Devon Biodiversity Records Centre

Devon Mammal Group

Strangers in a strange land

Dormice in gardens Devon Mammal Group small grant project 2009-2010

Rare, elusive, nocturnal, may live in teapots: some common thoughts about the uncommon Hazel dormouse *Muscardinus avellanarius*. Dormouse ecology is characterised as sequential foraging on seasonal, temporarily available flowers, insects, nuts and fruit, which, combined with limited dispersal, gives a patchy, low density distribution, largely restricted to species-rich coppice woodland and hedges. Dormouse populations also turn up in other places[1]: conifer plantations, heathland, culm grassland, reedbeds, patches of isolated scrub, and gardens, which prompts some questions: - how do they get to these places? Why do they stay? What can they be eating? And how important are these sites compared to woodland and hedge habitats?

Aided by a DMG small grant, I tried to investigate this further in partnership with Devon Biodiversity Records Centre (DBRC). Dormice are widely recorded in Devon: categorising by habitat type, the numbers of the 700+ dormouse records currently held at DBRC comprise *c.*300 from woodland; 80 from non-woodland; 170 from gardens (including garden hedges); 160 from other hedges / other unspecified. The largest subset is from domestic gardens, and these were chosen for further study, as representative of a novel, fragmented habitat in the wider landscape.

Between 1999 - 2009, over 110 different garden records were reported to DBRC from 82 sites, stimulated partly by a DBRC / Devon Wildlife Trust public engagement project appealing for garden sightings 2006 - 8. With the kind permission of garden owners, many of these sites were re-visited. To complement site surveys, aerial photographs were analysed with GIS software. Could the presence of dormice in unfamiliar, patchy garden habitat be linked to the presence of woodland, certain garden features, or connecting hedgerows nearby?

What the dormice said

The greater proportion of dormouse records in the 82 gardens was from garden birdfeeders and bird tables (*c.* 30 records). Four were caught red-pawed, as it were, raiding cultivated berry crops. Several nested in garden hedges, nestboxes or outbuildings (21), and some visited gardens against their will, in the mouth of a cat; there were eight such escapees, giving rise to curiosities such as ‘dormouse in kitchen’, and ‘dormouse in dressing gown’. Notwithstanding feline agency, and although no teapots featured, a tool belt and boot in a shed, a coconut shell, a watering can, a deck chair, and some curtains were also involved. Further garden records were obtained from finding of dead animals (5; one drowning, other causes unknown) and nibbled hazelnut evidence (3 gardens).

There appeared to be a post-hibernation peak of garden visits in March – April, and another in early summer, though feeder records were taken for every month of the year (figure 1 below). There might be an expected increase in autumn, when animals are building up fat for hibernation, but this was not really seen. Maybe a proportion of animals had already entered hibernation by this time. Conversely, animals seen in autumn and winter, from photos taken, did not appear to be underweight juveniles or unhealthy. One or two looked positively rotund. (In captive studies at Paignton Zoo animals forwent hibernation while energy-rich food was still available, carrying on eating, and expanding[2]).

[1] See, for example, Chanin P & Woods M (2003) *Surveying dormice using nest tubes. Results and experiences from the South West Dormouse Project.* English Nature Research Report No. 524. English Nature, Peterborough, Cambs., UK; Juškaitis R (2007) Peculiarities of habitats of the common dormouse, *Muscardinus avellanarius*, within its distributional range and in Lithuania: a review *Folia Zoologica* 56: 337–348; Eden S (2009) *Living with Dormice The Common Dormouse: Real Rodent or Phantom of the Ancient Wood?* Papadakis Publisher, Winterbourne, Berks., UK.

[2] Pers. communication.

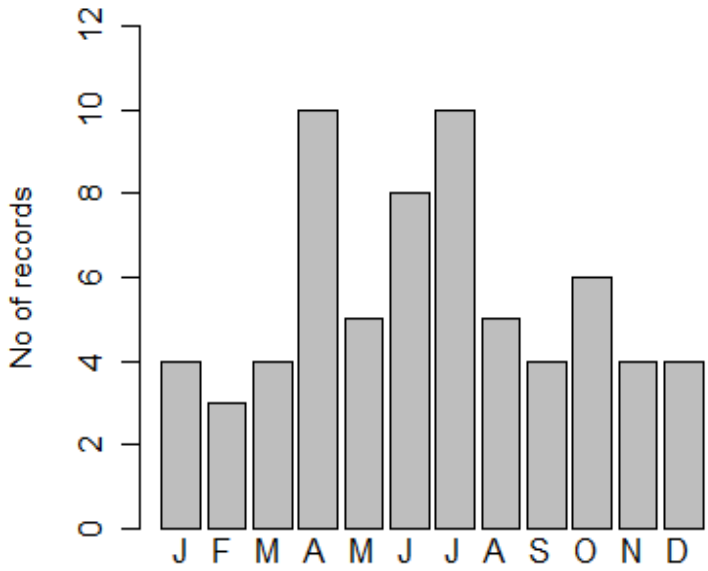

Fig. 1 Counts of dormouse visits to domestic gardens in Devon, by month 1999 - 2009 (*n* = 70 records, adjusted for multiple counts in same garden and where no information available on specific month seen).

Only four records were clearly of juveniles, three taken around July – August and one in autumn, which might coincide with natal dispersal, and breeding was known to take place in one garden. Otherwise garden records were generally single or low instances of apparently transient adults. Comparatively few seemed to remain in residence: repeated dormouse visits over more than one season were recorded in 5 - 6 gardens only. Sometimes there were consecutive nightly visits over a week or so, and in one or two gardens dormouse visits occurred a number of years apart, but in most cases, trusting garden owners' observations, dormice did not seem to stay.

In the study gardens, roughly 10% of garden birdboxes were nested in by dormice, in nine gardens of 82 (total number of boxes in the dataset was 103); in three of the larger gardens with space for multiple boxes, nests were found in several boxes in the same garden; another eight gardens were found to support dormouse nests in boundary hedges. Interestingly when nests were found in birdboxes, honeysuckle was often a main nesting material, even when this was relatively scarce in the garden. Otherwise all sorts of other garden material was used in nest composition: grass, ferns, bluebell stems, Montbretia, buddleia, bay tree leaves, pampas grass, and strips and threads of manmade fibres.

I couldn't verify whether dormice commonly hibernated in gardens. There were four records of hibernation nests, plus two anecdotal reports of dormice using flower pots to hibernate in, in one case in the same pot over consecutive years. I also received 2 – 3 reports of apparent hibernation nests being dug up from flowerbeds around February - March, in places where garden owners had been digging earlier in the winter without finding any dormouse nest evidence. Information about hibernation is generally lacking[3].

Studies have suggested that dormice are reluctant to descend from arboreal cover to cross open gaps[4]. In this study, access to most gardens entailed traversing at least one driveway, field gate entrance, country lane or other gap of 2 - 4m at ground level. Most distances from cover were in this range (for 60+ gardens); there were nine crossings of 5 - 10m and five over 10m. These gaps apparently were no obstacle, though there was often a rather large incentive, such as a peanut feeder, as a reward at the other end. Furthest distances measured across open ground were 39m along a hardstanding drive surrounded by lawn to reach a birdfeeder under a car port, and 32m along a flagstone patio verandah to reach an upturned watering can. Garden records were all within the known Devon range (see figure 2 below) and uniformly from rural areas, suburban edge, or small settlements, no more than 1-2 streets from open countryside.

[3] Pots and tiles have been experimented with as dormouse hibernaculum sites in south Devon: see 'Loddiswell lodges for dormice' *The Dormouse Monitor* Spring 2010, page 7 http://www.ptes.org/files/947_2010_spring_dormouse_monitor.pdf.
[4] Bright PW (1998) Behaviour of specialist species in habitat corridors: arboreal dormice avoid corridor gaps *Animal Behaviour* 56: 1485-1490.

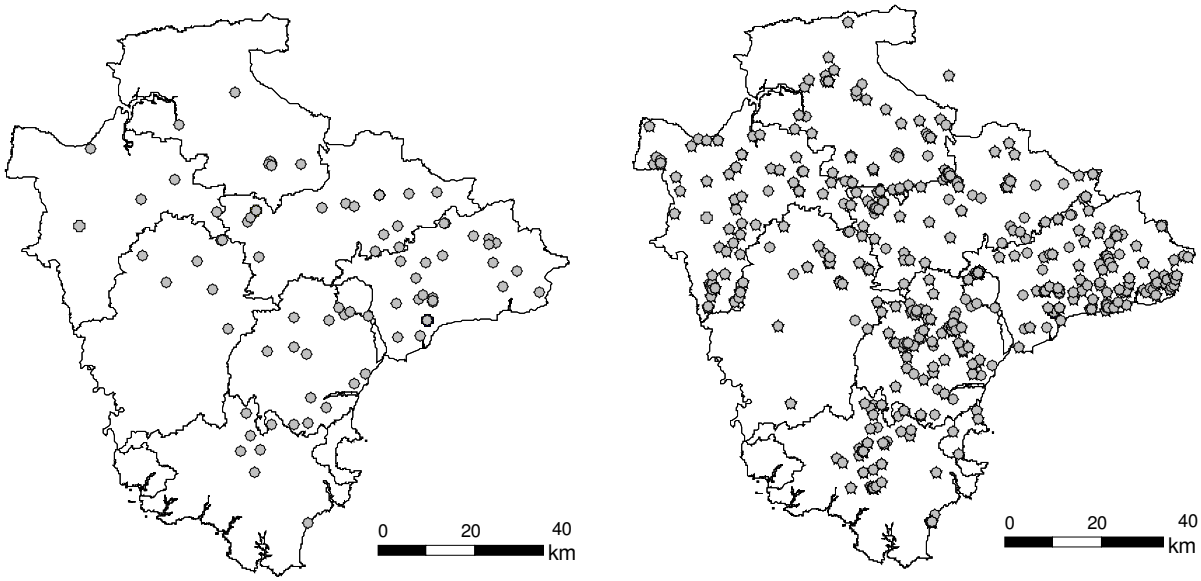

Fig. 2 Dormouse garden records (left) in comparison with overall Devon records held by DBRC (right) to 2009. Reproduced for the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown copyright. Licence No. 100019783 Devon County Council 2005. Prepared under licence by Devon Biodiversity Records Centre 2009.

To explore these matters further I looked at the various properties of 'dormouse positive' gardens, and at the amount of potential dormouse habitat within 1km radius (a distance based on reported maximum dispersal movements, so delimiting up to two foraging / dispersal ranges from gardens[5]). All woodlands within 1km of gardens were plotted, size and distance from gardens measured, and the number of individual woodland fragments within 1km counted.

Devon woodlands

Devon is not considered a well wooded county[6]. Dormice were present in gardens both next to large woodlands, perhaps unsurprisingly, but also where there was very little woodland nearby. The amount of woodland in the 1km buffers surrounding each garden varied from 3.6 to 121 hectares, split between anything from 2 to 25 individual woodland fragments. The average woodland size across the whole dataset was ~3 ha, with average ~30ha (~10%) of woodland cover present per 1km area around gardens, but with huge variation around these mean values.

Instead, woodland sizes were assigned to one of five area categories (0.2 - 2ha, 2 - 5ha, 6 - 10ha, 11 - 20ha, 20+ha, based on previous studies[7]). This revealed a higher frequency of garden visits when woodlands were smaller, *i.e.* associated with increased habitat fragmentation in the landscape (Table 1 below, column a; five gardens within 1km of other gardens, hence with partly overlapping 1km buffers, were removed from the sample, to prevent pseudo replication). 'Fragmented' in this case meant smaller woodland blocks of 0.2ha - 2ha[8]. Greater fragmentation was also reflected by higher numbers of individual woods, and usually with the nearest woodland further away from the garden site (column b). Mean distance from garden to nearest woodland was 207m, but there was an order of magnitude difference between gardens with fragmented vs extensive woodland within 1km. In the smallest woodland size category, distance to garden was average 330m away, a considerable journey in relation to recorded typical dormouse home ranges of 0.14 – 1 ha[5]. In contrast, for the smaller number of records

[5] See Juškaitis R (2008) *The Common Dormouse* Muscardinus avellanarius*: Ecology, Population Structure and Dynamics*. Institute of Ecology of Vilnius University Publishers, Vilnius, esp. review in chapter 4, section 4.5.2, and Büchner S. (2008) Dispersal of common dormice *Muscardinus avellanarius* in a habitat mosaic *Acta Theriologica*, 53: 259-262.

[6] See *e.g.* Rackham O (1990) *Trees and woodlands in the British landscape* revised ed. Dent & Sons, London; and Robins K, Butler A, Turner M & Lobley M (2006) *Agricultural change and farm incomes in Devon: an update* Exeter University Centre for Rural Research, Exeter, UK.

[7] See *e.g.* Bright PW, Mitchell P & Morris PA (1994) Dormouse distribution: survey techniques, insular ecology, and selection of sites for conservation *Journal of Applied Ecology* 31: 329-339.

[8] Statistics alert 1! Including woodlands as small as 0.2 ha in this category may have artificially increased the number of fragments, and lowered the average size. However the standard error around the mean is low: most woodlands in this smallest size category did not differ markedly from the 1 ha average size.

when gardens were near to large (20ha+) woodlands, average distance was much closer, at ~30m, well within scope of nightly movements.

This is not to read too much into the differential counts between large and small woodlands: sampling necessarily was not systematic but relied on incidental reports to DBRC; there could be many more instances of dormice in gardens near larger woodland, but undetected and not forwarded to DBRC (also, area category samples were subsets of the +ve garden records, not compared to an independent set of negative sites as a control). Nevertheless the findings contribute to evidence that dormouse populations can exist in landscapes comprising fragmented woodlands much smaller than 20 hectares. One might also speculate that individuals could be travelling some distances within this fragmented landscape.

In several cases, the nearest woodland seemed to be the largest within the 1km, compared to average woodland size overall (column c). To see whether this had been obscured by the averaging out of woodland sizes for the analysis, counts of garden visits were re-allocated to woodland size categories on the basis of size of nearest woodland (column d). This did re-distribute some counts to the larger woodlands, though overall highest numbers of garden visits remained with the smaller woodland sizes. Size of 'nearest wood' across the 77 gardens encompassed a range 0.2 - 100ha, at distances of 5 - 970m; 26 were less than 50m and 26 over 200m away.

Table 1 Counts of garden visits associated with area of woodland and woodland fragmentation within 1km (*n* = 77; to prevent pseudo replication, five gardens were removed from the sample where these were within 1km of other garden sites).

Wood land area category (ha)	Woodland landscape characteristics within 1000m of gardens										
	a) Average woodland size (ha) within 1000m				b) Distance (m) to nearest wood within 1000m		c) Size (ha) of nearest wood within 1000m		d) Count of gardens according to size of nearest wood (ha)		
	count	mean size	SE±	mean no. of frag.s	mean	SE±	mean	SE±	count	mean size	SE±
0.2-2	32	1.17	0.089	12	332.3	51.98	2.7	0.94	39	0.99	0.091
2-5	30	3.11	0.152	9	147.7	24.93	7.8	1.89	13	3.48	0.228
6-10	9	6.87	0.336	8	69.1	18.90	9.7	3.51	9	7.95	0.583
11-20	3	15.68	1.638	5	70.6	28.02	62.2	19.09	4	18.40	0.852
20+	3	26.68	4.648	4	31.7	13.58	44.7	9.07	12	41.77	6.147

(SE = standard error)

Viewing aerial photographs (see appendices), it was quite striking for some gardens how little suitable dormouse habitat, neither woodland, scrub, nor sizeable hedges, appeared to be present within 1km. As a further test, other types of woody habitat, such as conifer woodland and scrub, were added to the analysis. The inclusion of these additional habitat types did not produce any significantly different results. However hedgerows were found to be influential.

Devon hedges

Devon is considered a very well hedged county. Detailed assessment of hedges within each 1km was not possible due to the excessive survey burden (an average 1km buffer might contain 9000-12,000 m of species-rich hedgerow). Nevertheless, likely 'Important' hedges, as defined under the Hedgerow Regulations and DEFRA hedgerow survey protocols[9], could be identified fairly faithfully from aerial photographs, supported by sampled ground truthing.

When hedges were added to the statistical model, this appeared to neutralise to some extent the effect of 'distance from woodland': distances to nearest woodland or hedge (whichever the closer) were generally low, averaging 36m, compared to average distance from nearest woodland of 207m, as

[9] Hedgerow Regulations 1997 and DEFRA (2007) Hedgerow Survey Handbook: *a standard procedure for local surveys in the UK*. 2nd ed. DEFRA, London.

described above. There were still some lengthy distances travelled: among the range of data values 22 gardens were 40m+ away, and 6 more than 100m away; the maximum distance from wood or hedge was 202m. For a traditional Devon hedge on a 1 - 3m wide hedgebank, hedges typically provided an additional, though attenuated, habitat cover of 2 - 4 ha in each 1km buffer.

Even where hedges were regularly and tightly flailed, to some extent these still served to connect up patches of other habitat. Local dormouse populations might reside in the matrix of hedges, small woods, and scrub, or at least use the hedge network to travel around. This might be a key factor: here in Devon the rural character is traditionally small fields and small woods, surrounded and linked by ancient and substantial hedgebanks throughout the landscape.

What is a 'typical garden'?

Hedges were found to be important on a local scale as well. To test properties of individual gardens, a range of variables between matched pairs of gardens (those with dormice compared with next nearest neighbouring garden without dormice) were surveyed and analysed (see figure 3 box & whisker plot below for full list of factors recorded).

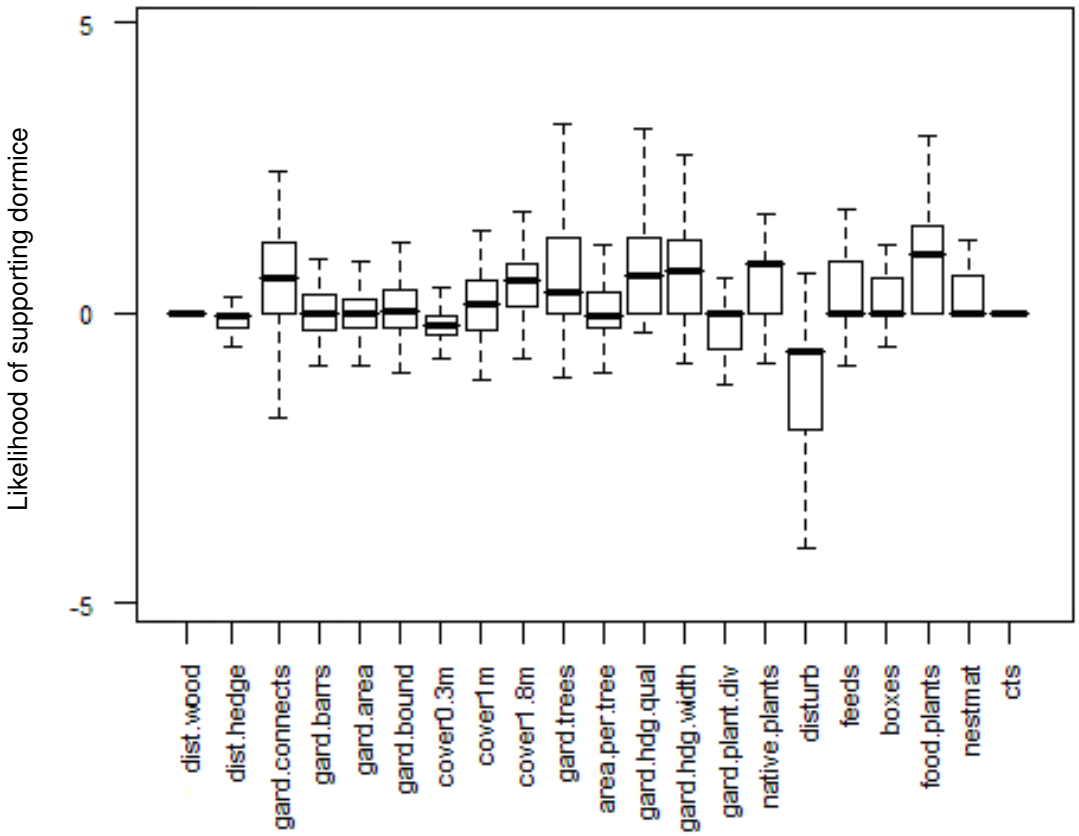

Fig. 3 Factors influencing presence of dormice in gardens (*n* = 80). Above 0 = positively correlated with dormouse presence; below 0 = negatively correlated with dormouse presence; 0 line = no difference between dormouse +ve and –ve gardens. Whiskers (dotted bars) show full data range; boxes show second and third quartiles; bold 'wedge' bars = median values: distance from the 0 line shows strength of effect. Data adjusted to give relative values for each factor.

- Distance to nearest wood (m)
- Distance to nearest hedge (m)
- Garden connectors (adjoining hedges, tree canopies; number)
- Garden barriers (roads, railways lines etc between garden and nearest habitat; number)
- Garden area (ha)
- Garden boundary length (m)
- Cover at < 0.3m height (lawn, low borders; %)
- Cover at 1-1.8m height (shrubberies, tall borders; %)
- Cover at 1.8+m height (canopy; %)
- Garden trees (number)
- Average cover / tree (*i.e.* tree maturity; %)
- Garden hedge quality (score out of 20)
- Garden hedge width (m)
- Garden plant diversity (DAFOR scale, score out of 20)
- Native plants (DAFOR scale, score out of 20)
- Disturbance (frequency x duration of garden management hours / month, score out of 20)
- Birdfeeders / tables (number)
- Birdboxes (number)
- Food bearing plants (number & relative density, score out of 20)
- Nesting material bearing plants (number & relative density, score out of 20)
- Cats (owned by householder or otherwise, known to visit garden; number)

In the box and whisker plot above, the 0 line denotes no difference between dormouse +ve and –ve gardens; above 0 shows a positive, and below negative, correlation with dormouse presence. The boxes and whiskers show the full data range and the interior bold wedges show median values; distance from the 0 line then indicates strength of effect.

At face value, higher likelihood of dormouse presence in gardens was associated with: higher number of garden boundary links (hedges and tree canopies connecting with the wider landscape); higher % garden cover at 1.8m+ (that is, trees and tall shrubs); better ecological quality of garden hedges; wider and denser garden hedges; greater % of native plants; and higher numbers of food (nut and fruit bearing) plants. What appeared to dissuade dormice were: greater %cover at <0.3m (*i.e.* more lawn and lower growing vegetation), and more frequent garden management (*i.e.* disturbance).

Not all garden properties were statistically significant: % garden cover at 0.3 - 1m height (lower shrub cover) and number of trees, showed some, but smaller influence. Numbers of birdfeeders and bird boxes, and maturity of trees (as indicated by area of cover provided per tree) tended to be greater in the dormouse +ve gardens, but overall gave no difference. However it's necessary to caveat that with the number of factors included in the analysis, there was risk of circumstantial correlations, without clear distinction between the various individual effects. To account for this, the statistical software R was used to carry out a Linear Discriminant Analysis to streamline groups of interdependent variables. The resulting grouped terms were then tested through stepwise linear regression.

This subsequent analysis suggested that the two most significant determinants of dormouse presence in gardens were hedge quality and sympathetic garden management[10]. 'Hedge quality' encompassed effects of connectivity, hedge width, cover at 1.8m+ (including trees), and availability of food plants and nesting sites. Hedges scoring highly for 'quality' generally achieved higher scores in these other categories as well. The next highest correlation was with disturbance / garden management. Some gardens were no more than small, very neat courtyards of hardstanding and a few shrubs (though this type was always close to woodland); at the other extreme some 'gardens' had enclosed woodland edge or in one case 0.2 ha / 0.5 acres of hazel coppice within the curtilage. On balance I would say the dormouse +ve gardens were not especially overgrown wildernesses nor solely gardened for wildlife; they would still be perceived as domestic garden spaces, but perhaps with denser, taller planting in beds and borders, and with more areas subject to a less intensive management approach; fewer tended to be as formally laid out and regularly maintained as the –ve gardens.

Several variables were found not to matter, such as garden size and age of house, the latter noted in case there was a relationship between dormouse presence and older houses with larger, more established gardens. Proportions of native plants were relatively low in all gardens, whether dormouse +ve or –ve; surprisingly, higher 'plant diversity' was associated more with dormouse absence (not significantly); I think this may have been because the more formal gardens often featured a wider range of non-native, ornamental plants.

There was no relationship found with local cat population density, though from reports of dormouse casualties by garden owners outside the present study, cat predation may be a meaningful threat. Eight cat escapees were recorded, arguably low in the context of average 0.6 cats / garden; however it's unknown how many other dormice may have been caught but did not escape. For a few of the study gardens, owners who were keenly interested in garden birds actively discouraged cats. That no overall difference was found between dormouse +ve and –ve gardens may be because expected cat ranges (variously up to distances of 2km)[11] would overlap both study and control gardens, and indeed much of the 1km buffer.

Similarly, providing birdfeeders / tables, and to a lesser degree nestboxes, was common and relatively consistent throughout study and control gardens, so that no differences in effect could be discerned. As

[10] Statistics alert 2! Although matched pair samples were used (which are statistically strong), in the context of the relatively short survey timescale and low detectability of dormice, there could be some doubt that dormice were definitely absent from the control / negative gardens. Even so, the composite hedge variable and disturbance / management were highly significant: z=4.512, *P*= 0.0000064 and z=4.117, *P*=0.0000383 respectively with 147 d.f., where the predictive value of the LDA was 91.6%.

[11] See *e.g.* Metsers EM, Seddon PJ and van Heezik YM (2010) Cat exclusion zones in rural and urban-fringe landscapes: how large would they have to be? *Wildlife Research* 37: 47-56 and Tschanz B, Hegglin D, Gloor S and Bontadina F (2011) Hunters and non-hunters: skewed predation rates by domestic cats in a rural village *European Journal of Wildlife Research* 57: 597-602.

described above, evidence of dormouse nesting, in bird boxes, hedges, or in a few cases outbuildings, was the next highest type of garden record after visits to feeders (30 to 21 records), and in the +ve gardens 13 of 103 boxes were adopted as nest sites. This spurs the question why the other 90 in the +ve gardens, plus the many nestboxes in the adjacent –ve gardens, were not used. It has been observed that nest site availability may be a significant determinant of dormouse population density[12]. Locations of boxes in relation to cover and proximity to boundaries were too variable to analyse statistically in the present study. Nonetheless, notwithstanding presence of boxes, there would often be a thick rural hedge either as a boundary or nearby which might provide suitable nesting habitat.

Considering this provision of a reliable supply of energy-rich food throughout the active season via bird feeders and tables, and presumably serviceable nest sites via bird boxes and rural hedges, it's not clear why dormice would make only temporary use of gardens, if this is the case. Maybe there are other limiting factors, such as relative scarcity of nesting material, frequency of disturbance, territorial / breeding imperatives, discontinuity of dense cover, or a combination of, or other missing, components. I would suggest that instead of responding to anything intrinsically specific to gardens, dormice were exploiting garden features as part of general foraging and ranging behaviour, related to the wider landscape and local dormouse populations surrounding the garden.

Local landscapes and local populations

Rural and rural edge situations, and proximity to hedge networks, were universal traits among dormouse gardens. For several of the variables tested, for example, distance from woodland, garden barriers, and degree of urbanisation, these obviously would not vary conspicuously on a landscape scale between study gardens and their next nearest neighbours. There were some ostensible differences, in that many dormouse gardens were situated within predominantly farmed landscapes, while others were located at the edge of settlements, or close to large woodlands. Within the 1km buffers, proportions of land use cover (apart from deciduous woodlands), comprising farming, built environment, forestry plantation, and scrub / other wildspace, averaged 74% (SE ±2.0); 9% (SE ±1.2); 3% (SE ±0.5); and 2% (SE ±0.8) respectively, and numbers of hedge-bounded field plots (as a proxy for levels of agricultural intensification) ranged from 33 to 217 (mean 111, SE ±3.9), per 1km buffer. But no effects were distinguishable within the current study parameters from amounts or types of surrounding land use, or when a greater density of small, hedged fields was present, as opposed to larger fields with sparse hedges. I think this was probably because landscape characteristics were relatively consistent across the study area, and to discern differential effects, one would need to undertake a comparison with an area comparable in terms of UK dormouse distribution, but where the landscape was not like this. From the current study, I would note certain properties and rural location were shared by gardens visited by dormice, and that more investigation is needed.

The sub-county region most represented was east Devon (a county stronghold, from DBRC and national records), with 24 garden records (vs mid and west Devon: 19; south Devon: 13; north Devon: 9; and Dartmoor: 6). A number of settlements contained clusters of garden records: such dormouse 'villages' include Kilmington and Tipton St John (east Devon), Meshaw (north Devon), north east of Tiverton and east of Cullompton (mid Devon), and Manaton and Lustleigh (Dartmoor). An internet-based map search would show the curious reader the local landscape characteristics for these areas. However, when analysed in the statistical model, density of dormouse records within 1km and 5km of gardens showed no influence; dormouse records are fairly evenly distributed across Devon (though, as above, records held by DBRC for this are more incidental than from systematic surveys).

Lastly it was not really possible to tell whether garden visits increased between 1999 - 2009. More records from later years tended to make their way to DBRC, but it's unclear whether this was because dormice visiting gardens became more frequent, or general awareness - and digital cameras - more widespread.

[12] See Morris P (2004) *Dormice* Whittet Books Ltd, Stowmarket, Suffolk, UK p.37-42; also demonstrated experimentally by Juškaitis R (2005) The influence of high nestbox density on the common dormouse *Muscardinus avellanarius* population *Acta Theriologica* 50: 43-50 and (2006) Nestbox grids in population studies of the common dormouse (*Muscardinus avellanarius* L.): methodological aspects *Polish Journal of Ecology* 54: 351-358.

In a nutshell

This was a fairly small scale study but generated some suggestive results. One observation is that dormouse populations are present in a landscape where woodlands are small and very fragmented, sometimes appreciably less than 20 hectares in area, the estimated minimum needed to support a viable population[13]. Also that dormice apparently travelled many tens of metres to reach gardens, and that hedges may be highly important, through providing both additional and linking habitat. Are populations able to persist in the mix of small woods, hedges, and scrub? Do dormice range more widely when habitat is more fragmented? Is this possible because of all the Devon hedges in the landscape? (It would be interesting to carry out some radio-tracking in hedges in such fragmented environments). Possibly gardens have structural similarities to woodland edge; possibly, as for other species, gardens act as 'service stations' in the spaces between other habitats.

In this study finding dormice in gardens was a phenomenon of rural areas and countryside edge. Dormice have been reported in gardens in other parts of the UK, including Essex, Worcestershire, Herefordshire, the Malverns, Carmarthanshire, Usk valley, Hampshire, Dorset, Somerset and Cornwall, within the known national distribution. The data presented here are from an interim analysis only, while the intention is to incorporate records since 2009, and re-analyse the larger dataset in due course. In the meantime all garden records from Devon, the wider south west, and other counties would be gratefully received.

Acknowledgements

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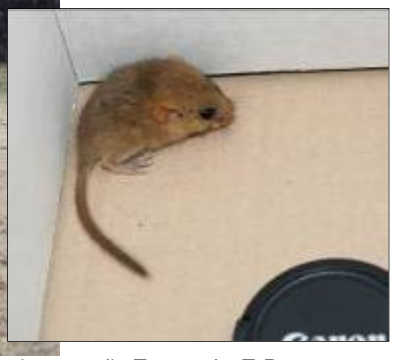
Stephen Carroll, Devon Mammal Group

Some dormice in Devon gardens
Top left: near Bondleigh, Dec 2006 (A Courtney); ***middle***: on deck chair in summerhouse, April 2006, nr Cullompton, (M Davis), both mid Devon. ***Top right***: in bird food tub, January 2009 nr Holsworthy, NW Devon (R Goodwin).
Above left: on trug in porch, winter 2011 nr Hennock, south Devon (N Green). ***Above middle***: visiting feeder, June 2008 (J Standen); ***above right***: crossing lawn, July 2009 (S Newton), both near Tiverton, mid Devon.

[13] *Op. cit.* footnote 7; notably this paper proposes that dormouse populations may subsist in smaller woodlands where these are connected by hedges, a point reiterated in the Dormouse Conservation Handbook http://publications.naturalengland.org.uk/publication/80018?category=32020



Above left: on raspberry bushes, July 2011 nr Honiton, (Elliot, with thanks to PTES); ***middle***: raiding parrot food since 2004, Colaton Raleigh (J McKay), both east Devon. ***Right***: on feeder under car port, Jan 2006, nr Chagford, Dartmoor (D & W King).

Juvenile (***inset***) repeatedly rescued August 2007 (T & P Falloon), from feeder / bird table (arrowed), Exmouth, E Devon.




Left inset: group visit to feeder in front garden (R Treeby), location of feeder inset below right, indicated by arrow. Visits since 2003 to several feeders, including one indicated in main picture. Nr Tiverton, mid Devon.

Variety of dormouse gardens Arrows indicate where dormice sighted.
Top left: feeder by shed visited June 2006, Meshaw; ***top right***: in coconut shell hung in tree April 2007, nr Bideford; both N Devon. ***Middle upper left***: nesting in greenhouse April 2008, nr Withleigh, mid Devon. ***Upper right***: feeder visited Nov 2003, Kilmington, E Devon. Note dense planting. ***Middle lower left***: dead dormouse found in shed March 2008, nr Bow, mid Devon. ***Lower right***: on feeder surrounded by ornamental planting July 2004. Both large, extensively lawned gardens.
Above left: cat rescue May 2008, Exeter (R Cush). ***Above right***: on bird table August 2003, Sticklepath, west / mid Devon area (PL Baycock). Both small courtyard gardens near to woodland.





Garden hedge boundaries

Top left: several nests found in garden bird boxes and hedges, nr Roborough, N Devon. ***Top right***: garden hedge next to where dormouse found nesting in store shed (arrowed) March 2007, nr Exbourne, mid Devon.

Above left: footpath between gardens, Manaton, Dartmoor. ***Above right***: hedge alongside gardens in Kilmington, E Devon. Several dormouse records made from gardens in both villages. ***Inset***: Manaton dormouse emerging from nest tube (A Taylor).

Landscape photos

Top: two areas with garden records from east Devon.

Middle left: garden near large woodland, Dartmoor.
Middle right: small woodlands and hedges in mid Devon

Left: north east outskirts of Tiverton. There have since been several dormouse records from the areas around the golf course to the east.

Red circles = 1km buffers around dormouse garden records; red dots indicate approximate locations of gardens.

DBRC