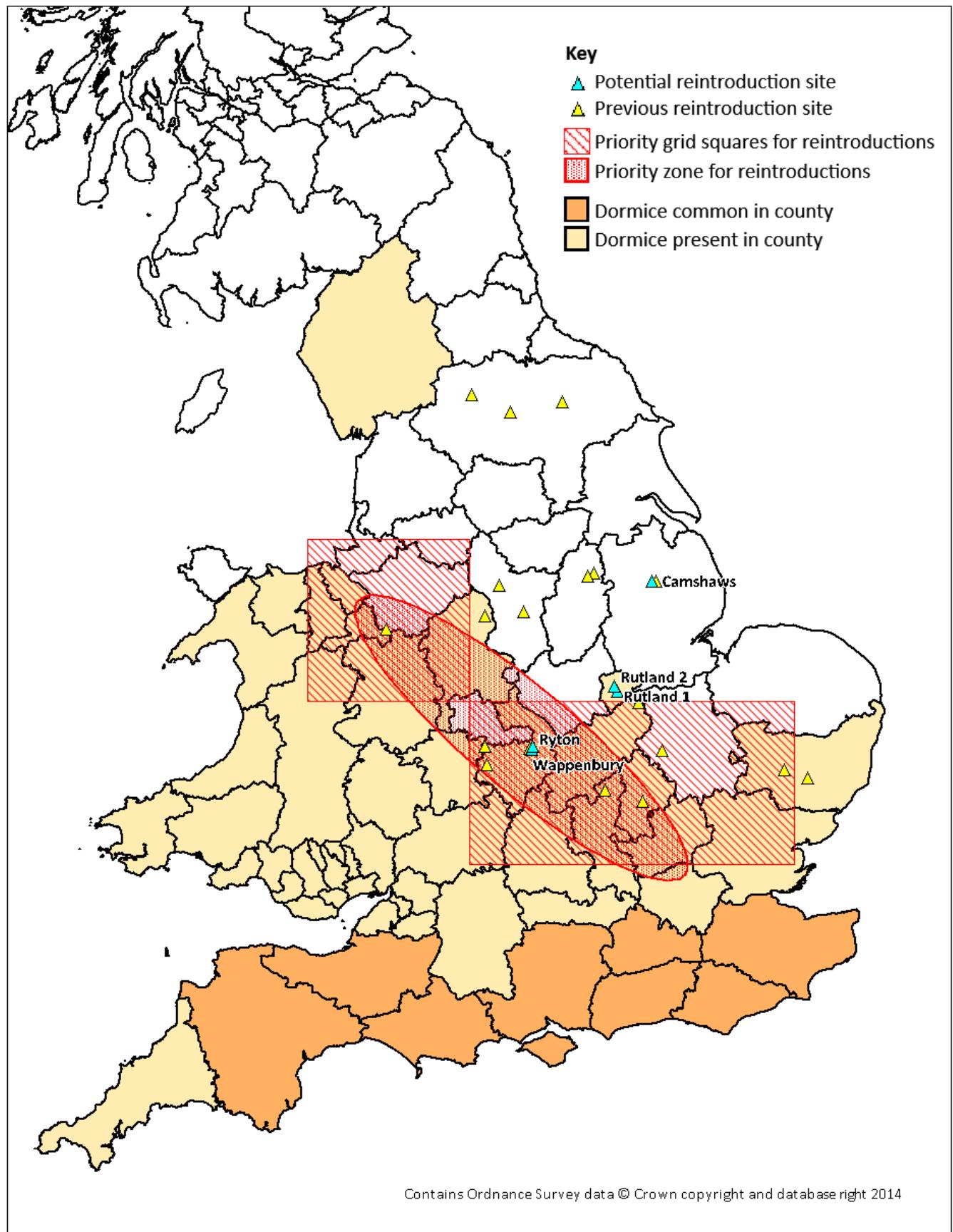


Fig. 2. The proposed priority areas for dormouse reintroductions in England and Wales showing some potential future sites.

## Future dormouse reintroduction strategy

In February 2014, PTES issued a formal response to the recommendations in Chanin's report. They recognised the important contribution they could make to the dormouse reintroduction programme but questioned their practical application.

### Summary of principle conclusions

1. The reintroduction programme should not continue in its present form. The strategy should change from one of expansion to consolidation.
2. Rather than disperse sites widely they should be clustered in small groups in order to create viable metapopulations.

*PTES agrees in principal with these recommendations. We will aim to try and find sites that are either within a reasonable distance of existing reintroduction sites or to use new locations where it is possible that at least two woodlands can be used as reintroduction sites. The former should be the priority. It should be noted that while every attempt will be made to achieve the above, for practical reasons with the dormouse reintroduction programme, it may not always be possible. Where it is impossible to find such landscapes, we should consider whether a reintroduction should proceed in a given year and what the implications of not doing so would have on the supply chain.*

3. A Project Coordinator should be appointed from outside the existing participating organisation and a small Advisory Group formed.

*We agree that improvements could be made to the management. It is difficult to see how a Project Coordinator could be appointed given the current funding constraints on NE and it is unlikely that it would be possible for anyone with either the time or experience to take on the role in a purely voluntary capacity. PTES is heavily involved in the dormouse reintroduction programme and is therefore not neutral in this, but we are prepared for our Dormouse Officer to coordinate management if other parties are comfortable with this.*

*Alternatively we suggest that NE takes on this role as it did previously. We suggest that there is a coordinating management group with representatives from NE, ZSL, Paignton and the CDCBG. This should confer regularly and inclusively through email, with occasional face to face meetings as necessary. In addition we suggest that two or three external advisers should be appointed to assist in an annual review (although a review every three to five years may be more appropriate) to ensure that the programme remains on track .*

4. In addition to ongoing monitoring of progress by the Coordinating Management Group and Advisers, there should be more formal reviews after three and ten years.

*It would be useful to have ongoing reviews of the programme but if this is to be pursued on the scale of that done by Paul Chanin, NE will need to consider the funding implications.*

*In addition continuing efforts will be made at the reintroduction sites to ensure that the captive breeding, quarantine process and release protocol is undertaken to ensure maximum success.*

In addition to the criteria for a suitable site for the reintroduction of dormice (Appendix A), the following criteria should also be applied to new site selections.

1. Greater attention will be given to identifying sites in priority counties
2. At existing sites, suitably managed woodland will be sought within approximately 5km of the original site and with an existing hedgerow/wood network between the woodlands, or a woodland where there is a high likelihood that a habitat network can be reinstated
3. At new sites, at least two suitably managed woodlands need to be identified within approximately 5km of each other and with an existing hedgerow/wood network between the woodlands, or sites between which there is a high likelihood that a habitat network can be reinstated

Potential new reintroduction sites could be ranked by the above criteria in order to determine suitable sites in optimal geographic locations without dismissing those sites that may not be located ideally but good in other aspects (Table 5.)

Table 5 Future dormouse reintroduction site criteria					
Species Recovery Programme English Nature (updated 2009)	The Dormouse Reintroduction Programme: A review (Chanin 2014)	Priority County	Wood size	Reintro. site proximity	TOTAL SCORE (lower score = higher priority)
Bedfordshire <sup>2</sup>	Bedfordshire	YES	Large wood or landscape (>100ha)	Close (up to 5km)	
Berkshire <sup>3</sup>					
Buckinghamshire <sup>3</sup>	Buckinghamshire	YES			
Cambridgeshire <sup>1</sup>					
Cheshire <sup>1</sup>	Cheshire (south)	YES			
Derbyshire <sup>1</sup>				Not close (>5km)	
Essex <sup>3</sup>					
	Hertfordshire	YES			
Lancashire <sup>1</sup>					
Leicestershire <sup>1</sup>					
Lincolnshire <sup>1</sup>			Small wood or landscape (<100ha)		
Norfolk <sup>1</sup>					
Northants <sup>2</sup>	Northants	YES			
Nottinghamshire <sup>1</sup>					
Oxfordshire <sup>3</sup>	Oxfordshire	YES			
	Shropshire (north)	YES			
Staffordshire <sup>2</sup>	Staffordshire	YES			
Suffolk <sup>2</sup>					
Warwickshire <sup>2</sup>	Warwickshire	YES			
Wiltshire <sup>3</sup>					
Yorkshire <sup>1</sup>					

Score:

#### Priority County

- 1 Site within Priority County as per Chanin (2014)
- 2 Site not within Priority County as per Chanin (2014)

#### Wood Size

- 1 Woodland/landscape large (>100ha)
- 2 Woodland/landscape medium (30ha - 100ha)
- 5 Woodland/landscape small (<30ha)

### Reintroduction site proximity

- 1      Woodland close (3-5km) to existing reintroduction site
- 3      Woodland not close (>5km) to existing reintroduction site

The optimal score is three points and that is a woodland in a large wooded landscape i.e. one where there is an opportunity for dormouse dispersal in a priority county. The woodland is close to an existing site and in a state whereby the habitat is considered highly suitable for a dormouse release in that year.

Higher values are placed on woods that are both small and relatively isolated and in a unsuitable condition for an immediate dormouse release. It is obviously possible for woodland condition scores to improve and this may encourage appropriate management at sites. It is recommended that a site with a score of eight or more is not considered suitable for a dormouse reintroduction.

The dormouse reintroduction programme relies on the goodwill of a number professional organisations and individuals as well as huge support from a range of volunteers. As Chanin reported, the programme in general functions well and the organisations and individuals involved have a good working relationship.

Dormouse numbers for the reintroduction are decided in the preceding year and hence if it is decided to suspend the programme; at least one years' notice will be required. It should be noted that if it is decided to suspend the programme for any period greater than one year it is considered that it would be difficult to reinstate the programme in its present format.

Although the lack of availability of suitable sites is considered to be one of the key difficulties facing the programme it is possible that sites could become available at any time. Hence a decision may not be made on whether a reintroduction will be undertaken at a site in one year until the preceding December at the latest.

### **Future dormouse reintroduction sites**

The major difficulty of the dormouse reintroduction programme is finding suitable sites. It is considered useful to have a future plan of where dormouse reintroductions could take place but recognising that as, for a variety of reasons, a reintroduction may not take place at a planned site, there are suitable reserve sites available (Table 6).

Year	Site	County	Grid ref	Priority	Size	Proximity	Score
2013	Treswell	Nottinghamshire	SK758500	2	1	2	5
2014	Eaton	Nottinghamshire	SK727775	2	1	1	4
2015	Gamston	Nottinghamshire		2	1	1	4
2016	Haws Bank	Yorkshire		2	5	1	8
	Camshaws	Lincolnshire	TF121743	2	1	1	4
	Rutland	Rutland	SK908068	2	1	3	6
	Wappenbury	Warwickshire	SP381709	1	1	2	4
	Rutland	Rutland	SK908068	2	1	1	4
	Ryton	Warwickshire	SP386728	1	1	1	3
	Belhus	Essex	TQ566825	2	1	3	6
	Clowes Wood	Warwickshire		1	1	3	5
	Marston Thrift	Bedfordshire		1	1	3	5
		Oxfordshire		1			

#### Notes on future release sites

- Treswell Wood                    dormice released in 2013
- Eaton Wood                    dormice released in 2014 (see Nottinghamshire dormouse project report for more detail)
- Camshaws Wood                    An FC wood close to Chambers Farm Wood. May be a perceived conflict with the release of EPS and woodland management
- Rutland Wood                    Suitable coppice woodland on nature reserve
- Wappenbury Wood                    Two dormice reintroductions in Warwickshire could be a central part of an HLF landscape project bid. This could be an opportunity for a chipping study into dormouse reintroductions

Rutland	Rutland Water – although there was an agreement in principal for the reintroduction to proceed, permission was not obtained from the land owner identified
Ryton Wood	See above. Second Warwickshire woodland
Belhus	Site towards edge of range in Essex. Excellent site and well managed woodland; main concern is whether dormice are already present.
Clowes Wood	A woodland close to Windmill Naps albeit separated by a motorway. It has been visited by a local monitor but not yet visited by PTES
Marston Thrift	PTES has looked for a Bedfordshire woodland close to Maulden woods but there is nothing obvious. Marston Thrift would be a new reintroduction site in the county close to a lot of newly planted woodland and hence potential future reintroduction sites. The wood would benefit from more management.
Oxfordshire	There is an active Oxon. Dormouse Group and it is anticipated sites will be put forward in the future.

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Eaton (2014) Real Mad Hatters Tea Party

## **Appendix A**

### **Dormouse Species Recovery Programme: Future site Information/Criteria form**

#### **Dormouse reintroductions**

The dormouse has become extinct in at least seven counties of England where it is known to have been present in the late 19<sup>th</sup> century. The dormouse reintroduction programme was initiated in 1993 as part of the English Nature Species Recovery Programme with the aim of restoring the dormouse to its native range. There have currently been 24 reintroductions to 19 sites in 12 counties. The programme was reviewed in 2014 in Dormouse Reintroduction Programme: a review (Chanin).

The wood needs to be at least 20 hectares in size with a relatively diverse species rich mix of shrubs and tree species ideally including oak, hazel, bramble and honeysuckle and hazel. There needs to be a long –term management plan committed to creating a diverse well-structured woodland including coppice management on a long coppice cycle; if necessary this should also include deer management. The woodland should be in a landscape with a good hedge network and ideally linked to other local woods with the future potential for another dormouse release in the vicinity. It will be necessary to have a local volunteer group to help with the reintroduction and to continue monitoring the dormice in the future.

#### **Target Areas**

The initial target areas proposed by EN and the revised areas proposed by Chanin (2014) are shown in Table 1. Sites will be considered outside of the target areas but priority will be given to those within them.

The aims of the programme have been widened to one of dormouse population consolidation in addition to the re-establishment of dormice in a woodland and hence it is important that sites fulfil the following criteria:

- At existing sites, suitably managed woodland will be sought within approximately 5km of the original site and with an existing hedgerow/wood network between the woodlands or one where there is a high likelihood that one can be reinstated
- At new sites; at least two suitably managed woodlands need to be identified within approximately 5km of each other and with an existing hedgerow/wood network between the woodlands or one where there is a high likelihood that one can be reinstated

Table 1. Target areas for the Dormouse Reintroduction Programme

Species Recovery Programme English Nature (updated 2009)	The Dormouse Reintroduction Programme: A review (Chanin 2014)	Year reintroduction undertaken in county (S=currently considered success; E=currently considered failed)
Bedfordshire <sup>2</sup>	Bedfordshire	2001(S)
Berkshire <sup>3</sup>		
Buckinghamshire <sup>3</sup>	Buckinghamshire	1998(S) 2005(S)
Cambridgeshire <sup>1</sup>		1993/1995(S)
Cheshire <sup>1</sup>	Cheshire (south)	1996/1997(S)
Derbyshire <sup>1</sup>		2003(E)
Essex <sup>3</sup>		
	Hertfordshire	
Lancashire <sup>1</sup>		
Leicestershire <sup>1</sup>		
Lincolnshire <sup>1</sup>		2002(S)
Norfolk <sup>1</sup>		
Northamptonshire <sup>2</sup>	Northamptonshire	2001(S)
Nottinghamshire <sup>1</sup>		1994/1995(E) 2013(S) 2014(S)
Oxfordshire <sup>3</sup>	Oxfordshire	
	Shropshire (north)	
Staffordshire <sup>2</sup>	Staffordshire	2002(E)
Suffolk <sup>2</sup>		2000(S) 2006(S)
Warwickshire <sup>2</sup>	Warwickshire	1998(E) 2010/2011(S) 2012(S)
Wiltshire <sup>3</sup>		
Yorkshire <sup>1</sup>		1999(E) 2004(S) 2008(S)

1. Counties with no known natural populations, which are adjacent to counties within the core range and are within the known historical range of the dormouse
2. Counties with isolated populations, which require strengthening
3. Counties with scattered populations, where some gaps may exist

### **IUCN Guidelines**

There are notable successes and as part of the government guidelines PTES and NE would like to continue releasing captive-bred animals to new sites in counties where their populations are still too low to either be feasible in the future or to spread throughout the county. As far as is practically possible the dormouse releases conform to the IUCN (The World Conservation Union) guidelines.

1. There is evidence of dormice being formerly present in the county (Rope 1881).
2. Dormice are known to have been lost from the area - nut hunts have failed to confirm presence. The dormouse populations in the county or area are considered to be low and widely dispersed.
3. Reasons for the initial county/area loss of dormice are a combination of habitat degradation (grazing, lack of management etc.), habitat fragmentation and isolation.
4. Low to negligible chance of natural recolonization – highly unlikely due to no known populations within at least 20km and colonisation appears to be compromised by habitat fragmentation.
5. Presence of sufficient habitat- woodlands should be at least 20 ha and is linked to other suitable areas.
6. Source of suitable animals of appropriate genetic form- a monospecific genus, without recognised sub-speciation, so not taxonomic/ genetic difficulties. Stock animals are bred from a variety of founders, ensuring greater heterozygosity than would be likely in a small remnant wild population.
7. No risk to source populations- animals are from captive bred stock, provided especially for the dormouse reintroduction programme.
8. Impact on management plan- none; current low- key management is suitable. Dormice live at low density and are unlikely to have a measurable impact on anything else. The addition of dormice to the site should make no additional demands on resources, and that is the explicit intention of this proposal.

### **Woodland type and management**

Suitable woodlands for a reintroduction should contain a diversity of deciduous trees and shrubs, including plenty of hazel. It should have good linkages to other areas of woodland and thus a reasonable prospect of any new population of dormice spreading.

The ideal management of woodlands for the dormouse would be long rotation coppice, in small coupes and at irregular intervals. It is important that sheep and other livestock should be excluded from the reintroduction area, as they are likely to trample dormice in hibernation.

## **Timing and procedure**

If the proposed site meet the criteria and subject to approval by People's Trust for Endangered Species (PTES) and Natural England (NE) following site visits, a release date will be fixed (generally only one reintroduction is undertaken each year).

In the release year, a site visit will occur in May or June to put up nest boxes and select sites for release cages. In early June the cages will be delivered and secured in place. The animals will be delivered to the site by mid-June and will be fed in the cages for 10 days, after which the cages are opened. Feeding will continue until late August and the cages removed in the autumn. The population will be monitored by checking the nest boxes up to six times a year as part of the National Dormouse Monitoring Programme and the results submitted to PTES. It is anticipated that the nest box placement, feeding and monitoring will be undertaken by a local team of volunteers with support from PTES.

The Dormouse Reintroduction Programme is carried out annually, as a joint project that is managed by PTES and supported by NE

## **Criteria for a suitable site for the reintroduction of dormice (in priority order)**

- 1 Deciduous woodland (preferably ancient) with a high species diversity among the trees and shrubs, preferably with little shading of the understorey, creating a full 'three dimensional' structure with plenty of arboreal links among and between the canopy and shrub layer.
- 2 There should be abundant fruiting hazel, at least seven years old, with provision for regular coppicing on a rotation of not less than 10 years.
- 3 Woodland fulfilling the above criteria where a further dormouse reintroduction could take place.
- 4 Either an area in excess of 20 hectares (50 acres) OR a smaller area, adjacent to more woodland or linked to other suitable habitat by species rich hedgerows (or strips of woodland).
- 5 A reintroduction will require a team of local enthusiasts to assist (e.g. with provisioning release cages and putting up nestboxes). (If not available it is sometime possible to make arrangements with the local Wildlife Trust or other local groups).
- 6 A commitment to ongoing appropriate woodland management.
- 7 If the site has a southerly aspect and is not too public, so much the better.

Released dormice are unlikely to pose a threat to other wildlife, but in some places they may act as nest competitors for pied flycatchers.

If you feel that you can meet the above criteria please complete the following questionnaire

### **POSSIBLE DORMOUSE RELEASE SITE FORM**

#### **Landowner**

Name .....  
.....  
.....

Address .....  
.....  
.....

Tel. No .....

Email .....

#### **Applicant (if different to above)**

Name .....

Address .....  
.....  
.....

Tel. No .....

Email .....

**Name of wood** .....

**Size of wood** .....

**Location**      Grid Reference .....  
                  Nearest Postcode .....  
                  Nearest Village / Town .....

#### TYPE OF WOODLAND

ANCIENT  ANCIENT REPLANTED  UNKNOWN

#### Species present

OAK	<input type="checkbox"/>
ASH	<input type="checkbox"/>
HAZEL	<input type="checkbox"/>
BRAMBLE	<input type="checkbox"/>
HONEYSUCKLE	<input type="checkbox"/>
BEECH	<input type="checkbox"/>
DOG ROSE	<input type="checkbox"/>
BIRCH	<input type="checkbox"/>
SWEET CHESTNUT	<input type="checkbox"/>

#### WOOD STRUCTURE

TREE CANOPY: OPEN  CLOSED IN PATCHES  TOTALLY CLOSED

UNDERSTOREY: NONE  PATCHY  DENSE

#### Rides

Does the woodland have rides? YES  NO

What is the average width of the rides? .....

### **Coppicing and management**

Do you currently carry out hazel coppicing in the woodland? YES  NO

How long are the coppice rotations? .....

How large are the coppice coupes? .....

What time of year is the coppicing carried out? .....

Is there a management programme in place? YES  NO

If YES please give brief outline.

.....  
.....  
.....  
.....

Are there deer present in the woodland? YES  NO

If YES is there a deer management plan in place to deter the deer? YES  NO

If YES please give details .....

.....

### **DORMICE**

Have any surveys for dormice taken place in this woodland in the past?

YES  NO

If YES, when did this take place and who did the survey

.....  
.....

Are there any known dormice population in the locality? YES  NO

If YES, please give details

.....

Thank you very much for completing the questionnaire and for offering to take part in the Dormouse Species Recovery Programme. We will contact you as soon as possible.