

# the dormouse monitor

the newsletter of the national dormouse monitoring programme

people's trust for **endangered species** |



## INSIDE

Using genetics to aid dormouse conservation

How our dormice fared in 2012

Monitoring dormice in hedgerows in Wales

# Welcome



Welcome to the first volume of *The Dormouse Monitor* 2013. In this edition we have a thorough overview of the data that you, our stalwart volunteers, sent in last year. Thank you for all of your efforts and we hope that you enjoy Ian's article. It would appear that our hazel dormouse population faced substantial challenges throughout 2012, mostly due to the weather conditions. Let's hope we have a better year, this year.

Thank you also to all our contributors who have provided fascinating articles on dormouse genetics, using hair tubes to monitor for mustelids - with interesting results - and other news from monitors far and wide.

This year we are holding a special dormouse conference - more information and how to book tickets on the back page.

And finally good luck with your box checks this year and if you are not already set up to submit your data online, please contact Susan who will be only too happy to help by emailing Susan. Sharafi@ptes.org or call her on 020 7498 4533.

Best wishes

Nida Al Fulaij  
& Susan Sharafi

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# JIGSAW dormouse work on the Isle of Wight

PTES funded a project run by Hampshire and Isle of Wight Wildlife Trust to look at the success of woodland planting schemes at aiding the dispersal and establishment of dormice on the Isle of Wight.

The Joining and Increasing Grant Scheme for Ancient Woodland (JIGSAW) was a Forestry Commission scheme designed to extend and link existing areas of woodland. On the island this resulted in the creation of 225 hectares of new broadleaf woodland. While the aim of the scheme was to reduce woodland fragmentation, it also had the potential to aid the dispersal and establishment of small mammal populations for species such as red squirrel and dormouse.

This project looked at the success of JIGSAW for small mammals, using the dormouse as an indicator. Five sites on the island were chosen that had been

planted at various times since the scheme began in 2000. At four of the sites 25 tubes were deployed, while at the fifth site 25 boxes were erected. These were checked up to eight times between May and October 2012.

The surveys proved quite a challenge, with nettles and thistles that were taller than the surveyors growing up over the summer making it difficult to quietly approach the tubes. This did result in a couple of dormice escaping from the tubes before we got to them but luckily they didn't go far, often sitting at a safe distance up the tree.

Dormice were found at two of the older, more established sites. Only one dormouse was ever seen on a single visit, but at one site there were likely to have been at least three different dormice due to their life stage and location. At the second site only one dormouse was recorded. It proved elusive for a while

with the nest being found two months before we finally found the occupant in residence, a nice healthy female which was in torpor on our final check.

Nests were found at all five survey sites, suggesting that they are at least investigating these new areas. It highlights the potential for these sites to support a dormouse population once they have become more established, having developed an understorey, a connected canopy and regularly fruiting hazel.

In addition to the tube and box checks, nut hunts were conducted at all the sites in November. The nut hunts found dormouse-nibbled hazelnuts at the same two sites that the dormice were recorded in. Nuts were also found to have been eaten by red squirrels (as there are no grey squirrels on the Isle of Wight) meaning that they are also making use of the new woodland areas.

Small mammal trapping was undertaken at two of the sites to find out what else was inhabiting the areas. In total five species of small mammal were found. Most individuals that were caught were wood mice, but there were also common shrew, pygmy shrew, bank vole and field vole. Many of the new woodlands are being planted on old agricultural fields so the presence of a range of species reflects the transition these areas are currently going through.

It is very encouraging to find dormice at two of the survey sites. It demonstrates that the planting of woodland to create links and reduce fragmentation can have a positive benefit for a range of small mammals, including dormice.

Sarah Bignell  
Ecologist, Hampshire &  
Isle of Wight Wildlife Trust



SARAH BIGNELL

# The best laid plans: what causes nest box si

Devon has many NDMP sites including some of the first to be set up, such as Andrew's Wood which was site number one in the NDMP, established over 20 years ago and is still going strong. By contrast Duryard, near Exeter, site 598, and the Sidmouth Donkey Sanctuary (see autumn 2012 issue) are much more recent.

There are over 40 regularly checked NDMP sites in the county, though there are several more which over the years have either been checked only briefly or intermittently, fallen into disrepair, lapsed entirely, or have never quite made it to becoming full sites. With this in mind, I carried out a mini-review to identify what

caused existing or potential sites to falter, or, conversely, continue to be actively monitored.

**Some results**

No two sites were the same of course, each with individual histories and circumstances, but some recurring factors were common to both situations; the difference was that the active sites generally had the means to overcome certain problems which triggered other sites to fail. The findings are summarised in the table below.

It may not have been a single cause but a combination that either led certain sites to lapse or not to get going. To draw some

conclusions as to why, I would suggest that the two most influential factors are: a) obtaining boxes or the funding needed to make boxes, and b) having a licensed person on board to support the site(s).

In some notable cases, monitoring schemes have collapsed immediately on departure of a key licensed person, even where there were buoyant dormouse populations. There seems to be no shortage of potential new sites or interest as Devon is a sizeable county in which dormice are widely recorded. However several such potential new sites have run out of steam, the momentum dissipating leaving unresolved questions

about grant funding and training.

In contrast, for organisations with active, locally based, licensed volunteers, and access to resources for supplying boxes (at a few sites, via their own timber and in-house carpentry), new sites have evolved rapidly, from first proposal to the start of the monitoring in a matter of weeks. Such prerequisites seem to be in place at many of the longer established schemes hosted by National Parks and AONBs, Local Authority countryside ranger services, countryside visitor attractions, and charities such as the county Wildlife Trust. Another noteworthy example is the Okehampton

**Table 1. Some factors which have helped or hindered monitoring of Devon NDMP sites (numbers of sites in square brackets; some counted under several categories. N=72 sites, 42 existing, 30 potential)**

<i>More likely to be actively monitored</i>	<i>Less likely to be actively monitored</i>
<ul style="list-style-type: none"> <li><i>Sites owned and/or managed by wildlife or conservation organisations (e.g. wildlife charity, Local Authority rangers, countryside visitor attraction, statutory agency). Monitored, and volunteers supported, as core part of ongoing site work [45]</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Site's main management objective is not wildlife conservation/ public amenity (e.g. forestry, quarry, farm holding) [20]</i></li> <li><i>Site managers unable to take on additional work [19] (can also affect hard pressed wildlife charities!)</i></li> </ul>
<ul style="list-style-type: none"> <li><i>Scheme supported by licensed box checker(s), often with regular team of helpers, often volunteers [52]</i></li> <li><i>Site relatively local to helpers [45]</i></li> </ul>	<ul style="list-style-type: none"> <li><i>No licensed box checker to monitor boxes or train others; site owner not licensed/needs training [17]</i></li> <li><i>Licensed checker does not have time to check site(s) [13]</i></li> <li><i>Original licensed checker moves on and is not replaced [9]</i></li> </ul>
<ul style="list-style-type: none"> <li><i>Funding and resources for boxes and ongoing maintenance [43]</i></li> <li><i>Capacity to make own boxes [4]</i></li> </ul>	<ul style="list-style-type: none"> <li><i>No funding for boxes (commercially £10-12 per box, or £500-600+ to set up a scheme) [25]</i></li> <li><i>No funding/resources for box replacements [8]</i></li> </ul>
<ul style="list-style-type: none"> <li><i>Site has dormouse records/known presence of dormice [66]</i></li> </ul>	<ul style="list-style-type: none"> <li><i>No records, many negative checks, dwindling interest [2]</i></li> </ul>
	<p><i>Other factors e.g.</i></p> <ul style="list-style-type: none"> <li><i>Persistent vandalism, disturbance, theft of boxes [3]</i></li> <li><i>Access and safety restrictions on private land [4]</i></li> <li><i>Site not large enough to support 30+ boxes [2]</i></li> <li><i>Site too close to existing monitoring site</i></li> <li><i>Site does not wish to become part of NDMP</i></li> </ul>

# tes to lapse or to last?

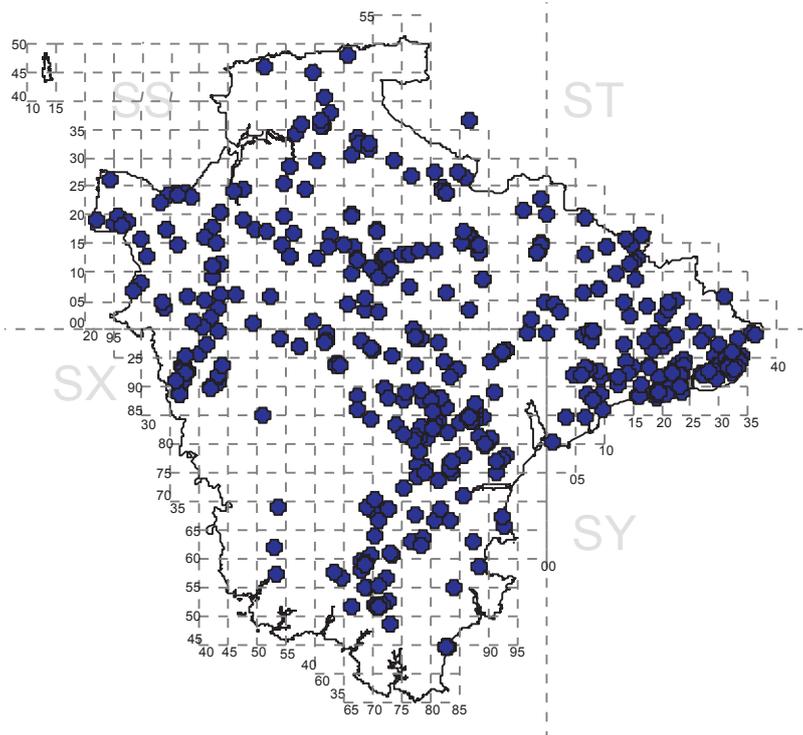
Dormouse Group, which monitors six local sites around the town and two nearby Highways Agency sites, through a core team of licensed volunteers.

A practical suggestion to make monitoring schemes more resilient might then be to have, where possible, more than one licensed person who knows and can check the site, and ongoing resources to make and, importantly, replace boxes. But this mini-review also prompted some further thoughts: perhaps some turnover of helpers at both old and new sites should be expected? Also, with over 40 monitoring sites in the county, isn't this enough?

Devon is a large rural county where most sites have originated by self-selection on behalf of an interested landowner; dormice appear to be relatively widespread but this does not reflect the distribution of NDMP sites, leaving some conspicuous gaps. An aspiration is to get more consistent coverage of the county, and a wider range of non-deciduous woodland habitats represented. There is also an effort to uphold continuity of survey effort, by rejuvenating lapsed schemes, and teaming up licence holders and trainees with sites that need monitoring, whilst building more capacity for training. Another future source of new sites might be box schemes established as part of mitigation for building developments.

Beyond this, greater monitoring allows statistically sound trends to be identified from county or regional studies (which we are told increases progressively past a threshold of 25 sites).

RIGHT: Devon dormouse records held by Devon Biodiversity Records Centre

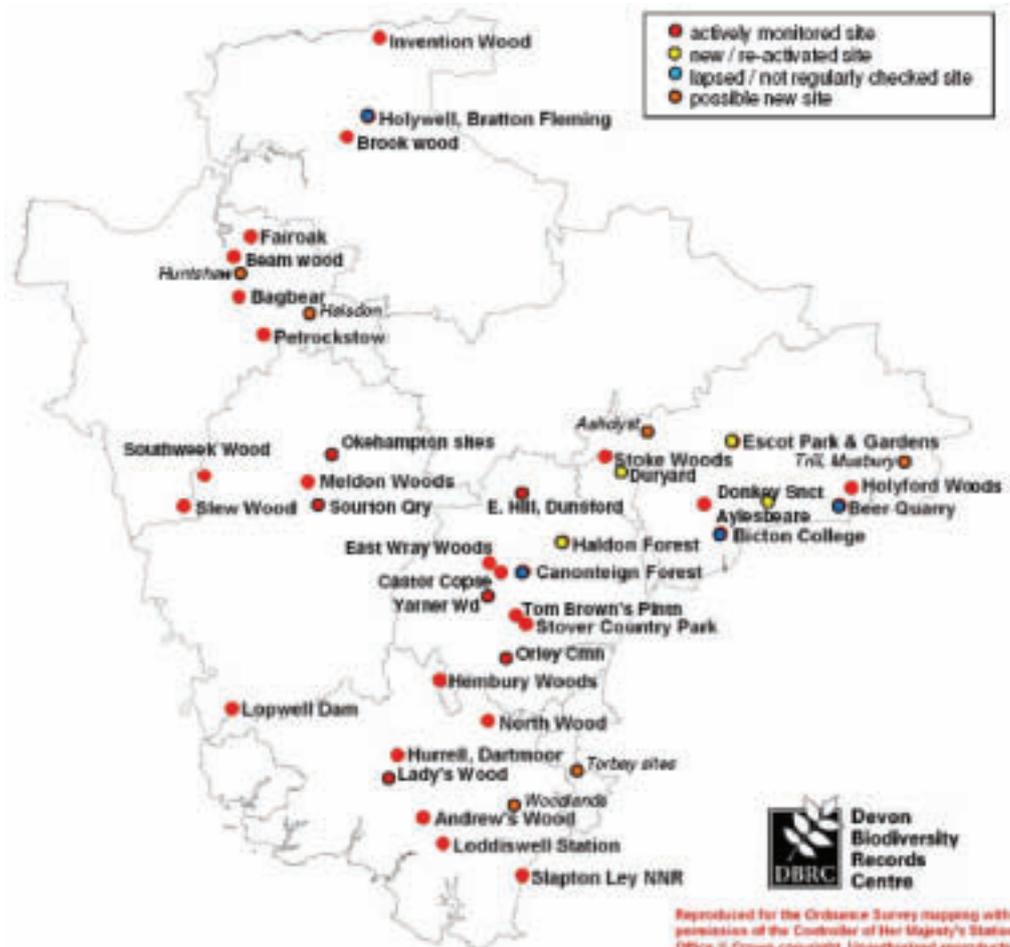


DEVON BIODIVERSITY RECORDS CENTRE

BELOW: Some of the NDMP sites across Devon that were monitored during 2012

Finally there may be other reasons for box schemes than collecting monitoring data. The added value to be gained from community engagement, or as a project focus for habitat management, with the hazel dormouse as the flagship species, cannot be underestimated.

Stephen Carroll  
Devon Dormouse Group



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# The woodland manager's dilemma: mini-cop

At Orley Common, South Devon, the rangers have the challenge of balancing the management of a public open-space with looking after a nature reserve. This means taking into account the needs of dormice and other wildlife, as well as considering how the reserve is used and perceived by the general public.

The 20ha limestone site is an important one within the county. About two-thirds of the site is comprised of old coppice and standards, ancient woodland indicators and dense blackthorn scrub. Some areas contain mature leggy scrub, blocks of derelict ancient coppice stools and a few standard trees for natural nesting sites. Little management had been undertaken in the wood for the previous 60 years, but nut hunts confirmed that dormice were present across the common. In 2008, coppicing was reintroduced. This traditional practice of cutting selected tree species back to ground-level to produce greenwood product also ensures that light reaches the woodland floor, the trees grow back more vigorously and that there is an improved age-structure within the woodland.

In taking on the management of such a

relatively small site we had a dilemma: how should we reinstate management, which would include clearing areas and disturbing wildlife, without impacting the dormouse population?

We decided to reintroduce coppicing within three coupes a year, ranging in size from 20x20m blocks to 30x30m blocks. There were about 6-8 neglected stools per coupe. We experimented with coppicing mature trees up to 1.5ft stump-width to ground level and these have been the most vigorous stools to recover.

Traditional dead-hedge brash was used at each coupe up to 1.5m to protect both from deer-browsing and visitor disturbance. We managed to create a manageable coupe size within one day with the help of up to eight volunteers. The coppice rotation is set to a minimum of 15 years allowing a range of species to mature well. The box scheme and yearly nut hunts help to monitor the effects of the management. The boxes are set in a rough transect between the coppice coupes incorporating non-coppiced sections, giving a rough comparison between the two habitat types. Thinning of standards was also carried out in some areas to



generate brash and create barriers, establishing blocks of woodland to be left undisturbed by visitors.

Four years on the first coppice compartments, which were created in 2008, have signs of fantastic re-growth from the coppice stools and ground flora.

During the box checks we have noticed that dormice are using the boxes on the edge of the coppice coupes rather than those in the areas that are not coppiced.

By ensuring that coppice coupes are of a manageable size for the available manpower, we can increase the likelihood that management will continue in the long-term.

The dead-hedging lasts roughly 2-3 years allowing the hazel re-growth and ground flora to pull away

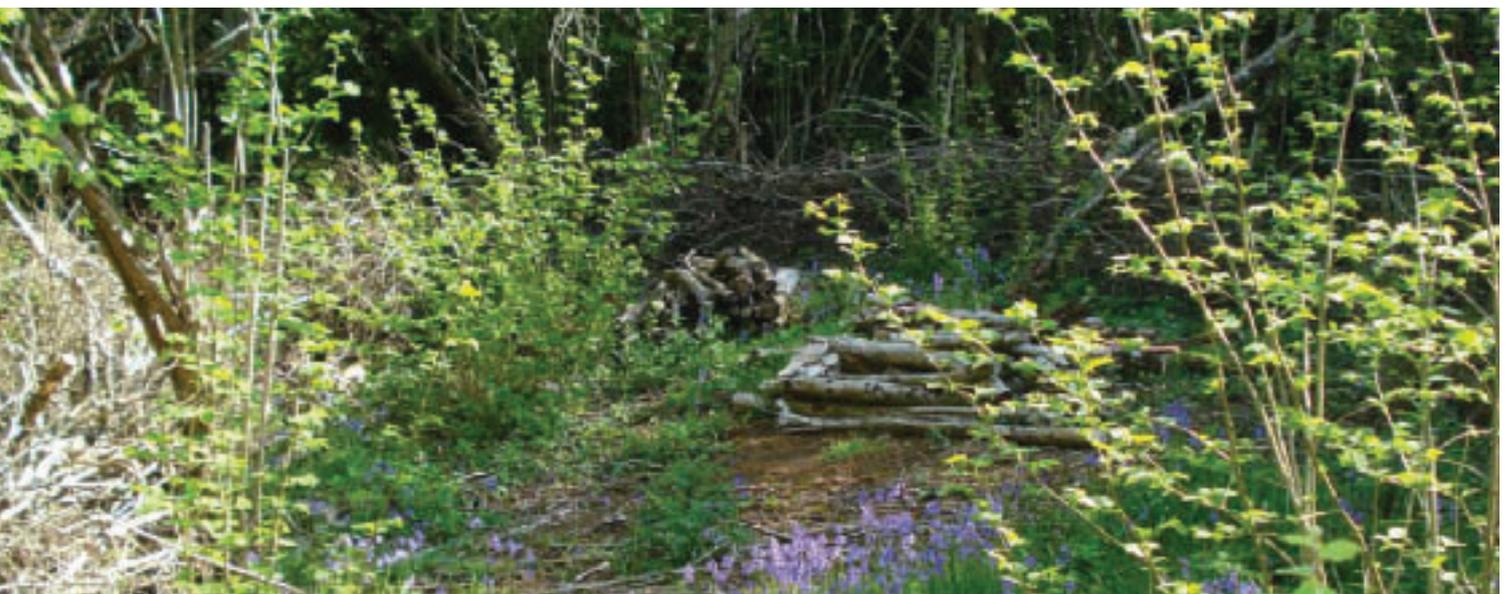
without the risk of deer browsing.

Additional brash barriers have allowed the ground flora to recover and provided much needed blocks of undisturbed woodland.

Coppicing with small coupes has started to create a mosaic of age structure and species types throughout the woodland while retaining connectivity for dormice. Crucially, the balance has been struck for the public, who are still free to roam, although subtly directed, and biodiversity which has benefited from small scale management.

Leo Henley-Lock & Stephen Carroll

For more info contact Leo at [Leo.henley-lock@teignbridge.gov.uk](mailto:Leo.henley-lock@teignbridge.gov.uk)



# picining at Orley Common, Devon

Orley Common consists of woodland, scrub and grassland



ALL IMAGES LEO HENLEY-LOCK

BELOW: New coppice coupe surrounded by dead hedging

BELOW LEFT: After four years the dead hedge has collapsed but has sufficiently prevented deer browsing to allow vigorous new growth



# Dormice monitoring throughout England and

The Met Office's description of the weather in 2012 is succinct and understated: 'a year of dramatic contrast.' But did the dramatic weather have an effect on our native dormice? Anecdotal reports throughout the year seemed to suggest that there were sites where dormouse numbers, as recorded for the NDMP, were either down compared with previous years or they were absent from the boxes. Other sites, however, recorded good numbers relative to previous years, some sites having their highest ever numbers. Overall it didn't look good – a total of 5,402 dormice were recorded in 110,558 boxes checked (2.44 per 50 boxes) which didn't compare favourably with 2011 when 8,904 dormice were recorded in 117,485 boxes checked (3.78 dormice per 50 boxes). With the conflicting reports of numbers found in 2012, this seemed like a very good time to look at the NDMP data regionally allowing us to compare site data more locally, rather than just nationally.

At present the NDMP provides data for a national dormouse trend to be produced but, with the exception of Devon and Kent, there is generally insufficient data for regional analysis. We decided to divide England and Wales into nine regions along county boundaries. Within each of these nine regions it is hoped that, over time, a minimum of 40 NDMP sites will be established. This will enable us to analyse the regional data as robustly as we analyse the national data.

In the meantime we have taken a crude look at the regional data out of interest. The total dormouse numbers recorded each year were divided by month and the number of boxes checked in each region noted. In some regions, specifically in the midlands and northern parts of the country, the numbers of boxes checked is very low; for example of the 17,500 boxes checked nationally in May 2012 only 729 (4.2%) were in northern England and 1,157 (6.6%) in the Midlands. Wales fared rather better with 2,137 (12.2%) boxes checked.

The number of dormice recorded in the southern counties of England throughout May approximately reflects the number of dormice recorded per 50 boxes nationally. More northerly counties show a much greater variation. In central England the numbers have been below the national average for the past three years. By contrast the numbers of dormice recorded in the

northern counties increased from below the national average to approximate it since 2008. In Wales the number of dormice recorded per 50 boxes is consistently above the national average and, as a similar pattern is demonstrated in the South

West, it seems that dormice manage quite well in the wetter parts of our island (Fig. 2).

If we take a look at dormouse numbers per month over the course of a year we would expect the numbers recorded in May

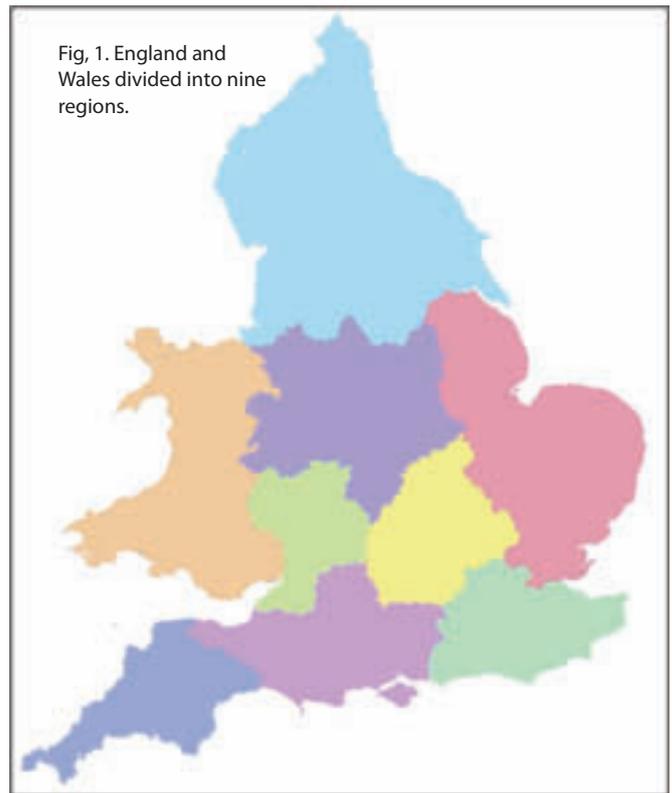


Fig 2. Number of dormice recorded per 50 boxes in May

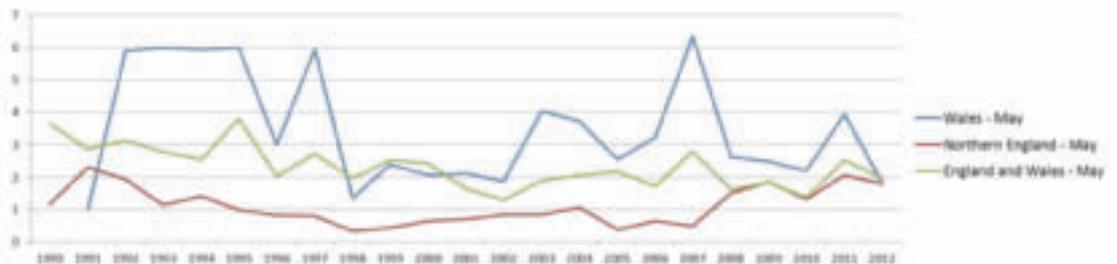
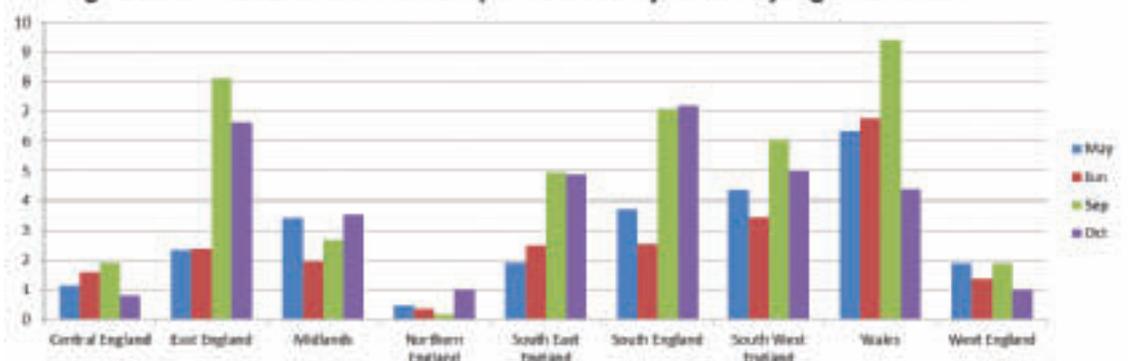


Fig 3. Number of dormice recorded per 50 boxes by month by region in 2007

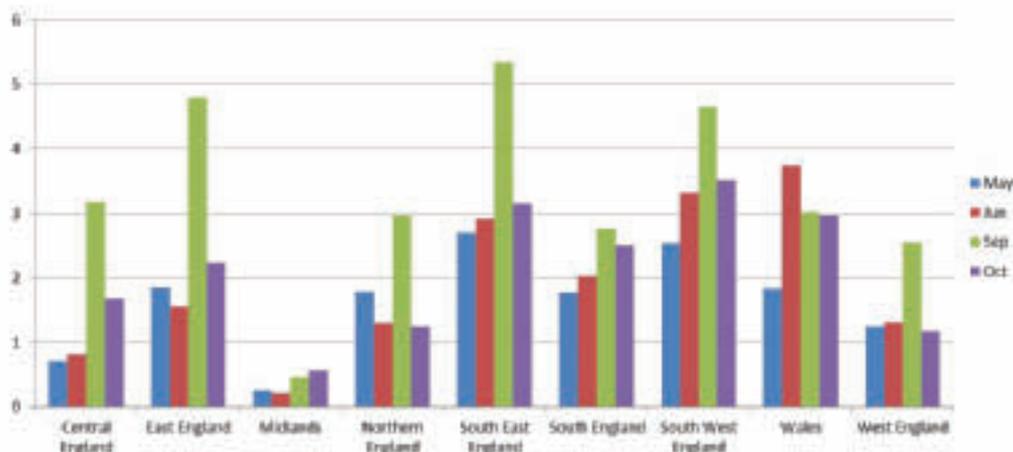


# Wales, 2012

and June to be exceeded by the numbers recorded in September or October, as the population will have swelled by the addition of the year's young. This is indeed what is generally found. For example, in a year where a reasonable number of dormice are recorded, such as 2007, the number of dormice recorded per 50 boxes in May and June was 2.78 and 2.63 respectively. In September this had swollen to 5.0 and was still higher at 4.35 in October. These figures will however hide some regional variation as shown in Fig. 3. It suggests that there was limited evidence of a population increase over the year in Central England, the Midlands, Northern England and West England. Although there was a good indication of a healthy population increase by September in Wales, the number of dormice recorded in October was lower than it had been in spring.

In 2012 the number of dormice recorded per 50 boxes was lower than in 2007, with 1.96 recorded in May and 2.26 recorded

**Fig. 4 Number of dormice recorded per 50 boxes by month by region in 2012**



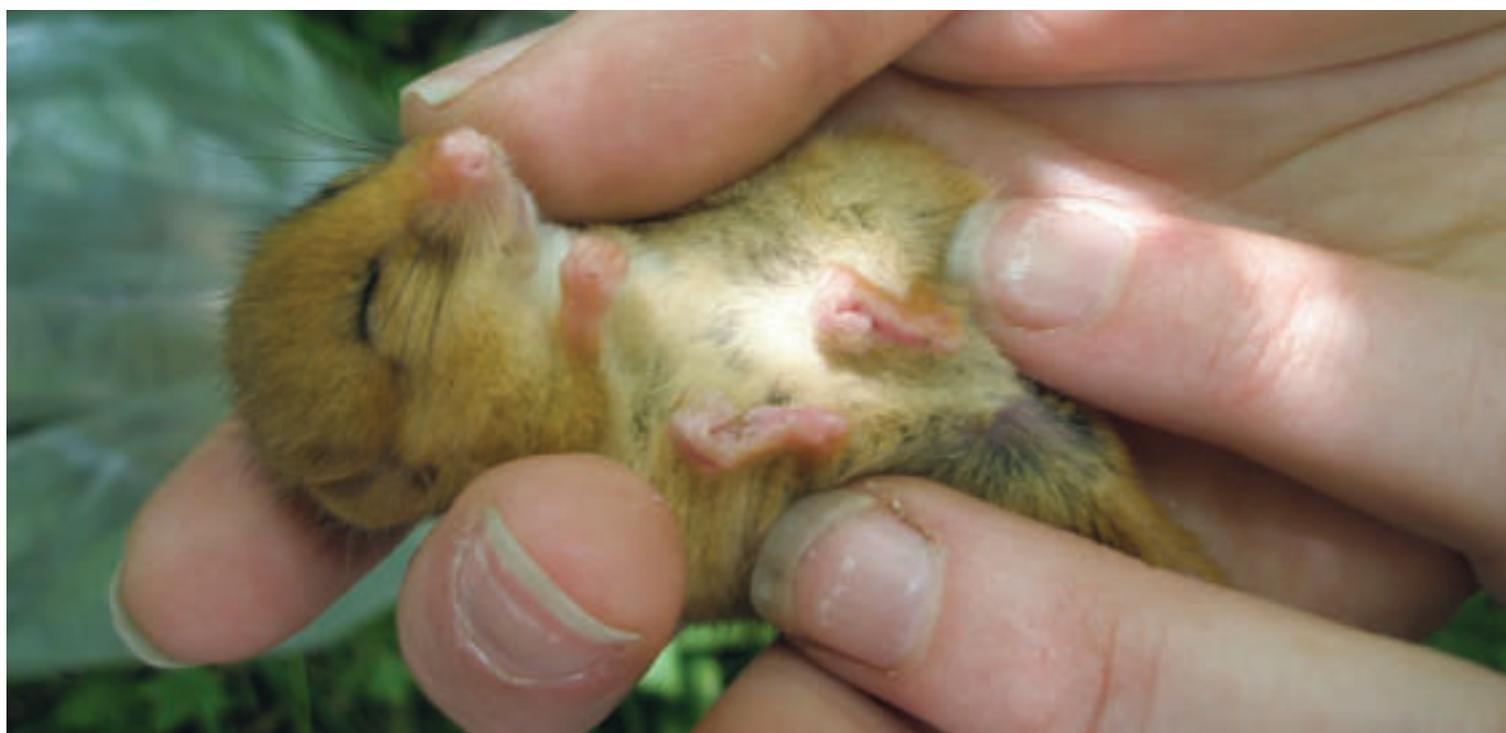
in June. It did not really improve over the summer and by autumn 3.90 dormice were recorded in September and 2.38 in October. These national figures again hide some regional variation (Fig. 4), although, with the exception of the spring records in southern England, numbers of dormice recorded were generally lower than in 2007. There appears to have been little evidence of a population increase over the year in the Midlands, South England and Wales but in all other regions there is an increase in numbers by September compared with

the spring figures. Curiously in all regions the number of dormice recorded in October was lower than those recorded in September. Is this a consequence of poor survival of young of the year or early hibernation?

It is difficult to determine exactly when dormice start to go into hibernation but the NDMP does hold data on whether dormice are torpid, active or dead. We also ask people to record dormouse weights and age classes. Sometimes it is not possible to record the animal's weight but it is important that the age class is recorded. There are

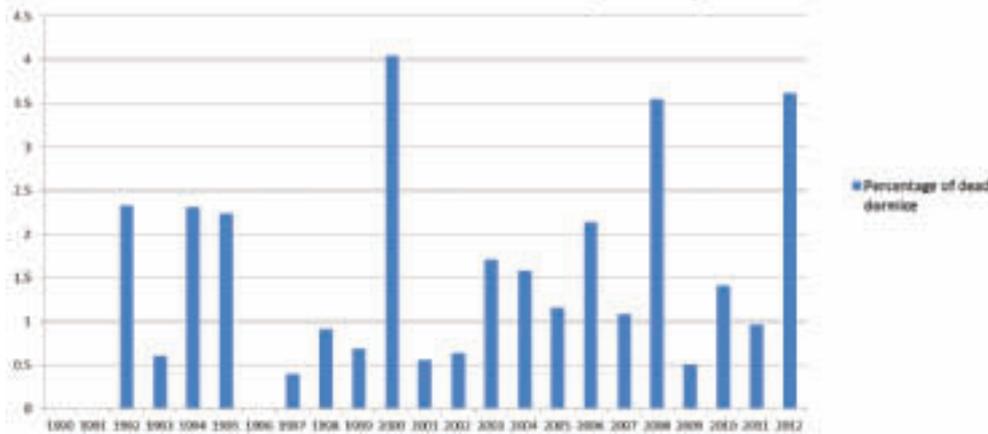
five age classes: pink, grey eyes closed, grey eyes open, juvenile and adult. The first three are grouped together as young and are considered to be animals that have not yet been weaned. These ages can be classified by weight, or an average weight can be allocated if the age class is recorded. It becomes more complicated with juveniles, which are weaned young of the year, and adults, which are considered to be those that have gone through their first hibernation. It is impossible to separate juveniles and adults on the basis of weight alone because the weight

LOUISE SHERWELL



# Dormice monitoring throughout England and

**Fig 5. Number of dead dormice recorded as a percentage of the total dormice recorded between January and May**



classes overlap. Hence the importance of accurate age recording.

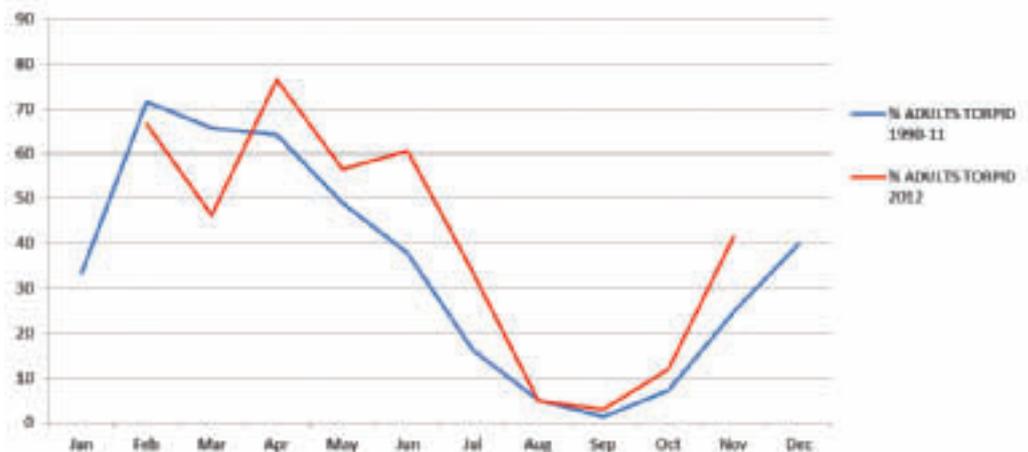
In March 2012, while clearing boxes at the PTES reserve on the Isle of Wight, 11 dead dormice were discovered. Had this been a consequence of the mild winter and subsequent warm spring? March 2012 was the warmest March since 1957. Had this brought dormice out of hibernation early and had they been unable to find sufficient food? The number of dormice recorded in the NDMP during the first five months of the year used to be counted in tens of animals (1990 n=132) but more recently they are counted in their hundreds (2012 n=1,662) as the number of sites being monitored continues to increase. Fortunately the number of dead animals found in boxes is quite low (2007 n=18, 2012 n=60) and in terms of the number of dead animals recorded as a proportion of the total number of animals recorded between January and May, 2012 was not exceptional; both 2000 and 2008 were as bad if not worse (Fig. 5). Later, on the Isle of Wight, when NDMP checks were

undertaken in May and June, very low numbers were recorded. If, on a

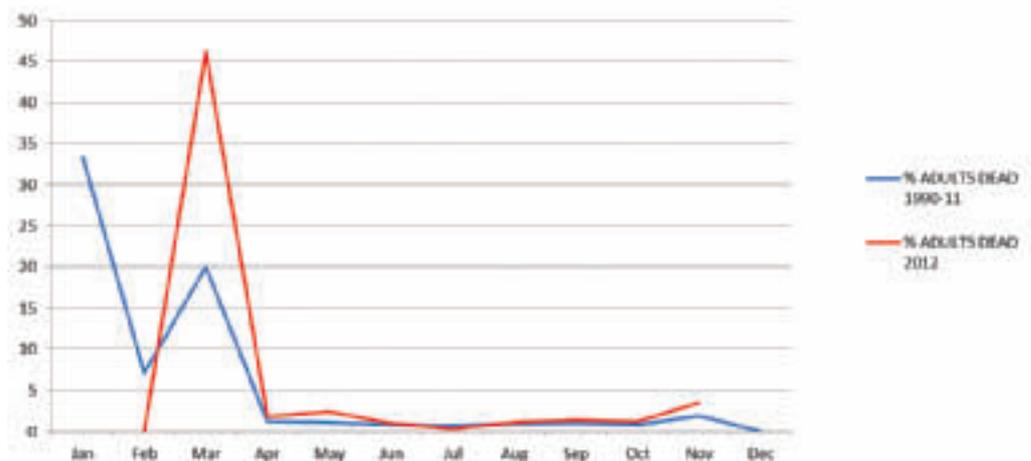
national scale, the unusually warm spring had not been responsible for the deaths of

more dormice than usual, was anything else happening that could cause low numbers of dormice to be recorded? A warm March gave way to the wettest April on record, which set the trend for the weather for much of the rest of the year. After average rainfall for May, both June and July were exceptionally wet months with temperatures slightly below average. Autumn brought no respite and September again was the wettest on record. Temperatures were again below average. Perhaps dormice had pushed their physiology to the limit and

**Fig 6. Number of dormice recorded in torpor as a percentage of the population by month**



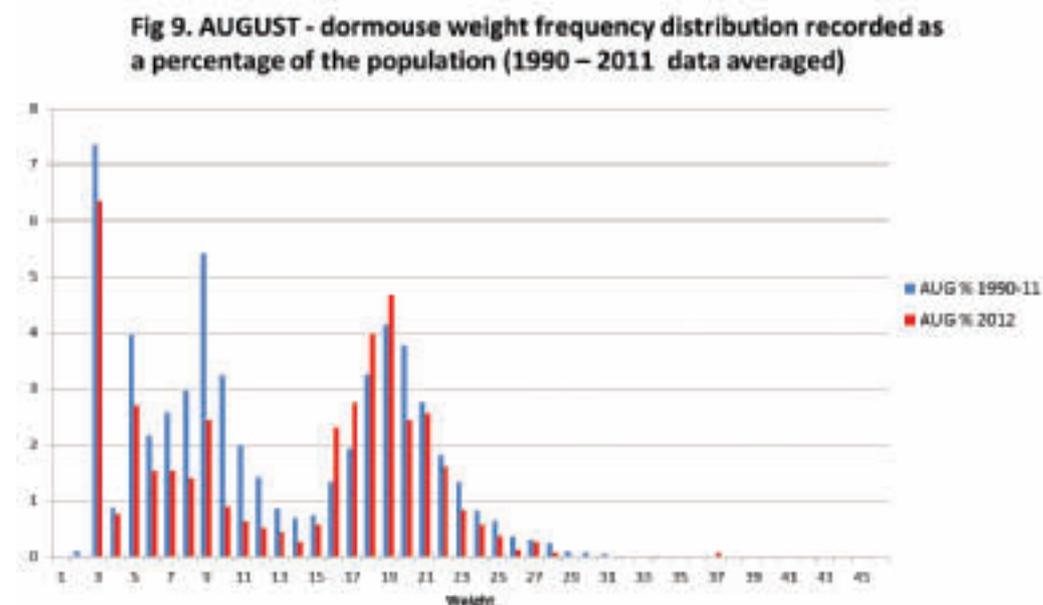
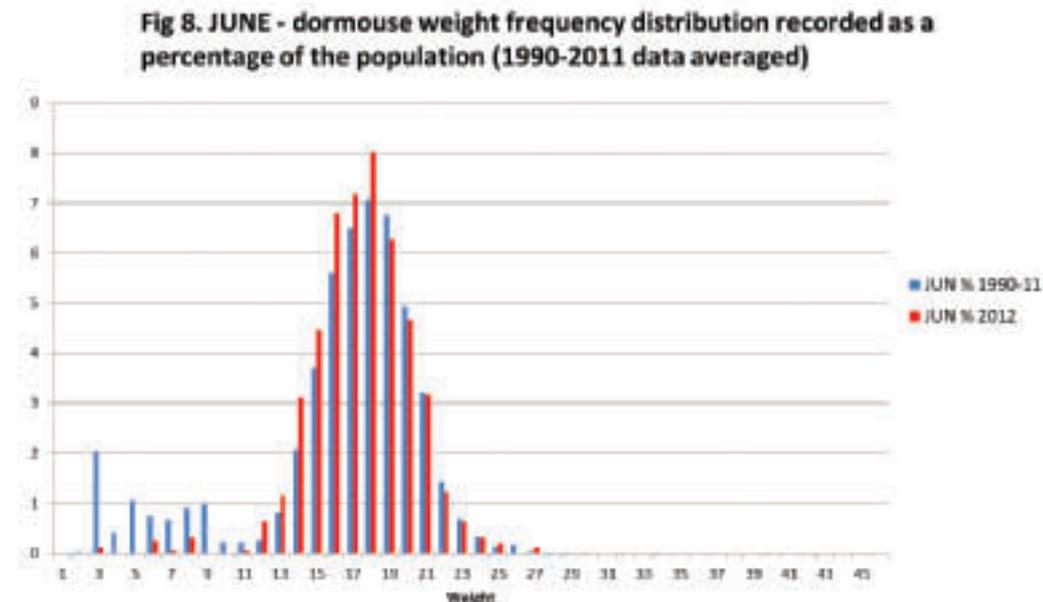
**Fig 7. Number of dormice recorded dead as a percentage of the population by month**



# Wales, 2012

done what many people would have liked to have done in 2012 and hibernated for the year.

Hazel dormice exhibit both hibernation and torpor; hibernation can be considered to be a period of inactivity that lasts longer than 24 hours while torpor usually lasts less than 24 hours. The NDMP is too crude to monitor hibernation, although it is possible to see annual trends in torpor. A high proportion of dormice are recorded in torpor in February and March; this declines to its lowest level in September and increases again by December. Did the exceptional weather in 2012 induce any variation in the normal patterns of torpor in the year? We looked at the 22 years of data from 1990 to 2011 and compared 2012 with that broad dataset. Fewer adult dormice were recorded in torpor in March than usual (Fig. 6) and a higher number were also found dead that month (Fig. 7). It should be noted that the number of dormice found dead is biased by the number of dead found at Briddlesford and it should also be noted that in March low numbers of dormice, dead or alive, are recorded, so comparisons early in the year should be treated with caution (1990-2011 March n=70, 2012 March n=26). While dormice may not have remained in hibernation it does seem that they remained in torpor longer than usual. On average 38% of dormice are noted in torpor in June and 16% in July; in 2012 that increased to 60% and 33% respectively. While it is undoubtedly beneficial for the adults to enter torpor in inclement weather it does mean that they will be less able to



adequately feed and hence less able to successfully rear young – indeed one of the frequent comments last year was the apparent lack of breeding at many NDMP sites.

The annual life cycle of the hazel dormouse can be expressed as a frequency distribution of the weight of dormice throughout the year. This can either be recorded in the field or, if an age class is assigned to an animal, an average weight can be determined. It is likely that young are under-

recorded as some monitors may fear disturbing them, however it is very useful if at least an age class is noted and the minimum number within each age class recorded. It is possible to approximately average the data between 1990 and 2011 to give a weight distribution for a year, which can then be compared with individual years.

It is highly unusual to see any young in April and all animals recorded then can generally be considered to be adults. Dormice will often

have their first litters by the end of May but in 2012 there was evidence of only one litter being born that month when three pinks were recorded at Marbach Hill in Herefordshire. Things didn't seem to improve in June when only four litters were found at four sites in Yorkshire, Cardiff, Dorset and Kent (Fig. 8). The number of adults present in the population was identical to previous years but the presence of litters was very low.

By July 2012 the adult

# Dormice monitoring throughout England and

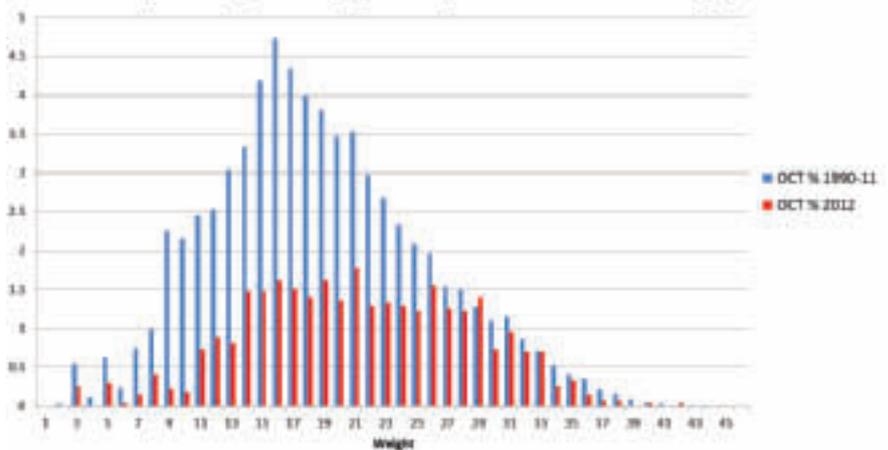
population was still comparable to previous years and there was evidence of more new litters. However, the number of developing young was down against the national average as a result of poor breeding in May and June. This pattern was repeated in both August and September where both the number of new-born young and the adult age class were similar to previous years but the number of maturing young was lower (Fig. 9). In October, as the weight classes became less distinct and the weight frequency distribution approached a normal distribution, there appeared to be a further decline in the number of mature dormice compared with what would have been expected (Fig. 10). This difference became even more apparent in November. Although the adult dormice in the population did not seem to be adversely affected by the inclement weather, it is possible that they benefitted from the lack of breeding. It is considered that dormice need to be approximately 18g to survive hibernation but the heavier they are the greater chance of survival over the winter period. On a measure of the

number of dormice weighing at least 35g in October as a percentage of the total adult population in that month, 2012 ranks about midway on the 23-year scale (Fig. 11). The two heaviest dormice, males weighing in at 40.1g and 38.6g respectively, were both recorded at Roudsea Wood in Cumbria on the 20th of the month. The young dormice in the population did appear to suffer in the poor weather over the summer and autumn. On a crude measure of the total number of young recorded per site per year, 2012 had the lowest number of pre-

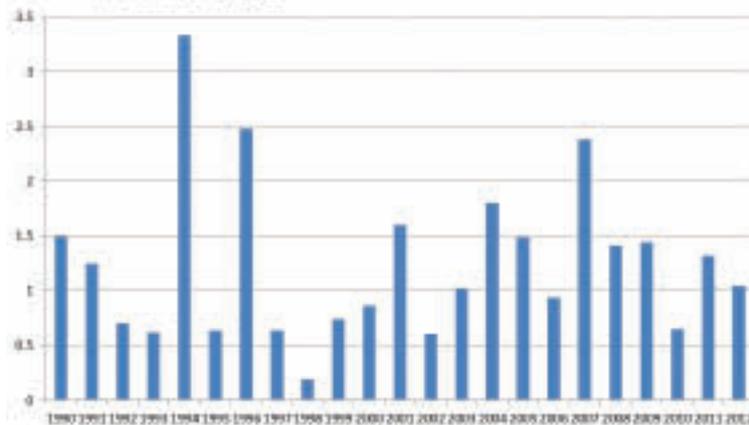
weaned dormice found at NDMP sites; only 2001 and 2005 were comparable. Unfortunately in 2012 a large number of dead young dormice were found which equated to the highest level

of mortality as a percentage of the young population in the NDMP since recording began (Fig. 13). Finally, it would be interesting to know whether there is any regional variation in breeding success throughout the country (Fig.14). Early breeding occurred in Central, East and Northern England with no young deaths recorded in these regions. Breeding occurred later in the South East and South West but breeding in southern England (Dorset, Wiltshire, Hampshire and the Isle of Wight) seemed to have been as poor as it was in the Midlands, West England and Wales. It really wasn't a very good year for dormice

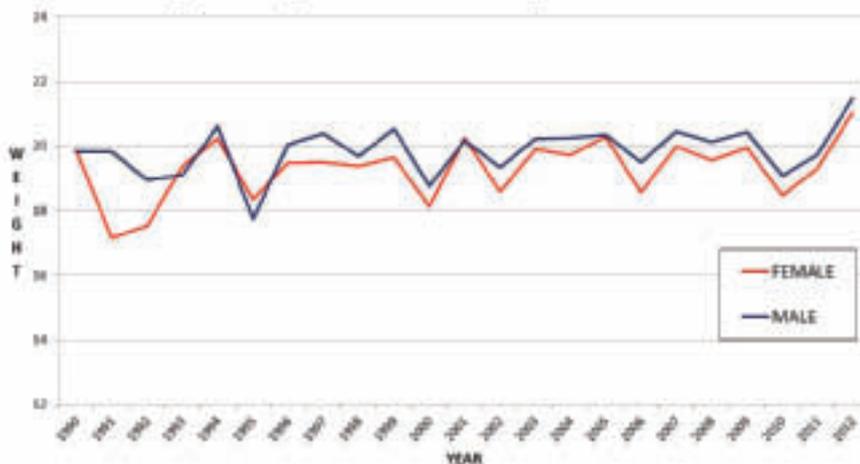
**Fig 10. OCTOBER - dormouse weight frequency distribution recorded as a percentage of the population (1990 – 2011 data averaged)**



**Fig 11. Percentage of adult dormice weighing at least 35g in October by year**



**Fig. 12 Average male and female weights recorded in October**

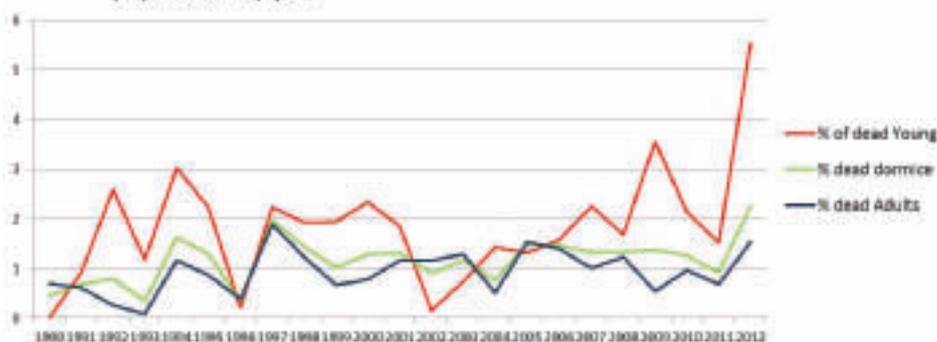


# Wales, 2012

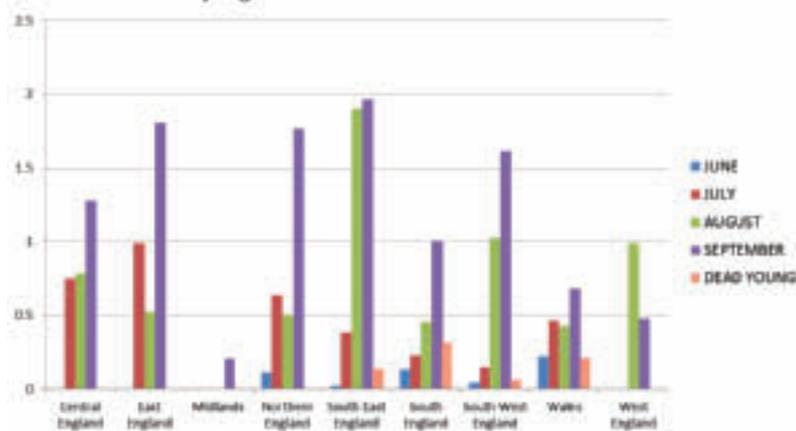
in 2012. Looking at the data submitted to the NDMP it would appear that dormice came out of hibernation (Fig. 12) early due to the mild weather in March. Although the adult population didn't seem to be particularly affected by the early arousal or by the onset of wet weather, which persisted throughout the summer and autumn, they were less active and breeding was delayed, with virtually no young born in May and June. In July, August and September the number of young born was below average whilst a higher infant mortality meant that recruitment into the adult population was much diminished. While breeding was poor however, the adult population in autumn appeared to be at a good weight to survive hibernation.

Ian White,  
Dormouse Officer, PTES

**Fig 13. The number of dead dormice recorded as a percentage of the population by year**



**Fig 14. Number of young alive and dead dormice recorded per 50 boxes by region in 2012**



LOUISE SHERWELL



# Is it a stoat? Is it a weasel? No it's a dormouse

In 2011-12, we carried out a pilot study, as part of the Mammals in a Sustainable Environment (MISE) project, to test the effectiveness of using hair tubes deployed by volunteers to survey for stoats and weasels along hedgerows in west Wales.

One site was surveyed in each 10km grid square in the counties of Carmarthenshire, Ceredigion and Pembrokeshire. Within each survey site, ten tubes were placed at 20m intervals on the ground along a hedgerow or, in the absence of a suitable hedgerow, a stone wall. Hair tubes were made from 52mm diameter plastic pipe cut into 300mm lengths, and with a pad of double-sided adhesive tape just inside each end. Tubes were baited with rabbit or chicken and anchored in the ground using a cable tie attached to a tent peg. They were left in place at each site for seven nights between the end of June and mid-October. All pads with hairs present were then sent to the Waterford Institute of Technology (WIT) in Ireland for analysis. DNA was extracted from hair samples

and tested for the presence of stoat and weasel DNA using species-specific real-time PCR assays. Samples were also tested for wood mouse, bank vole, field vole, pygmy and common shrew, dormouse and yellow-necked mouse.

In total, 61 sites were surveyed across the three counties, from which 207 samples were collected and sent for analysis. Dormice were detected at nine sites in seven 10km squares in Carmarthenshire and Ceredigion, from which there were no recent records. This was quite a surprising result, because the hair tubes were all sited on the ground and dormice are thought to avoid spending time at ground level even within the cover of hedgerows. If those samples that were positive for dormouse had been collected in late summer/early autumn this could have been because dormice are looking for suitable places to hibernate at that time of year. However, dormouse hairs were found in some samples collected as early as mid-July.

Not unexpectedly, wood

mouse and bank vole were the most commonly found species, but yellow-necked mouse was also found in four samples. Weasel was present at 15 sites, but stoats were not detected at any of the survey sites, despite being found using this method in

Ireland. This may reflect the patchy distribution of stoats in west Wales and further work is being carried out this year to improve the method for the target species.

Jenny MacPherson  
The Vincent Wildlife Trust



JENNY MACPHERSON, BRIAN SHACKLETON

# Hazel dormice on the edge

The increasingly rare and elusive hazel dormouse exists at its north-western limit in the UK in the limestone woodlands around the head of Morecambe Bay. Roudsea Wood and Mosses NNR is its last remaining stronghold in this area. Here the woodlands of the nature reserve are managed through a sensitive programme of annual coppicing specifically for this small nocturnal mammal, and an essential part of this work is the extensive monitoring of the population. This is carried out by local Natural England volunteers, Tony and Heather Marshall, who are fully licensed to handle these delicate little creatures. The fat little fellow below was found in one of the many nest boxes in Roudsea Wood during Tony and Heather's October survey last year. He had clearly been feasting on the abundant berry crop in the coppice, and hopefully made it through last winter

with that much fat!

The excellence of the woodland management at Roudsea Wood also allows Natural England staff to familiarise other land managers in the area with appropriate woodland management to benefit hazel dormice. Consequently the nature reserve is increasingly being used as a training site for volunteers who want to become involved in the monitoring across the Morecambe Bay woodlands.

Natural England staff are working closely with a range of partners in North-West England to survey for the presence of hazel dormice in case there are populations still remaining that need special care. This includes an active partnership with Aggregate Industries at their Holme Park Quarry. Aggregate Industries recently received a prestigious Biodiversity Benchmark Award from The Wildlife Trusts for their

positive support of nature conservation work on their property, which included Clawthorpe Fell NNR and Holme Park Local Nature Reserve.

Here Kate Morris, NE Mammal Specialist, and I, Senior Reserves Manager for South-East Cumbria and North Lancashire NNRs, are working with Aggregate Industries and people from the local community to survey for dormice across the quarry site, where 300 nest tubes have been sited. NE staff are also working with other partners like RSPB and the Arnsdale and Silverdale AONB in examining the potential for a possible

release of captive-bred dormice to areas where they may do well. In preparation for a possible release, parts of Gait Barrows NNR and the adjacent RSPB woodlands are now being managed to ensure the habitat is suitable to support a population of hazel dormice.

Rob Petley-Jones  
Senior Reserves Manager

TONY AND HEATHER MARSHALL



# Lincolnshire dormouse group

The Lincolnshire Dormouse Volunteer Group was formed in 2002, after 16 pairs of dormice were reintroduced to Chambers Farm Woods, a Forestry Commission woodland near Bardney. Monthly nest box checks have shown that the reintroduction has been successful, with high numbers of dormice being found, crossing roads and moving into new areas of the woodland complex. In 2012, a university student started to conduct a fur-clipping project to help estimate the current population size.

During the winter months, volunteers help to carry out coppicing work in designated coupes using hand tools, with much of the brash and smaller branches used in dead hedging on site. Larger trunks (too big for our bow saws!) are felled using a chainsaw and we even had a Dutch draught horse named Hector to help

pull five tonnes of large timber from the woods to be used locally for firewood. The horse disturbed the ground far less than machinery would have.

Volunteers do not go to the winter work days with hopes of actually seeing a dormouse, but after someone heard a "squeak", a woven dormouse nest was discovered on the ground with a hibernating dormouse inside. Where had it come from? Although we were all excited about seeing the first dormouse of the year, we were careful not to disturb it too much, returning the nest to a safe hole in the roots of a nearby tree that was not due to be coppiced.

This surprise visitor raises questions about how many dormice are disturbed by winter woodland management. It can therefore be suggested that best practice should include taking extra care to keep

to the same paths during woodland work periods as much as possible, and keep the movement of brash through the wood to a minimum.

Gemma Watkinson  
Lincolnshire Dormouse Group

Nature lovers and conservationists Brian and Sheila Coulson from Morton, Lincolnshire have been given a prestigious award for their extensive work in helping to conserve and increase the number of hazel dormice on Exmoor. The Samuel Foss Conservation Award is only given to one or two people each year for their "outstanding contribution to the conservation of Exmoor".

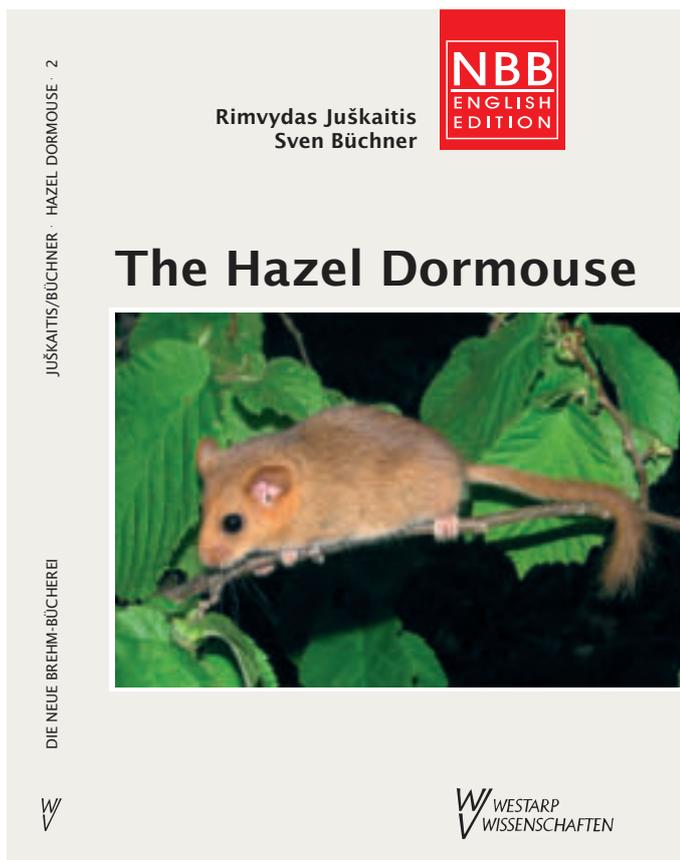
Brian and Sheila have been visiting Exmoor in Somerset for over 35 years but it wasn't until 2001 that they saw and fell in love

with a dormouse. After two seasons of training Brian and Sheila were granted a dormouse licence and now travel down to Exmoor four times a year, clocking up over 2000 miles. Whilst they help to survey many species, Brian says their real reward is to be able to work with a rare and endangered species which most people will never be fortunate enough to see in their lifetime in the wild.

PHILIP BYCH, BRIAN COULSON



# NEW dormouse book



a friendship over the years, sparked by the chance, every three years, to meet with like-minded researchers and conservationists from across the globe at international dormouse conferences. Ten years later the pair decided to write a monograph about their research objectives. They incorporated the results from a broad range of studies, condensing and summarising the findings, together with the results from their own long-term studies. In 2010 this book was published in German with such success that the publisher encouraged Büchner and Juškaitis to consider producing an updated edition in English.

The result is a comprehensive overview of one of our most elusive, least-known small mammals. Hazel dormice are found west from the UK, across Europe, south as far as Sicily and the Greek islands, as far north as Sweden, then east into Russia and Turkey. Absent from Ireland, Norway, Spain and Portugal, this enigmatic creature is still found across a diverse geographical range. Büchner and Juškaitis have carefully consolidated all current research on this species. The various chapters in

the book look in depth at the morphology, activity, breeding and behaviour of hazel dormice. Their feeding patterns, hibernation adaptations and population ecology - the aspects of a dormouse's life that make it unique amongst our native rodents - are covered in detail.

This guide to hazel dormice would be a welcome addition to any amateur naturalist's library. A useful, quick reference guide, it also makes a fascinating read and provides food for thought for further research studies. In the face of an ever-changing climate and a world where natural habitats are under ever-increasing pressure from development, it is so important that we understand the fundamental ecology, needs and adaptational limits of our species to ensure we can conserve them effectively into the future. This book goes a long way in enabling us to do that.

To order a copy of the book, which costs £20 plus £2.50 p&p please visit [www.ptes.org/shop](http://www.ptes.org/shop) or call us on 020 7498 4533.

*The Hazel Dormouse* is a new, definitive monograph on the species, written by Dr Rimvydas Juškaitis and Sven Büchner. Juškaitis, based at the Institute of Ecology of Nature Research Centre in Lithuania, and Büchner, who works as a specialist ecological consultant in Germany,

met at the third International Dormouse Conference which was held in Croatia, following the inaugural conference in Germany and a second one held in Italy. Rimvydas and Sven struck up



# How can genetics aid the conservation of th

I am currently a PhD researcher in the Molecular Ecology Research Group at Manchester Metropolitan University (MMU). I have recently begun my research project which aims to understand how habitat variables associate with dormouse presence and influence gene flow between populations. These data are practically useful to inform future sustainable conservation management of this species. The work is taking place under Dr Ed Harris and Dr Jonathan Ellis at MMU as well as with Dr Simone Bullion of Suffolk Wildlife Trust. We will also be working with other wildlife trusts in Kent and North Wales (North West Dormice Partnership).

Scientific research to aid the applied conservation of the hazel dormice has seen a rapid increase over the years. Iconic work by Dr Pat Morris and Dr Paul Bright has vastly improved our knowledge

on the ecology and biology of this species. Whilst new research by Dr Robyn Grant (also at MMU) conducted at the Wildwood Trust can start to give us insights into how dormice move through their habitat using their whiskers (see article in *The Dormouse Monitor volume 2 2012*), genetic techniques can provide insights into the movement of dormice at the landscape scale. In recent years, genetic techniques have given us the ability to begin to relate dormouse ecology, biology and physiology with population genetics. Ultimately, this will help us to prioritise future management strategies. Now these genetic techniques can also be combined with geographical data. This allows the influence of landscape features on dormouse dispersal and population structure to be estimated – an emerging area known as ‘landscape genetics’.

Hazel dormice occur naturally at very low density. Because of patchy habitat availability, local dormouse populations are small. This makes it an interesting species to study in a landscape genetics context, as well as making it important to understand the role of inbreeding in population persistence through time. Due to dormice being habitat specialists and consequently vulnerable to habitat fragmentation, they are seen as a bio-indicator species (i.e. an indicator of environmental integrity and species biodiversity). Loss of genetic variation is often caused by reduction/loss of connectivity between populations caused by habitat fragmentation. This can potentially impact on the ability of a population to adapt and cope with environmental change in the long-term.

As such, it is important

to maintain suitable connectivity to ensure the future viability of a population. We have to think about populations of dormice as a collection of sub-populations interlinked with each other. It is important to know how individuals move and interact with nearby sub-populations in the course of routine feeding and breeding activities. This is where genetic techniques can be used to identify breeding through the sharing of genes (or alleles) between neighbouring populations – i.e. the extent of dispersal between populations can be estimated based on genetic data. Combining this information with current data on population levels as well as the landscape features that link or separate these populations will allow us to further understand dormouse biology whilst, at the same time, relating

NIDA AL FULAJI



# the hazel dormouse in the UK?

these data to demographic histories.

The impact of roads and transport infrastructure on dormouse dispersal has long been debated by members of the dormice community (see article in *The Dormouse Monitor* volume 1, 2012). It is naturally presumed that roads and infrastructure act as barriers to dispersal (the barrier effect as previously proposed in Pat Morris's book). However, the true extent of this is unknown as some anecdotal and visual evidence has shown that dormice do sometimes cross roads and have been found in traffic islands and roundabouts. There has also been investment in wildlife land-bridges across roads to aid dispersal of dormice. Thus there is a need for current research using genetic analysis to assess the extent to which roads act as barriers to dispersal as well as the effectiveness of mitigation practices such as

wildlife bridges. Specifically, this year I will be looking at the role of the Lamberhurst wildlife landbridge over the A21 in Kent, in promoting movement of dormice using genetic methods. Dormice have been found in nest boxes on the bridge, however, as yet we have no information on whether populations either side of this bridge have managed to breed, thus restoring population connectivity.

For reintroductions, it is also important to understand the genetic status of dormice to inform best practice. Genetic analysis also allows us to monitor the success of introduction programmes through time. This can be done by looking at total genetic diversity and levels of inbreeding to predict the future viability of a population. An important point to consider is the fact that these reintroductions may use a mix of individuals from varying locations, this

can help provide a diverse genetic stock to the area and possibly aid in the chances of success. However, the effect of introducing a diverse stock from different parts of the UK may negatively impact on the extent to which populations are locally adapted. These factors are currently largely unknown for dormice since as yet there have been no wide-scale studies to identify whether the UK is made up of genetically distinct populations.

Where do we go from here?

Genetic methods in conservation of the hazel dormice can play an influential role, especially with the interdisciplinary collaboration of various groups. Hopefully, we can build upon the existing genetic work conducted by Dr Cheryl Mills in SW England and Dr Phil Watts' group at Liverpool University.

This field can greatly add to the knowledge gained through scientific studies not just from academics, but also from the volunteers of the dormice monitoring programme to aid in the long-term persistence of this threatened species. Indeed, our field work to collect genetic data takes part alongside volunteers monitoring dormouse populations as part of the national programme.

Fraser Combe  
Manchester Metropolitan University

If any wildlife trusts or other organisations would like to contact us to discuss our research, or feel they could contribute to the programme, especially regarding wide-scale population structure of dormice in the UK please contact Fraser Combe at [f.combe@mmu.ac.uk](mailto:f.combe@mmu.ac.uk)



# And finally...

## **DORMOUSE MONITORING 2013 - a one-day conference 9 November 2013**

We are really pleased to announce that, this November, PTES is holding a dormouse conference for all the NDMP volunteers. Thanks to you, we have over 350 dormouse nest box sites registered, which are being monitored at least twice a year. It is also over twenty years since monitoring began at just a handful of sites in the early 1990s.

Since then local dormouse groups have sprung up all over the country, training methods to teach new volunteers how to handle and sex dormice accurately have been developed and a whole community of people devoted to the conservation of one of our most endearing mammals has emerged.

In celebration of all of the above we would like to invite you to join us at the University of Reading for a day packed with talks and discussions given by

a variety of people from the dormouse world. Talks, which will begin at 10.00am on Saturday 9th November, will focus on how to set up and run a successful dormouse group and how to instigate beneficial woodland management at your monitoring site, with insights from monitors at one of our most successful reintroduction sites in Suffolk. The talks will begin with an opening session by Dr Pat Morris, the leading dormouse authority.

We hope that the day will be an opportunity for you to come and meet other dormouse monitors and enthusiasts, share ideas, ask questions, hear useful advice and enjoy a delicious lunch too.

To book your place please visit [www.ptes.org/events](http://www.ptes.org/events) or call 020 7498 4533. Tickets are £38 which includes all refreshments and lunch. There are also a limited number of tables for local wildlife or mammal groups. For more information please email [lan.white@ptes.org](mailto:lan.white@ptes.org).

## **PTES WOODLAND COURSES**

There has been an increase in the interest in woodland management in recent years and gradually more practical management is being undertaken in our woodlands. Historically woods were managed by hand for a product and biodiversity benefitted as a consequence. Now woodlands are more likely to be managed for amenity value or for conservation interest and it is important that we have a means whereby the management that is undertaken can be shown to be achieving its objectives.

PTES has developed a suite of short courses to enable participants to know how to identify a range of species, how to monitor those species in woodlands, how to create a management plan that directs practical woodland management, and how to make woodland management sustainable. These courses will be of general interest to anyone

involved in managing woodland primarily for conservation purposes.

The first two courses to run will be *Identification of Key Woodland Species* and *Monitoring Key Woodland Species*. The identification course runs over two days, running from 9am to 9pm on Tuesday 16th July and 8am to 4pm on Wednesday 17th with tea and meal breaks as appropriate. The monitoring course is a two day course, running from 9am to 9pm on Tuesday 20th August and 8am to 4pm on Wednesday 21st August with tea and meal breaks as appropriate.

The cost of each course is just £75. Travel, food and accommodation are not included. If you require information on possible travel arrangement to the Isle of Wight and local bed & breakfast for the night please contact us for details.

Please visit [www.ptes.org/events](http://www.ptes.org/events) to book your place now. Places are limited. Or call Ian White on 020 7498 4533 for more information.

