

Guidance for surveying for hazel dormice using footprint tunnels

1. Introduction



- Footprint tunnels are an excellent way to survey for dormice in most habitats but they work best in hedges or scrub.
- The method detects dormouse presence using their footprints. It only shows presence or likely absence; it does not give an indication of dormouse density.
- Unlike a nest tube or box where a dormouse needs to be present or build a nest to be recorded, at a footprint tunnel it only takes a fleeting visit for a dormouse to be detected. This means that there is a higher detection rate when compared with conventional nest tubes and boxes.
- There is a reduced survey period compared with nest tubes or boxes.
- The level of survey effort has been quantified so that, depending on the number of tunnels used, the length of time they are put out and checked, and the habitat type in which they were put, a probability score of likely dormouse absence can be calculated. [This should be recorded on the PTES website.](#) Negative survey results are as important as positive results.
- You don't need a dormouse licence to check footprint tunnels as you are highly unlikely to disturb a dormouse.

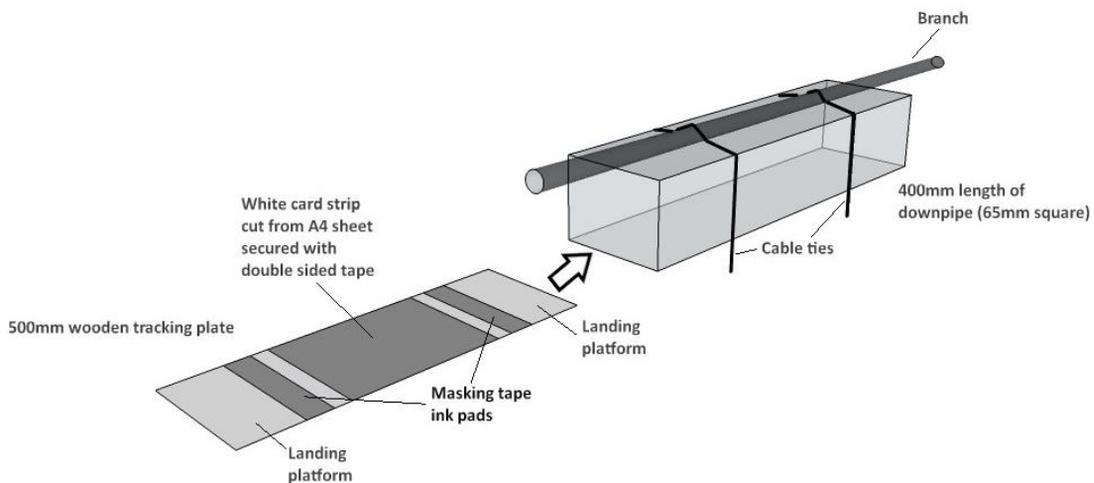
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BUT

- Before you set up a footprint tunnel survey, you must have landowner permission.
- If you find a bird nest, dormouse nest or dormouse in the tunnel, it must not be disturbed unless you have a dormouse licence.

2. Equipment

- Tunnels are made from 400mm lengths of 65mm square black downpipe.
- 500mm length of 9mm plywood is inserted to form the tracking plate, with a landing platform at each end. Plywood does warp over time and so plastic inserts are being trialled.



Dormouse footprint tunnel components © James Meyer

- White card approx. size 300mm x 52mm to fit on tracking plate
- Double sided tape 12mm width
- Masking tape 36mm width
- Tracking medium is made from olive oil and pharmaceutical grade charcoal powder
- The footprint tunnels are secured with cable ties, wire, bungee or Velcro straps.

Top tips

Use good quality card, matt not gloss, as molluscs will chew off the coated surface removing all the lovely prints...

Lorna Griffiths

3. Setting up the tunnels

- A strip of thick white card is used, attached to the tracking plate. Mark the centre of the tracking plate and then mark where the ends of the paper will sit.
- At least three turns of masking tape is wrapped around the tracking plate at each end so that it will lie close to the card but not overlap it.
- Either a strip of double-sided tape is stuck on each end of the card, or a single strip is stuck lengthways down the middle of the card. The card is then stuck to the tracking plate between the masking tape.
- Tunnels can be set up to this stage before going out in the field. Spare cards can also be prepared in advance of the survey.
- Tunnels should be numbered on the underside of the tracking plate and/or on the side of the tunnel.
- The 'ink' is made by combining 3 heaped teaspoons of ultra-fine pharmaceutical grade charcoal powder with 15 teaspoons of olive oil. This should make enough for approximately 50 footprint tunnels.
- The ink is applied to the two areas of masking tape using a paintbrush.



Top tips

Prepare your ink in advance and take the time to get the consistency right; too runny and it'll run off the plate, too thick and it'll dry too soon. I used a pastry brush to paint on the ink...

Lorna Griffiths

4. Survey setup

- It isn't necessary to bait the tunnels, dormice and other small mammals will explore them irrespective of whether food is present.
- The tunnels should be spaced approximately 15 – 20m apart.
- They should be positioned as near horizontal as possible.
- It doesn't appear to make a difference whether the tunnels are on top of, or underneath, a branch.
- The tunnels are attached to the branch with wire, zip ties or Velcro strip.
- All footprint tunnel surveys should be set up two weeks prior to the survey start date to account for neophobia (a reluctance of small mammals to explore novel objects in their environment).
- For professional ecologists, 50 tunnels should be put up for any consecutive 3-month period from May to Oct. This will give a 97.5% chance of detecting dormice if they are present.
- For conservation purposes, any number of tunnels (in multiples of 10) can be used for any number of months from May to Oct. A minimum of 30 tunnels for two months is recommended. This gives an 82% chance of detecting dormice if they are present.
- For more information on survey set ups see [Survey recommendations for Ecological Consultants and Conservation projects](#)



Top tips

Where to site the tunnels can depend on the design (I used nest-tubes with plastic trays therefore they were very lightweight). Try to install them on lighter branches & towards the ends where the fruit is. I found that I had less incidents of non-target species, such as wood mice/voles, as they were often too heavy to navigate the thinner parts of the woody vegetation. Also, vary the height. If you can get away with high ones (above arms' length) do it.

Put the tunnels on a variety of species, don't just go for the obvious (hazel), and include scrub species.

Lorna Griffiths

5. Habitat types

- The likelihood of dormice being rapidly detected is dependent on the habitat that the tunnels are placed in.
- Dormice are more easily detected in dense scrubby habitats such as hedges, or scrub (high category) than they are in high canopy woodland (low category).
- The National Dormouse Footprint tunnel survey only focuses on surveying for dormice in hedgerows and not any other habitat type.

Top tips

If you have the option to put the tunnels in bramble, then go for it! Much easier to get a horizontal than hazel, higher levels of detection and you can tie to several sturdy bramble stems for stability. It can be quite low down - we detected dormice about a foot above ground in bramble. A bit of red tape can be used to find them again if you are worried about them disappearing into the new growth.

Simone Bullion

Top tips:

Bracken is proving to be very popular in Devon. There seems to be a moment when the bracken gets to a certain height, forming a connected canopy, then the dormice move in (in quite large numbers). Bramble is also very popular as is elder when the berries are ripening.

Matt Parkins



6. Survey methodology

- The tunnels will need to be checked every fortnight. A two-month survey requires a site visit to set up the survey and a return trip in two weeks to start the survey proper (the first two weeks to account for neophobia). A further four visits will be required before the tunnels can be removed.
- A two-month survey requires a total of six site visits.
- On each fortnightly visit the 'ink' will need to be recharged as it will have dried out.
- The card may be damaged by slugs and snails if the weather has been wet. High woodmouse activity may have obscured other prints. Cards should be changed if there's been any footprint activity or deterioration in quality.
- The masking tape should only be replaced when required
- Avoid surveying during heavy rain, as the papers don't stick effectively when wet.



Top tips:

We have a little metal pail with handle (I guess a plastic one would do) to carry round the jar of mixed-up ink and paintbrush - that way holding the handle rather than the jar limits the transfer of black to you and it can be put on the ground without falling over.

Simone Bullion

7. Identifying footprints

Hazel dormice have very distinctive triangular-shaped pads on the 'palms' of both their front and hind feet.



Mouse prints lack the triangular pads of dormice and have well separated rounded pads. From footprints, wood mouse and yellow-necked mouse are difficult to distinguish.



Distinctive triangular-shaped 'palm' pads of hazel dormice on both their front and hind feet:

Front foot



Hind foot



Mouse prints lack the triangular pads of dormice and have well separated rounded pads.

Front foot



Hind foot



8. Keeping records

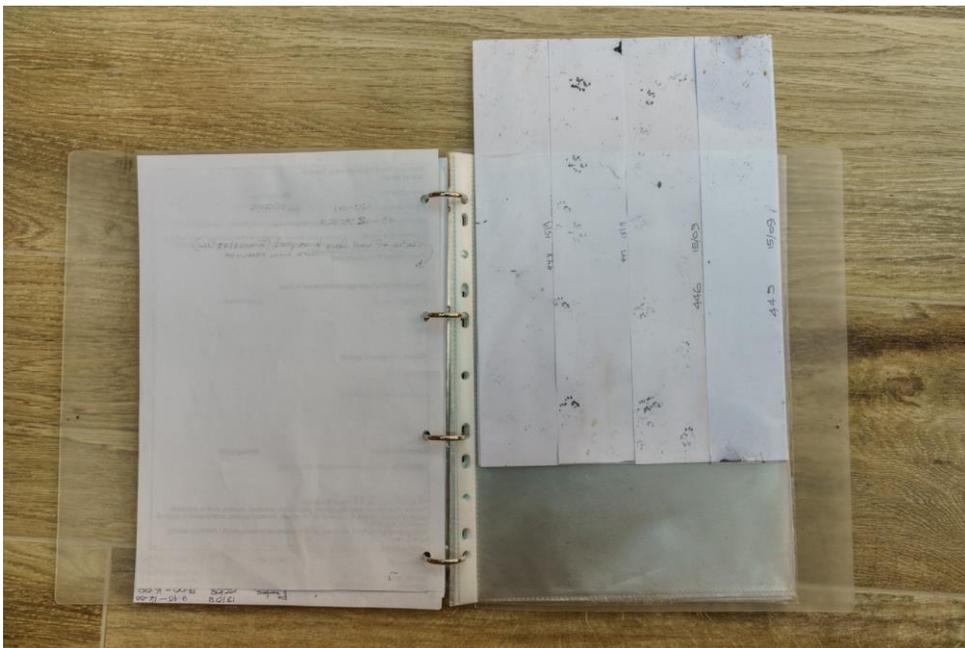
- Cards can be photographed in the field and/or retained and scanned.
- Cards can be checked in the field and photographs taken of any suspected prints. Ensure that the photos are clear if the card is to be destroyed.
- Ensure that the photographs of footprints from a site are clearly labelled to identify which site they relate to.
- Cards with dormouse prints or all cards with prints can be retained.
- When the cards are removed from the tracking plate there should be sufficient adhesive remaining to allow the card to be stuck onto a piece of A4 paper.
- Store the mounted cards in a plastic A4 wallet.
- It's important that the cards are fully dried as soon as possible.
- Once dried the cards can be scanned as evidence of dormouse presence at the site.



Top tips

I would record directly in the field, but storage of cards is essential if you are not doing this - you need to lay them out separately if storing as, if they are damp, they'll quickly go mouldy and you'll have the prints obscured.

Simone Bullion





Scanned sheet of footprint tunnel cards with some of the dormouse footprints ringed in red.

Reporting results

- Conducting a footprint tunnel survey is not currently considered to be a licensable activity and hence results don't need to be reported under a dormouse licence return.
- Both positive and negative dormouse records and the results of the hedge surveys should be submitted on the [National Dormouse Footprint Tunnel Survey submission form](#) (not yet active). This simple form allows you to input the result of a single dormouse survey using 20 tunnels for a period of 10 weeks, and the number of hedge surveys in which the dormouse survey took place.
- Please ensure that you provide evidence of dormouse presence with positive records.
- Generally, all data held by PTES is made available on the NBN. For dormice, this will be at a low resolution, but full resolution data will be made available to LERC's.
- The biological data collected through this survey, including the locations, is shared with a number of third parties for analysis and to help guide conservation action e.g. statutory agencies, universities and other NGOs. This data never includes your personal details.

Please note that negative dormouse results are as important as positive dormouse results.

