The Dormouse Monitor

DECEMBER 2019

people's trust for endangered species

Hazel dormouse releases

Over 25 years after the first release how are dormice doing in Wawickshire, Lincolnshire and Buckinghamshire?

A new virus found in dormouse lungs
The Institute of Zoology team tells us about finding a virus in hazel dormice lungs for the first time

Linking up Lincolnshire
We revisit the dormouse population at one of our first release sites to see where the animals are now and how they're faring

A dormouse in a potato field?
How a family found a snoring dormouse as they prepared a clifftop plot for some prize potatoes

In this issue

Welcome

2019 was a busy year. Last month we held our Dormouse Conference in Reading. We were delighted to see many familiar faces, and also to meet plenty of new friends. Our speakers covered a diverse and interesting range of topics, from hibernation, using footprint tracking tunnels to find dormice, how climate might impact the species and why hedgerows are so important. It was also our opportunity to launch the latest *State of Britain's Dormice*. The findings are worrying. The decline is continuing in many woods. Now more than ever we need to engage woodland owners and managers in how to look after our forests and hedgerows to help dormice. You can read it at www.ptes.org/SoBD-2019

This year we also congratulate Susan; she has worked at PTES for 25 years. A great achievement, we are grateful for all her hard work, especially all her efforts for dormice.

Nida Al-Fulaij & Susan Sharafi

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A hazel dormouse makes its home on the Devon coast

We often receive interesting records for the National Dormouse Database. Gracie Pearson-Link, and her mother Flo, sent us details of a very unusual find.

We have a little wooden hut that sits on top of the cliff between Branscombe and Weston in East Devon. The huts were originally built by local farmers who grew crops on small plots, called 'plats'. The south-facing, sheltered clifftops and sandy soil formed a perfect growing spot. Locals were able to produce early crops in this unique microclimate, growing flowers, vegetables and even strawberries. The Branscombe potatoes were the most successful vegetable and were said to even rival Jersey royals.

On one of our trips to the hut, we met a local man in his 90s who had worked the plats with his father-in-law. He told us all about the area's history. In 2018, inspired by his stories, we decided to try to grow the original variety of new potatoes he recommended, Epicures. Whilst we were clearing the ground we came across a hazel dormouse, all curled up and holding onto its short furry tail in a nest of grass wedged between some rotten logs. It was at ground level and we hadn't noticed the little dormouse until we heard a high pitched squeaking. We think it was saying "mind out for me!" We took these pictures then moved it to a safe place out of the way. When we returned later, the dormouse had gone.

A hazel dormouse was all curled up and holding onto its furry tail

However, that wasn't our last encounter with sleepy dormice. Whilst we were doing more clearing, a year later, we came across another hazel dormouse in a similar situation. This one was also squeaking! It's lovely to know they are here, on the Devonshire coast, and thriving.

Gracie Pearson-Link & Flo Pearson

Ten years later: how dormice are faring at Windmill Naps

Windmill Naps is one of our dormouse reintroduction sites. In 2009 and 2010, captive-bred hazel dormice were released into adjacent sections of the wood. Lisa Kerslake, Principal Ecologist at Swift Ecology, explains what happened next.

It is now ten years since the first release of captive-bred hazel dormice took place at Windmill Naps, a good opportunity to look back and see how successful the project has been. The site is a 35ha mixed woodland which sits on acid soils in Warwickshire, close to the Worcestershire border. Some time ago, in 1990, it was designated a Site of Special Scientific Interest (SSSI) because of it being a lowland broad-leaved woodland. It's unusual in that both sessile and pedunculate oak are present in the canopy, which makes it a special place. The understorey includes a rich mix of hazel, rowan, birch and holly. There's also a small group of wild service trees, a relatively rare species which was once used to make billiard cues and musical instruments. A varied ground flora covers the woodland floor, including abundant bluebells and two Warwickshire rarities: common cow-wheat and purple moor-grass.

The current owners bought the wood in 2005 and set about managing it

The current owners bought the wood in 2005, and set about managing it with help from a local experienced forester and advice and input from the Forestry Commission, Natural England and Warwickshire Footpath Group. One of the first tasks was to remove large quantities of rhododendron and Himalayan balsam - the latter being ongoing work – as well as sorting out official footpaths and closing off unofficial ones. Ongoing management involves selecting an area of about two acres each year, in different parts of the woodland, to thin out over the winter months. Brash is then used to create dead hedges to benefit wildlife and stymie the local deer population. Ditches have also been opened up to prevent flooding, and the ponds throughout the site have been cleaned out.

As supporters of PTES, the owners read an article in PTES' magazine which included a call for possible release sites for dormice in Warwickshire, and contacted PTES accordingly. After a site visit to assess the wood and see which areas would be most suitable for a release, plans were hatched.

In 2009, 25 dormice (from various captive breeders around England) were released using the usual soft-release method. And at the same time, 200 nest boxes were installed in the wood, spread out from the central release location. In 2010 the release cages were moved to another part of the wood, 20 extra nest boxes were installed, and a further 21 animals were released. Unfortunately, one of these died in the release cage, from unknown causes, an unusual event not recorded before. In 2011 an additional 28 nest boxes were put up on the northern and western edges of the wood to see whether the dormice had moved from the original release sites. Subsequent nest box checking intervals have varied slightly, but every year since 2009 we have carried out at least two checks, with an established routine since 2013 of three checks a year in June, September and October (though we had to cancel the October check in 2018 because of poor weather). In 2019 a few more boxes

were installed in a new area in the south-eastern part of the wood.

The initial results from the box checks were disappointing. Apart from a small number of young in autumn 2010, from 2009 to early 2013 findings in the nest boxes were fairly barren with mostly one, two or, on two occasions, no animals being found. However, in autumn 2013 things started to improve. Since then increasing numbers have been found in the boxes, with a maximum of 29 adults and 32 young in September 2017. That was a great box check. Fairly typically numbers tend to be higher in September and October than June, with more young present later in the year. However, numbers do fluctuate, and the cause of this is not known; the results show no clear trends. A graph of the results (below) shows the data from our box checks. Blue represents adults and orange represents young.

A closer look at the raw data reveals some interesting findings. Of the 248 nest boxes installed throughout the wood, approximately half have never been used by dormice. These boxes appear to be spread throughout the wood, with no discernible pattern. So we cannot conclude that dormice don't occupy particular parts of the wood, for example.

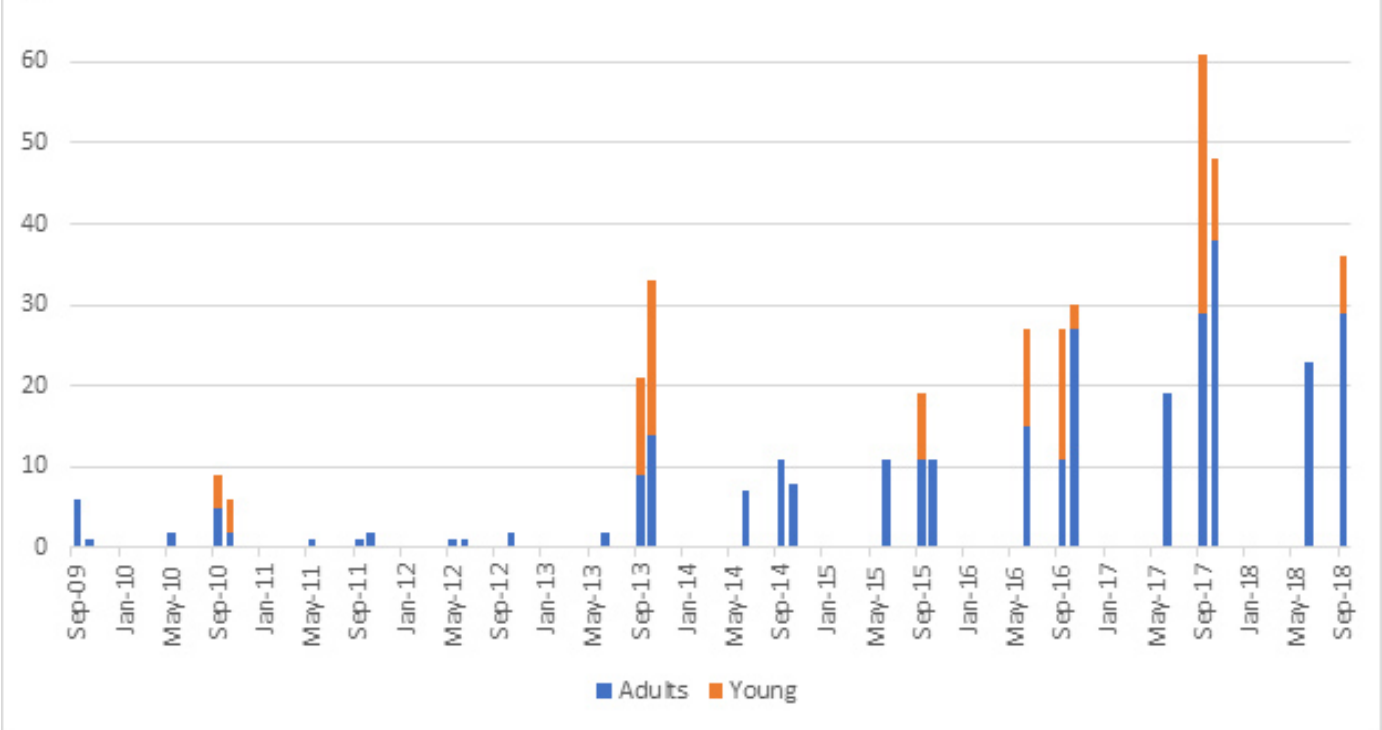
We've had the usual issues with squirrels, and boxes have been modified to reduce potential predation, which seems to have decreased the number of boxes with obvious squirrel damage. We also get a high number of nesting birds early in the season (particularly tits and wrens) and the wood supports a good population of yellow-necked mice, which are always entertaining! Wood mice and pygmy shrews, and occasionally voles, have also been found in the boxes, and our first bat, a brown long-eared, was found in a box in June this year. Butterfly surveys have revealed a good mix of species, the woodland management we carry out should benefit butterflies as well as dormice.

Excitingly new developments revealed a different story

Overall, so far, the reintroduction seems to have been a success but we don't know why. It's probably a combination of factors in play: for example, the wood had been thinned a couple of years prior to the dormouse release, resulting in an open canopy and an abundance of shrubs at box height. The weather conditions during the release were good. Box density is fairly high and it's possible there's a shortage of natural nest sites due to thinning. And the ongoing management and box maintenance keep conditions good. We should not, however, be complacent, particularly given results elsewhere.

One measure of success would, of course, be evidence of dormouse dispersal outside the wood. In 2013 there was a tantalising report of a possible dormouse nest near the eastern edge of Redditch, some 4km away as the crow flies. However, this was never verified, and tubes and boxes that were subsequently installed in connecting habitat nearby did not result in any signs of dormice over the next two years.

Excitingly though, this year, new developments revealed a different story. Works are soon starting to convert the adjacent motorway to a smart one. This will not directly affect Windmill Naps, but as part of the ecological surveys by Highways England, nest tubes and boxes were installed on the northern edge of the wood, where none had been before. This summer the consultants checking the nest tubes and footprint tunnels confirmed dormice had been using them; they not only found footprints but dormice too, including a litter of babies. This is great news; not only is our dormouse population appearing to do well generally in the release area, but the animals have moved throughout the wood. A sure sign that the population is establishing itself well.



Do dormice breed in the canopy?

John Prince, a dormouse monitor and captive breeder, has been collecting evidence to see whether hazel dormice breed high up in the canopy of our woodlands. It's not a commonly reported occurrence but it may happen more than we think

Although we have many records of dormice breeding in our wooden nest boxes, nearly all of them are not high up in the canopy of woodlands, simply because they aren't easy to check. Consequently we don't know if they breed as regularly in the canopy as they do in other parts of the wood, or not.

However, there are a couple of independent records of dormice breeding in the canopy, which makes me wonder whether it's more common than we think. The first was in 1995 when the Northampton Dormouse Group was monitoring Hazelborough Wood on either side of the A43 road between Brackley and Toaster. There were plans to widen the road and divert it around the village of Silverstone. Initially there was no evidence of dormice, until the contractors started to cut down the trees. As the trees were felled, a dormouse nest was disturbed, falling from the canopy. Unfortunately, it was a breeding nest with babies inside. The lead monitor, Mike Miley, who ran the dormouse group, was quickly called. Although he placed the nest and babies carefully in a nest box adjacent to the area, in the hope that their mother would find them, the following day they had all died.

As the trees were felled, a dormouse nest was disturbed

The second occurrence came to light at the dormouse conference in Cheddar. The late Gordon Vaughn reported that he had come across dormice whilst putting up nest boxes in order to monitor fly catchers. He had a site in Oakhampton, Devon, and had placed his wooden bird boxes up in the canopy to attract the birds. Vaughn reported that he'd been annoyed to find them occupied by hazel dormice, and that they'd been breeding in the boxes too. His woodland site was on a steep hillside with no understorey, not what we would consider usual dormouse habitat. The boxes could only be accessed with a long ladder.

It's possible these were uncommon instances, not usual dormouse behaviour. However I'd like to find out so I'm trying to

gather information from anyone else who may have come across dormice breeding in the canopy.

I monitor a site called Little Linford, one of the early reintroduction sites. Although we found plenty of dormice for years after the release, we haven't found any in the wood for the last three years. They were released in 1998 and during the subsequent twenty years, the understorey has completely changed. Has this forced the dormice out of the wood? Or have they changed their habits and moved up into the canopy? We've been monitoring the surrounding habitat and know they've moved out and are living along the M1 motorway embankment nearby. But I wonder if they are also still in the wood but living in the denser canopy too. We're attempting to find out if they are up there.

We've started a new project using feeding platforms that we're putting high up in the canopy. These platforms were designed by Goedele Verbeylen. The food we've placed on them has been eaten, so next year we're putting up cameras to see if it's being taken by hazel dormice.

Please send me any information you have about dormice using the canopy. John Prince, 94 Newport Road, New Bradwell, Milton Keynes, MK13 0AA. Or email Nida.Al-Fulaij@ptes.org who will forward it on.

All images: Frazer Waller

Reintroducing hazel dormice into limewoods in Lincolnshire

Gemma Watkinson, ecologist and Chair of the Lincolnshire Dormouse Group, looks back over almost two decades to tell the story of how hazel dormice returned to Lincolnshire.

Since no hazel dormice had been found in their last two known historic sites, they were officially considered extinct in Lincolnshire by the turn of the last century. So, in 2002, a project was established to reintroduce the species into the county. Chambers Farm Woods, near Wragby, is a group of woodlands, all owned and managed by The Forestry Commission. The woods are predominantly semi-natural ancient woodland and secondary broadleaved woodlands. These blocks of wood have been connected by plantations of conifer and mixed woodland, grown on what was previously agricultural land, old grassland and parkland. Chambers Farm Woods is the largest wood in a group known as the Bardney Limewoods, covering almost 400 hectares. Ivy Wood, a Site of Special Scientific Interest within this block, was chosen as the reintroduction site where 32 captive-bred hazel dormice were released.

The dormouse population has been monitored since 2002. Nest tubes set up in hedges and scrub adjacent to the release area were quickly occupied by dormice. Natural nests were found in bramble clumps up to 500m from the release site in the years following the release. Hazelnuts with the tell-tale dormouse-nibble signs were later found in Little Scrubbs Woods. Wooden nest boxes put up in this wood ten years later, in 2012, confirmed that the population had dispersed from the original site and established themselves in other parts of the woods.

Hazel dormice were officially considered extinct in Lincolnshire

In 2010 we set up the Lincolnshire Dormouse Group to encourage wider involvement in the monitoring. The group currently has 45 volunteers, including licence-holders and new monitors training for their licences. We meet once a month to carry out nest box checks. In 2015 the group put up more nest boxes in Minting Wood, also within the Chambers Farm Woods complex, and the monitoring site was then further extended into Minting Far End. Our first record in Minting Far End was in October 2017, when an adult male dormouse and adult female dormouse were found in the same box, and breeding has since been recorded. These dormice were found at least 1.5km (in a direct line) from the core population, with most of the intervening land being conifer and mixed plantation with little understorey. By positioning nest boxes throughout the woodland complex we know that the population of dormice is thriving and has spread into new areas of the wood. There are now six areas within Chambers Farm Woods being monitored, with at least 50 boxes in each. Encouragingly, dormice are regularly being recorded in each area. The population appears stable with counts remaining similar from 2005 through to 2017.

Gemma Watkinson & Will Bartle

LEFT: A sleepy hazel dormouse snoozes.
BELOW: Table showing the total number of hazel dormice marked by fur clipping in the monitoring sites of Chambers Farm Woods

Monitoring Site	Total individuals r	
	2014	**2**
Ivy Wood East & West	26	
Little Scrubs	No clipping	
Minting Triangle	No fur clipping	
Minting Far End	No fur clipping	
Gosling's Corner	Not monitored	monit
(LWT reserve)	Not monitored	No monit

ABOVE: Members of the Lincolnshire Dormouse Group carry out important winter woodland management work creating dead hedges from the coppice brash. RIGHT: The current chair of the Lincolnshire Dormouse Group, Gemma Watkinson (left) and the original chair of the group, Anne Goodall, were both excited about the release of more hazel dormice in June 2019.

In 2014 we started a new project, fur-clipping any dormice that we found in Chambers Farm during our box checks. This has enabled us to monitor population trends within the different areas of the woods. It also enables us to follow the movements of individual dormice month-by-month when they are recaptured. In 2018 the total number of individuals marked was 60.

In 2017 we set up a completely new monitoring area in Goslings Corner Wood. This is a Lincolnshire Wildlife Trust Reserve which is approximately 1km from the Chambers Wood complex. Knowing that the dormice had spread throughout Chambers Farm, we wanted to investigate whether they'd also successfully dispersed into new areas of woodland. Goslings Corner is separated from Chambers Farm Woods by Hoop Lane but it's well connected by hedgerows with trees overhanging the road. As yet, we have no positive evidence of dormice within Goslings Corner Wood, nor firm evidence to confirm that they've successfully dispersed out of Chambers Farm Woods and into the

marked by fur clipping			
2015	**2016**	**2017**	**2018**
10	45	26	38
5	7	1	3
4	10	7	15
0	0	2	4
Not tored	Not monitored	0	0
t ored	Not monitored	0	0

wider landscape. However, one of the neighbouring farmers has seen one while managing his dense hedges which abut the woods, so we are optimistic that, although we don't have the evidence yet, they have actually spread into the wider countryside.

This summer, in June 2019, a further 11 captive-bred dormice were released into Ivy Wood. This patch of woodland sits to the south of the original release site and the existing nest box monitoring area. The aim is to increase the genetic variability of the existing population, since there are no other populations in the wider countryside for the Chambers Farm population to link up with. We want to thank our group of dedicated volunteers who helped. They willingly checked the release cages daily, ensuring that the new dormice had plenty of fresh fruit and dried foods, as well as water and shelter. Without their help, this supplementary release wouldn't have been possible. The new dormice were all micro-chipped so that they could be individually identified. In the box checks following the release, three of the micro-

The aim is to increase the genetic viability of the existing population

chipped female dormice were found with litters. They'd had four or five babies each, a really exciting development. It's important that the newly released animals breed as quickly as possible so that a large, healthy population of dormice goes into hibernation. At the time of writing, only two of the 11 micro-chipped dormice have not been recorded since being released.

Our dormouse group has held two Open Days in the woods to raise awareness about the project. We regularly have a display at the annual Countryside Lincolnshire event, held at the Lincolnshire Showground. It gives us a chance to educate the public about dormice, dormouse conservation, the project and the work of the group. In addition, visitors, such as local Wildlife Watch groups and the Guides, are regularly welcomed on box checks, giving members of the public, including children and young adults, a chance to get out into the woods and see a hazel dormouse up close. Margo Charlton, from the Alford Wildlife Watch group, wrote to us after one of the events to say, "Many thanks for a wonderful morning with your group on Saturday. We all had a great time and it was a very special experience that no-one will forget. It is inspiring to see so many dedicated people giving up their weekends to help these

small but very charming endangered creatures and please pass on our thanks to all those who looked after us and helped us make the footprint tunnels too."

During the winter the volunteers still meet monthly so we can manage the woods whilst the dormice are hibernating. We have sections of the wood that are in a coppice rotation cycle, so we cut back small areas each winter to create dense new growth in the coming years. We have used brash that has been removed during the coppicing to build dead hedges around the coppiced areas. This helps to protect the new growth from heavy deer browsing, and is a better alternative to burning brash in a SSSI. We have also been helped with coppicing and poplar removal by the RAF trainees on their community weekends. We're really pleased to involve so many varied groups and local communities in our dormouse project. It gives so many people a chance to learn about one of our more endangered wild mammals, and the opportunity to understand why looking after our traditional habitats is so important.

LEFT: Two dormouse found on a box check. ABOVE RIGHT: The RAF trainees carried out woodland management on their community weekends. BELOW: The dormouse group regularly attends events to educate the public about the project and how important dormice are.

What do we know about where hazel dormice hibernate?

Hibernation is a state of inactivity in warm-blooded mammals that enables species to survive periods of cold and low food abundance. John Prince is investigating where dormice choose to hibernate.

Work is already underway at the Universities of Exeter and Cumbria, by Leo Gubert and Rachel Findlay-Roberts, to understand more about how, where and why hazel dormice hibernate. Radio-tracking studies are giving us vital clues about what makes a good hibernation site. For a species that lives its life in the shrub and canopy layer, it seems strange to risk coming down to ground level for several months of the year. Especially when being in hibernation, almost completely inactive, seems such a vulnerable state for a small mammal. We know that hazel dormice often hibernate on the forest floor, not far from the trees they usually make their homes in during the warmer months. What is it they are looking for when deciding where to hibernate? What makes a spot in the leaf litter both appealing and safe?

What makes a hibernation spot appealing and safe?

Our reintroduced population of hazel dormice have moved into the wider countryside and are inhabiting scrubby areas along nearby motorway embankments. These embankments are now the focus of works and are being cleared for upgrading work, housing and industrial developments. Whilst we can look for natural nests and dormice using nest boxes and tubes during their active months, it's much harder to know where they are and how they're doing over the winter.

Hazel dormice were reintroduced to Little Linford Wood during 1998. The day we took the animals to the wood to be put into their release cages, it poured down with rain all day. It also rained all that summer. Our volunteers were ankle

Hugh Clarke

deep in water during each box check. The weather was so awful that year that my wife asked where we thought the dormice would hibernate. The reply that came back was, 'they will find somewhere.' And they obviously did because they bred that year, and the next.

But I keep asking myself that same questions. It's still as relevant now as it was in 1999. Despite carrying out extensive searches on our hands and knees, and dismantling wood piles that were built by the volunteers who carried out winter coppicing work, we have never found a hibernating nest. Every year about 0.25ha of Little Linford is coppiced, and during that time, none of the volunteers carrying out the work has ever found a hibernating dormouse.

So I ask the same question that my wife did; where are the dormice during the winter? I am interested to know how many of the reintroduction sites are recording hibernating dormice. Are there some monitors that know what type of sites dormice are using for hibernation over winter? When Pat Morris studied edible dormice in the Chiltern Hills, he found that they hibernated in dry holes in rotted tree roots, and sometimes in dry disused drain pipes. Could it be that hazel dormice are looking for similar sites? Are they hibernating in tree hollows? This winter I'm trialling some hibernacula that my son has built for me. I will put data loggers in them to collect information about temperature and humidity which should provide useful insight. If you have any information about hibernation or any ideas, please write to me – or email nida.al-fulaij@ptes.org who will forward your messages on to me. I'm hoping to collect as much information as possible to investigate further this important aspect of dormouse ecology.

John Prince, 94 Newport Road, New Bradwell, Milton Keynes, MK13 0AA.

Are dormice hibernating in tree hollows over winter?

Hattie Spray

Dormouse highways created in Wensleydale

Releasing captive-bred dormice into a woodland is the first step in a more ambitious plan for these tiny creatures to spread into the wider countryside.

Yorkshire was once home to some of our most northern populations of hazel dormice but, along with most other northern counties of England, lost the species as our countryside changed radically after the second world war. Dormice have been reintroduced to two small areas of woodland in mid-Wensleydale, firstly in 2008 into Freeholders' Wood, then again in 2016. We know that hazel dormice were present in this particular region because of reports written by the Victorian naturalist Rope in 1885. So returning a native species to its home is really exciting. Although releasing populations into woodlands is, in itself, a great achievement, considering how these dormice may spread out beyond the woods and colonise a wider area, is our ultimate goal.

So, after the second reintroduction, a three-year plan began, to connect these two woodlands to one another, and to a third woodland on the Bolton Castle estate. Our ambition is to create a three-mile-wide stretch of habitat for dormice.

The project is funded by PTES and the Yorkshire Dales Millennium Trust. Phill Hibbs, Trees and Woodlands Officer for the National Park Authority, has been busy surveying land, engaging land owners and ensuring suitable areas are planted up. During the first year Phill assessed what hedgerows existed in the area, what condition they were in and where new hedgerows were needed. Two 'highways' were identified: one along the River Ure and another which followed the route of the former Wensleydale Railway. Part of the reason that hazel dormice are lost from wider parts of the countryside is because their remaining woodland habitats became fragmented, isolating populations from one another.

We aim to restore dormice to Wensleydale, where they were 100 years ago,

Open evenings were held to inform and engage landowners in the hope that they allow new planting on their land. Stuart Raw, who owns Hollins Farm, took little persuading. He's really supportive of the project and wants his farm to support as much wildlife as possible.

Nearly half a mile of hedgerows has been planted already. Hard at work on Hollins Farm in mid-Wensleydale,

Clare Pengelly

Hawes-based arboricultural contractor Dave Allen explains the process, "It takes seconds to plant a tree," he said, as he cut the ground with a spade and inserted a 70cm-long hazel 'whip'. Each whip – or slender unbranched tree – costs about 25 pence. However it costs more per tree to plant it and ensure it survives. Rabbits are a big threat to young trees, they like to nibble the soft bark which quickly kills the plants. So the costs of getting a tree in the ground, which includes tree guards and secure fencing to ensure the whips are not eaten or destroyed by rabbits or deer, is closer to £3 per tree. At the moment there is a lot of wood, wire and green plastic, but in just a few years' time this new hedgerow will become a 'highway' for hazel dormice. Once the plants are established, they'll provide shelter and food for numerous species of wildlife. The project is part of a larger initiative. The National Park Management Plan aims to increase populations for 90% of priority species by 2024.

We aim to plant just over one mile of healthy, wildlife friendly hedgerow. Since dormice are arboreal creatures and prefer moving through the safety of dense branches, they do best in a shrub environment. They like hawthorn, blackthorn, spindle, hazel – especially hazel – bird cherry and dogrose. These new hedgerows are very diverse and will provide a variety of food throughout the year.

Phill is also training to get his dormouse handling licence, so that he can take part in monitoring work as well as tree planting. "Dormice are lovely to handle. When we first monitor them in spring they are very docile. You can hold them in your hand and they curl up in a ball and stay asleep. Later in the year they are more lively and can jump off to a branch. They are tiny and very delicate, but you need to hold them firmly so they don't get away," he said. The project shows every sign of success and, we hope, will be a case study for helping dormouse populations in other counties across England and Wales.

LEFT: The dormouse highway taking shape. RIGHT TOP: Dave Allen planted 4,600 trees in three weeks RIGHT MIDDLE: A dormouse from Freeholders' Wood. RIGHT BOTTOM: Phill Hibbs with a hazel whip.

The latest on how dormice are using bridges

Ian White and Sophie Hughes explain how their arboreal bridge trial has collected valuable data to show that these structures are preferentially used by hazel dormice. These bridges are now available for use in mitigation projects.

Wildlife bridges are being used increasingly around the world to help species that either find it difficult to cross roads without risk of being killed – such as snakes and hedgehogs – or those whose habitat has been fragmented by the roads – such as dormice. A wildlife bridge in Japan is well-used by Japanese dormice and other mammals that live in the trees alongside them, such as squirrels. In the UK, PTES and Animex have trialed a structure crossing a railway line in our woodland, Briddlesford, on the Isle of Wight. The design has been thoroughly tested, our findings published in Conservation Evidence, and the bridge is available to be used. When we first put the trial bridge up, hazel dormice were recorded on it within nine hours.

Railway and highway construction across England and Wales has fragmented the landscape. Roads cut through our countryside reducing the chances for young hazel dormice to disperse. When smaller populations are unable to connect with one another, there's limited gene transfer and the potential for populations to become less genetically diverse, and therefore at risk from disease. If hazel dormice do cross roads at ground level they're considerably more vulnerable both to the risk of being killed on the road, and to possible predation. The solid concrete safety barriers installed in the central reservations of motorways pose an almost total block to wildlife passage.

42 clips were of dormice, 39 on the bridge, three on the ground

Camera traps were placed along the bridge and on the ground to see how often dormice used the trial bridge, compared with the ground, to cross the gap between the wooded areas. The cameras provided almost 18,000 clips of footage. Over 12,500 clips were from the ground and almost 850 on the bridge. Of these, 42 were clips of dormice, 39 of them on the bridge, and three on the ground. Dormice used the bridge throughout the year, with higher numbers between May to June and September to October, with little usage recorded between July and August. We looked at dormouse behaviour on the bridge. Encouragingly all parts of the bridge structure were used by dormice, often within a single crossing. Dormice ran along the mesh floor, along the wooden batons and also along the top of the bridge. They often also ran through the bridge, frequently pausing in, the shelters placed on its floor. Some individuals seemed to run quickly, especially along the top, yet many spent several minutes slowly moving around on the mesh floor.

The design of the bridge is thought to help make the structure accepted by dormice. There are multiple access points for the animals to get onto the bridge via lots of openings along the sides. The bridge is designed so that each end extends well

Animex & PTES

into the vegetation either side of a habitat gap. This means it's more likely to be found by animals that are already moving through the trees and shrubs. And it blends in well with the surrounding habitat. The design also enables dormice to move between the multiple elements of the bridge and there are plenty of secure and safe shelters all along it so that the dormice can hide when they feel under threat, enabling them to exhibit natural behaviour.

The dormice appeared to behave in a normal, relaxed manner in the video clips which suggests that they were relatively at ease on the bridge. They often spent time on and exploring the mesh floor, rather than crossing the bridge as quickly as they could. The bridge spanned a gap of 30m which is roughly the width of a UK dual carriageway. This suggests the design could provide suitable habitat connectivity over highways of this width. It's likely that the slightly higher level of usage during May, June, September and October reflects the time of year when hazel dormice are most mobile. In May and June dormice forage after hibernation and search for nest sites. In September and October juveniles disperse from their birth site. The bridge is therefore considered to be of particular value at these times of year.

To find out more about the bridge and discuss its potential in a mitigation project, please visit https://animexbridge.com/

Devon in a nutshell

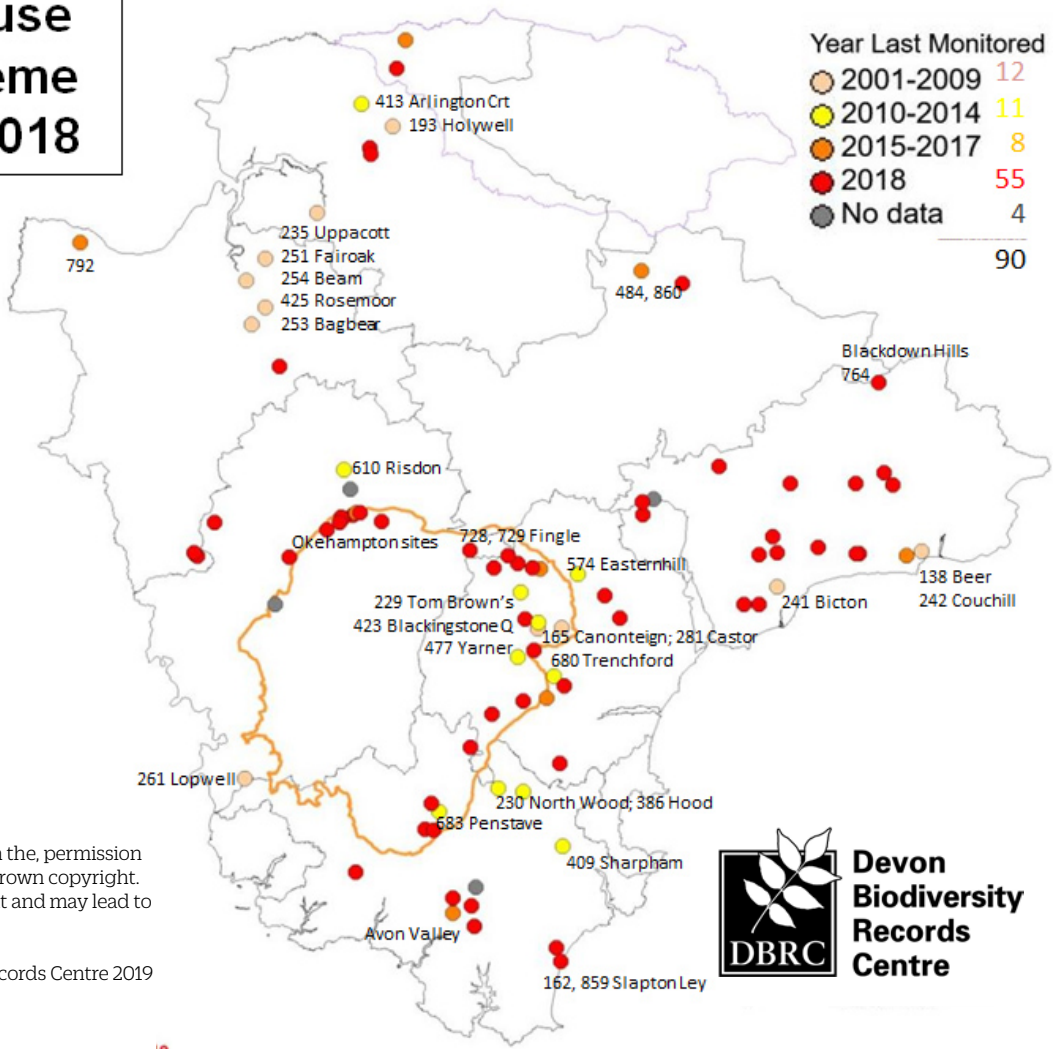
Stephen Carroll gives an overview of hazel dormice in Devon, a county with one of the highest number of dormouse sites.

On Dartmoor's southern edge crouches Moorgate, home of H.G. Hurrell and his daughter Elaine, who were the first to discover that dormouse-nibbled hazelnuts are distinctive. It's also where the country's first and oldest dormouse nest box was installed in the 1960s, Forty years later Moorgate became NDMP site number 256.

Today there are about 90 NDMP sites in Devon. These include site number 1, Andrew's Wood, one of the original 12 NDMP sites from 1992, and site 871 which was registered in 2017-8. Just over 60% were actively monitored in 2018. Recent sites include community engagement projects around landscape and woodland restoration, such as at Fingle Woods, Avon Valley and Blackdown Hills. Others are long-established: seven sites have been running continuously for between 20 and 30 years, while 20 have clocked up over 10-15 seasons.

An informal county network exists, supported by Devon Wildlife Trust. Monitors, volunteers, site owners and researchers gather for annual or biennial get-togethers. 2019 saw our 10th gathering. We try to link up licensed handlers with lapsed sites, new sites and trainees. Where there are many dormice, we have studies underway. We've been lucky to host PhD students studying tracking tubes, DNA, conifer plantations and hibernation. Some old sites probably can't be reactivated, having lost site owner contacts, dormice, or both. Tributes are owed to monitors who persevere monthly, with null or few records. Some loss of sites may be inevitable but interest remains strong as new sites are proposed, county meetings remain well-attended and the gaps in NDMP site coverage are identified with a view to filling them in, in this large, dormousy county.

National Dormouse Monitoring Scheme sites in Devon 2018



Virus detected in lungs of hazel dormice for the first time

Inez Januszczak, former Pathology Technician at the Institute of Zoology, describes how a virus that infects the lungs has been detected in hazel dormice here in the UK. Keeping alert for cases like this helps us check the health of our wild population.

An encephalomyocarditis virus (EMCV) has been detected in the lungs of three hazel dormice. The carcasses were examined by the Disease Risk Analysis and Health Surveillance (DRAHS) team, a partnership between Zoological Society of London and Natural England. The investigations, undertaken with the help of the Animal and Plant Health Agency (APHA), were part of the disease surveillance of wild hazel dormice the team undertakes, and were triggered by an unusual number of cases of lung disease. This is the first time, as far as we are aware, that this virus has been detected in a free-living, wild British rodent, although it's previously been detected in a captive wood mouse that was being held for a German study. We're continuing to evaluate the role of the virus in the disease, but EMCV is known to be associated with disease in other rodents.

When DRAHS receives carcasses of wild dormice, they undergo a full post mortem examination to investigate why they died. This helps us build a picture of the health of dormice in the wild. These three dormice, whose samples were sent for testing, showed signs of consolidation of the lungs, a possible indication of respiratory disease. EMCV is a small, single-strand RNA virus which is associated with myocarditis, encephalitis, neurological and respiratory diseases, as well as reproductive disorders in other animals.

The DRAHS team is keen to examine more wild dormice found dead to monitor their health and disease threats to populations. If you find a dormouse carcass and would like to submit it for post-mortem examination please email DRAHS@zsl.org, or phone 0207 449 6437/6668. We'll send you a report of our findings.

Institute of Zoology

Remembering friends

Many of our dormouse monitors and friends have been supporting PTES for many years. Here we remember two friends who were involved in our dormouse work for some times.

Hugh Clark was a wonderful wildlife photographer who kindly shared his amazing shots of hazel dormice with us to use freely. Hugh's photographs have been on the cover of many of our magazines and beautifully show dormice in many different shrubs, at different times of the year. We have one of Hugh's photos on the cover of this edition, and this stunning one below. We are very thankful for Hugh's support over many years and will miss him.

Wendy Novelle had been a dormouse monitor for years. She, along with her husband Allan, was an active and passionate wildlife enthusiast. Wendy was a member of the Haslemere Natural History Society and was interested not just in the hazel dormice that she helped to monitor, but all British Wildlife including dragonflies and lizards. We will miss Wendy, and miss receiving the photographs she often sent us, like this snoring dormouse on the right.