

# Detecting dormice using footprint tunnels at Brampton Ash Wood, Northamptonshire

Gwen Hitchcock

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*Setting the footprint tunnels*

*This report contains sensitive information on dormouse box locations.  
Please check with the Monitoring & Research team before sharing externally.*

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## Summary

In a new attempt to discover if dormice are still present at Brampton Ash Woods footprint tunnels were deployed through the centre of the wood for four months. The idea is simple; a sheltered platform is suspended in the branches with inkpads and a sheet of cardboard inside. As the dormouse passes through it walks over the ink and leaves its footprints on the card. These cards are collected regularly and the footprints looked over to identify who was been through - dormice leave a distinctive print with triangular shaped pads and out-turned toes. The tunnels have an advantage over conventional boxes and tubes as they don't require the animal to be present, or choose to build a nest, nor do they require a licence since no animals are disturbed.

Although we didn't find any conclusive dormouse footprints the trial of the methods used was successful. Following minor tweaks, the footprint tunnels will be used in other locations in future years.

*My thanks to Alison Looser and Simone Bullion from Suffolk Wildlife Trust for their advice, Forestry England for being understanding about the flexible nature of the checking dates and all the volunteers involved with the project.*

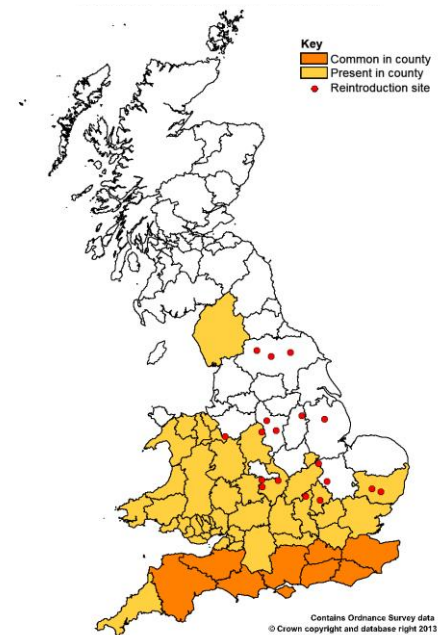
## Introduction

The hazel dormouse *Muscardinus avellanarius* (hereafter referred to simply as dormouse) is an intriguing and unusual small mammal. Unlike other British small mammals dormice are relatively long-lived, have relatively low reproductive rates, live at low population densities (even in the best of habitats) and hibernate over winter (Bright *et al.* 2006; Juškaitis 2008; Juškaitis & Büchner 2013). They are strongly arboreal, being found primarily in deciduous or mixed woodlands with a well-developed understory and high diversity of tree and shrub species (Bright *et al.* 2006; Juškaitis 2007).

Dormouse populations have declined drastically in the UK over the past century and their range has contracted (Rope 1985; Bright & MacPherson 2002; Bright *et al.* 2006). This decline is due to the loss, fragmentation and inappropriate long-term management of woodlands and hedgerows (Bright *et al.* 2006). Due to their rarity and specific habitat requirements, dormice are considered flagship species for woodland conservation as well as bio-indicators of habitat condition. This makes them an ideal species to monitor to help assess both woodland reserves and living landscapes.

Northamptonshire is at the northern edge of the dormouse's main range in England (Figure 1), it is relatively unsurprising therefore that at some sites where they are present their populations are small. This can make monitoring them using traditional nesting boxes and tubes difficult as these methods rely on the dormouse either building a nest in a box/tube or being present when they are being checked.

Various groups have been trialling an alternative - footprint tunnels - all finding them successful at picking up evidence of dormice in both woodlands and hedges (Haag & Tester 2016; Mills *et al.* 2016; Middleton-Burke 2017; Bullion *et al.* 2018). Studies in Suffolk showed an overall detection rate of 97.5%, even at low densities, over just three months of surveying (Bullion *et al.* 2017). As the tubes are temporary installations they can also be used in privately owned sites where landowners may not want permanent boxes (e.g. due to forestry works). Another benefit is that this method does not disturb any dormice and so does not require a licence making it a more practical method for volunteer groups with few licence holders.



**Figure 1: The range of the dormouse (White 2014)**

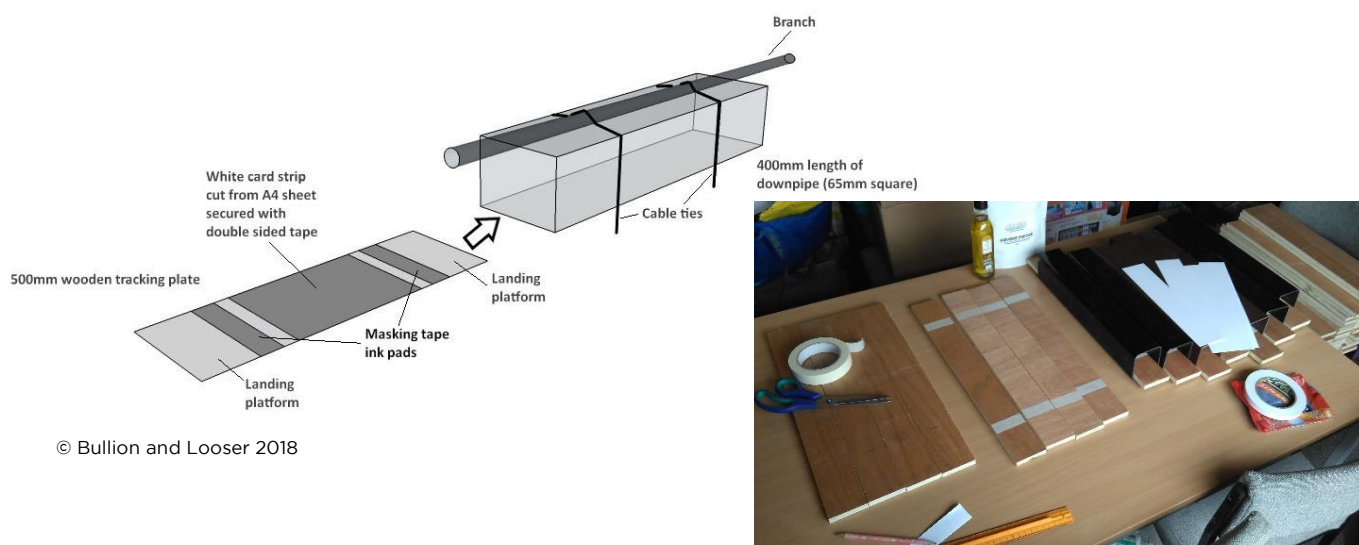
## Study site

During the 1980s dormice were found in bird boxes in Brampton Ash Wood near Corby, Northamptonshire, a private woodland owned and managed by Forestry England. This wood is congruent with Stoke Wood (Woodland Trust) and they include Stoke Wood End Quarter Wildlife Trust nature reserve and part of Stoke & Bowd Lane Woods SSSI. These woods combined cover 72ha and contain areas of ancient semi-natural woodland. Much of Brampton Ash Wood was clear-felled in the 1990s, but the new regrowth provides suitable dormouse habitat if any of the initial population survived the felling.

In 2013 the Ecology Group set up three dormouse box transects, one at the edge of the woodland and two following hedgerows linking this wood to Bowd Lane Wood (also part of Stoke & Bowd Lane Woods SSSI). Annual surveys from 2014 to 2018 found no evidence of dormice and volunteer morale was getting low. It was decided to try using footprint tunnels installed temporarily in the centre of Brampton Ash Wood in an attempt to determine if dormice have survived in this woodland.

## Method

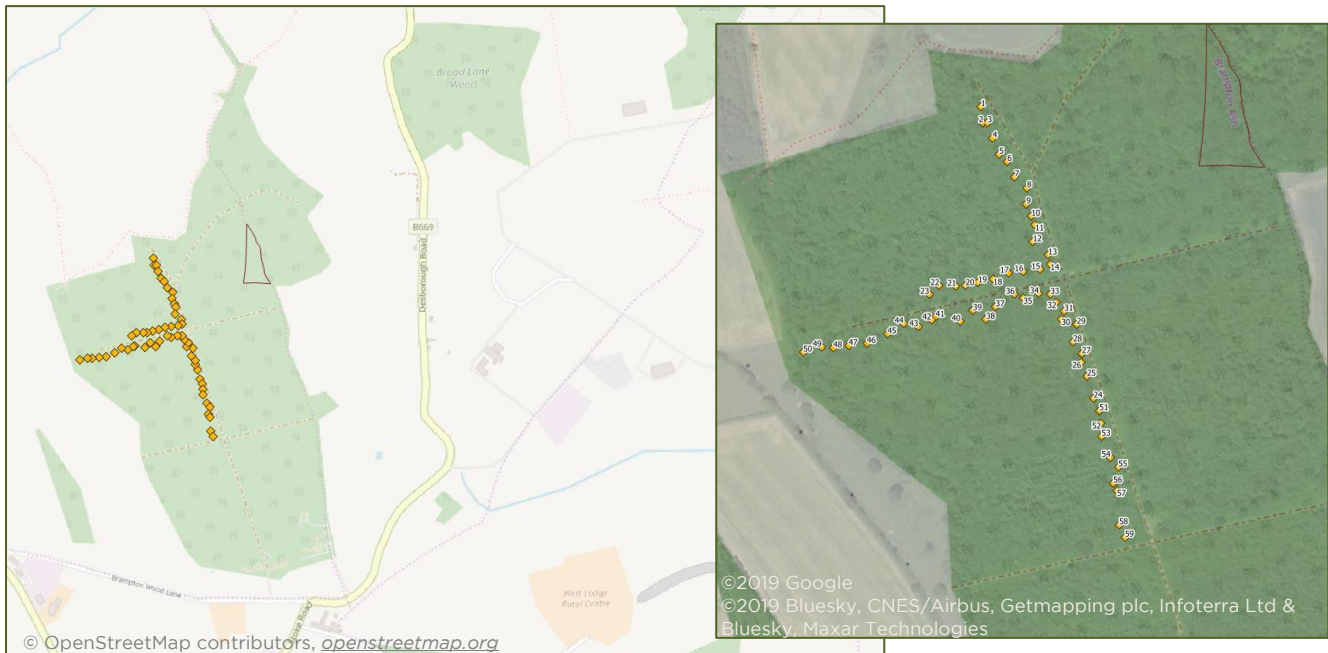
After investigating the techniques used in previous studies those recommended by Bullion and Looser (2018) were followed. Over winter 2018-19, 59 footprint tunnels were made using 40cm lengths of square downpipe and 50cm landing platforms cut from marine plywood. The ink was made from ultra-fine pharmaceutical grade activated charcoal powder mixed with olive oil; this mix is completely harmless if ingested by the animals. The footprint tunnels are designed to be used unbaited as this allows longer between checks.



**Figure 2: Footprint tunnel design & components**



The tunnels were installed in Brampton Ash Wood on 11<sup>th</sup> May 2019 in two transects running parallel with two woodland rides. The tunnels were placed 10-20m in from the ride, at the back of the dense scrubby edge, at approximate 20m intervals as suitable vegetation allowed. Where possible the tunnels were placed 1-1.5m from the ground on hazel or other scrub on a branch that linked to other scrub. The majority of tunnels (45) were installed lying above the branch but 14 were placed underneath where this was easier, since previous studies found no difference between these positions (Bullion *et al.* 2018).



**Figure 3: 2019 footprint tunnel transects at Brampton Ash Wood (no public access)**



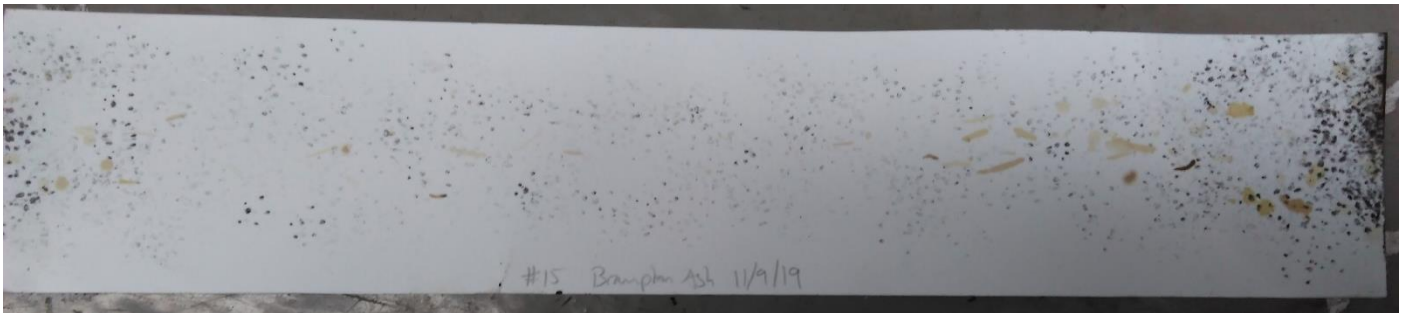
**Figure 4: Applying the ink and setting the footprint tunnels at Brampton Ash Wood**

The tunnels were visited by volunteers every fortnight to check for footprints, replace marked or damaged cards and re-ink the pads. On each visit it was recorded which cards were replaced because they had footprints and which were damaged. Only a single tunnel wasn't checked on one visit because it contained a nest which may have been a dormouse nest. On the last check on 11<sup>th</sup> September 2019 all the tunnels were collected in then washed ready for next season.

The cards with footprints were scanned and emailed to several volunteers for analysis. Each card got looked at by at least three volunteers, any card with suspected dormouse prints was double checked by more experienced volunteers and also by expert Simone Bullion (Suffolk Wildlife Trust).

## Results

Even though sadly no evidence of dormice was discovered – the possible nest turned out to belong to a wood mouse after being checked by a licence holder – the survey method was successful in finding *Apodemus* footprints in 55 out of the 59 tunnels. It is suspected that these were wood mouse *Apodemus sylvaticus* prints as yellow-necked mice *A. flavicollis* hasn't been recorded here previously. A few cards containing *Apodemus* footprints had some prints that looked like the pad was slightly triangular shaped, a distinctive feature of dormouse footprints, but on closer examination these were rejected.



**Figure 5: *Apodemus* footprints**

## Conclusions

Whilst absence of evidence is not evidence of absence, there is no evidence that dormice are still present in Brampton Ash Wood. The clear-felling of the wood may have caused the local extinction of the population, but other factors are likely to have contributed. The dormouse populations in this area are at the edge of their range in the UK (White 2014) so are likely to be small and vulnerable to fluctuations caused by weather, predation and disease as well as habitat management. A second footprint survey in a different part of the woodland complex would be advised to increase the certainty of their absence.

In terms of the methods used, the trial was a success, although there are a few changes to be made to ensure future surveys run smoothly. The most important one would be having a local volunteer Activity Leader to coordinate the surveys and to manage the equipment. At Brampton Ash Wood one survey got missed due to confusion between the volunteers who were planning to do the survey.

What did work well was having a core group of local volunteers with a keen interest in the wildlife on their local patch. To keep in line with GDPR volunteers had to opt in to

allowing their contact details to be shared within this small group of volunteers, all were willing for this to happen and it greatly facilitated volunteers arranging the details of the tunnel checks between themselves with minimal input from staff.

It was also useful to have some experienced dormouse volunteers involved, especially in terms of setting up the tunnels in the most appropriate locations. A licence holder to either help or be nominated 'on call' for the project would also be useful, for example during the late August check one tunnel contained a tight nest which the volunteers thought could have been a dormouse nest. On the next visit a licence holder checked the nest and found it to be a wood mouse nest.

Another issue discovered this year was that the very hot, dry weather in early summer was drying out the ink too quickly. For future surveys, it would be beneficial to visit the tunnels every week during such heatwaves. This would be the job of the local Activity Leader to coordinate.

Many of the volunteers who originally offered to look at footprints were not then able to do so meaning the few who helped had lots each to look at. Encouraging volunteers to look and record in the field may help with this. A better system of sharing the scans may be to use a shared folder, which is visible to all volunteers, instead of emailing out the scans after each check.

## **Future surveys**

Due to the limited number of footprint tunnels available only one large or two small sites can be surveyed each year. There are several ideas of where the tunnels could be used, as well as the importance of the site the presence of keen, local volunteers is an important factor when deciding where to put them. Permissions would also need to be sought from landowners for non-Wildlife Trust sites.

If local volunteers are willing to continue for a second year it would be beneficial to run another survey in the Brampton Ash/Stoke Wood complex. One possibility would be to deploy the tunnels in the adjacent Stoke Wood which includes Stoke Wood End Quarter nature reserve. This area of ancient semi-natural broad-leaved woodland is managed by the Woodland Trust and Wildlife Trust BCN for nature conservation so would be a good place to search for any remaining dormouse population.

Another option would be based around surveys at another Forestry England woodland, Salcey Forest, where we have been monitoring dormouse boxes since 2013/2014 without finding any evidence that they are present. There are anecdotal historic records of dormice from this area and the site is around 5km north of Little Linford Wood, Buckinghamshire. Little Linford Wood is a dormouse reintroduction site (released in 1998) (Mitchell-Jones & White 2009; Manchester, 2016) from which dormice are known to be spreading north along the M1 corridor. One suggestion is that tunnels are used instead of boxes to examine different areas of Salcey Forest and to

survey the hedgerows south of the forest. Local volunteers already check the boxes and may be willing to try to this new technique.

The footprint tunnels may also be used to supplement other existing Wildlife Trust landscape linkage projects looking at dormouse dispersal. Bullion *et al.* (2018) found footprint tunnels significantly better than boxes in hedgerows making these linkage schemes an ideal place to use them. Volunteers already spend a lot of time checking the boxes at these sites so adding more intensive surveys to the survey schedules would require careful planning and discussions with those involved.

There are also other local organisations interested in joint projects looking at key woodlands, especially those that have never been surveyed.

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