

# Up in the Trees: arboreal dormouse monitoring

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# Contents

- Dormouse ecology and survey techniques
- Research Project
- Follow up study

## Background

The common dormouse  
(*Muscardinus avellanarius* L)

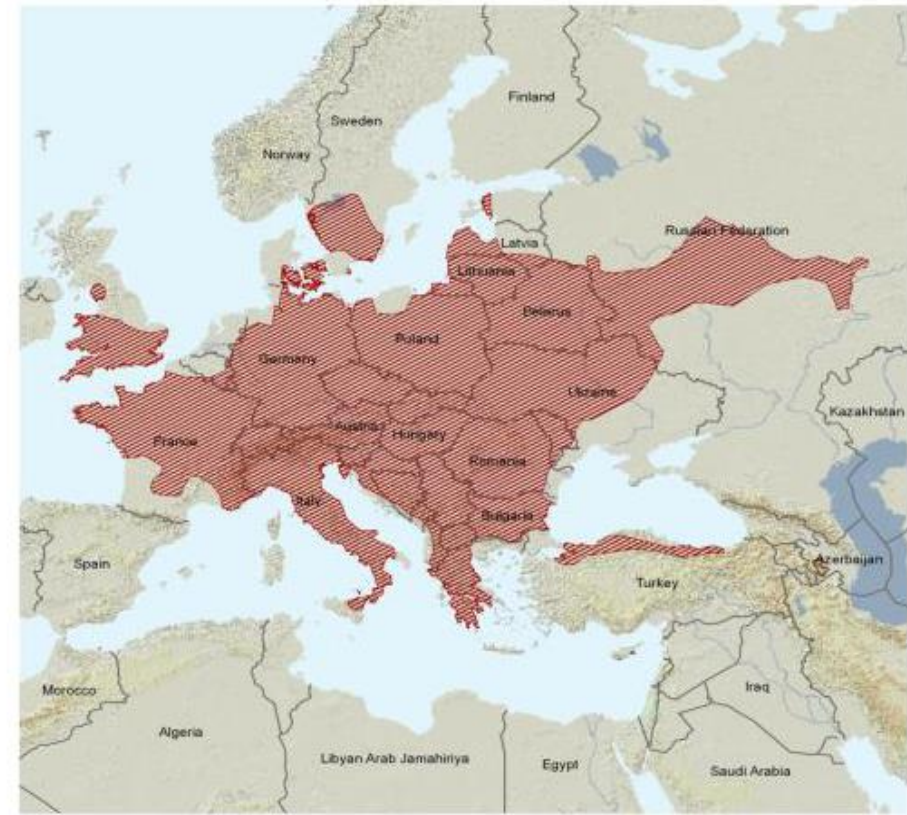
- arboreal
- bioindicator



## Background

The common dormouse  
(*Muscardinus avellanarius* L)

- arboreal
- bioindicator
- European protected species




*Muscardinus avellanarius*


range type

 Native (resident)

— national boundaries

- - - subnational boundaries

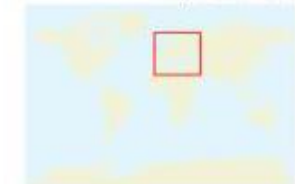
 lakes, rivers, canals

 salt pans, intermittent rivers

data source:  
IUCN (International Union for Conservation of Nature)



map stereographic - central point: 0°, 0°  
map created 05/19/2009



European Regional Assessment



## Background

The common dormouse  
(*Muscardinus avellanarius* L)

- arboreal
- bioindicator
- European protected species

Accurate identification of dormouse presence on a site has ecological, legal and practical significance



## Current survey method

- Artificial nest boxes or tubes
- 1 - 1.5 m above the ground

This is convenient for the surveyors

**BUT** is this the most appropriate  
positioning for a strongly arboreal species?



## Is there an alternative?

### *RESEARCH QUESTIONS*

- If dormice have a choice of a box in the canopy or at 1.5m which will be used?
- Are there identifiable habitat features associated with nest box use?
- Does the use of some nest material suggest dormice maybe less strictly arboreal than commonly supposed?



## Study site

ASNW

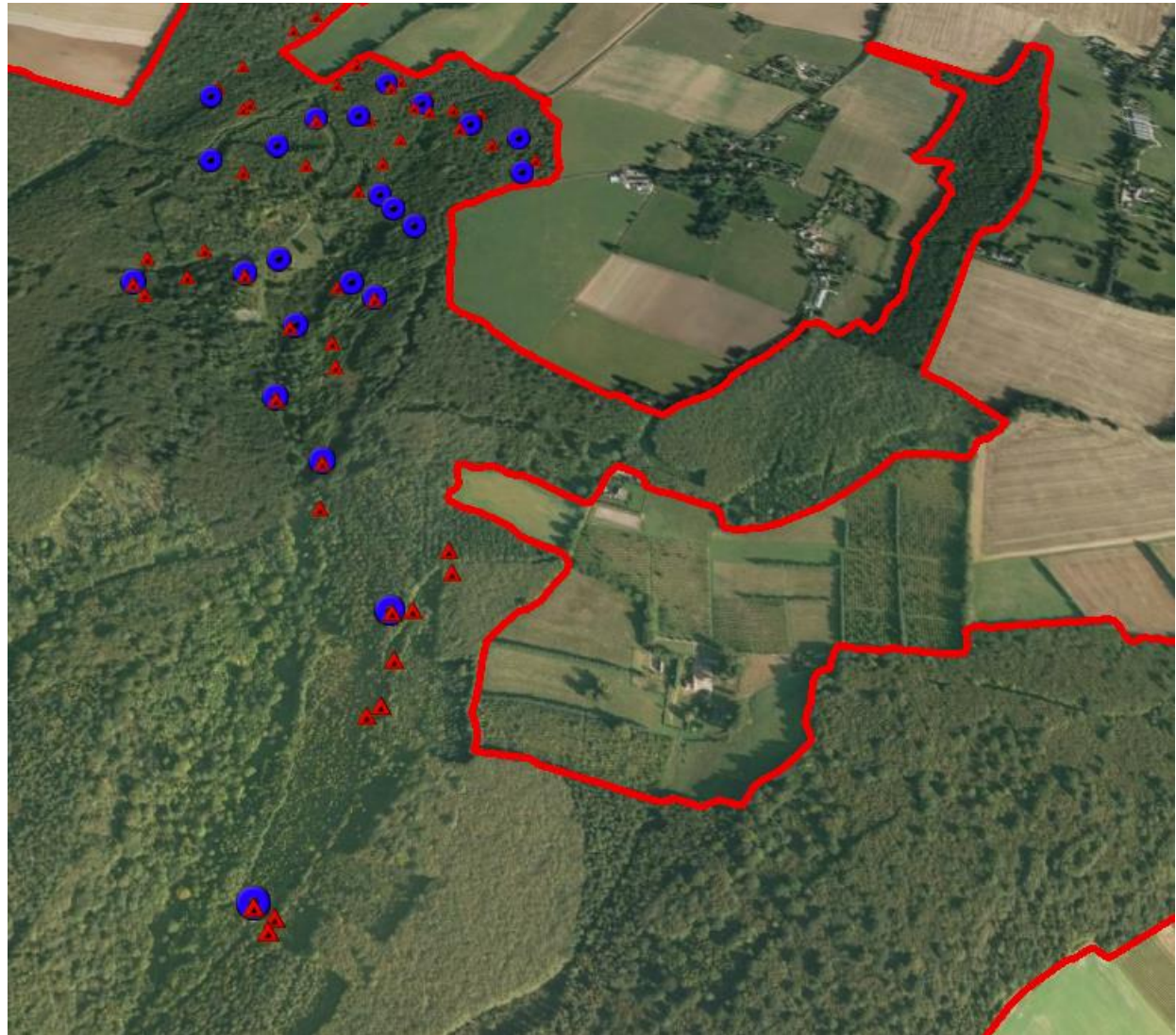
Mixed ownership

Established survey site





## Study site



## Method

- 49 boxes were erected on 23 trees using roped access
- Lowest box placed at standard 1.5m
- Higher boxes varied between 3 and 14m
- Habitat composition and structure was recorded
- Boxes checked regularly during active season for 3 consecutive years



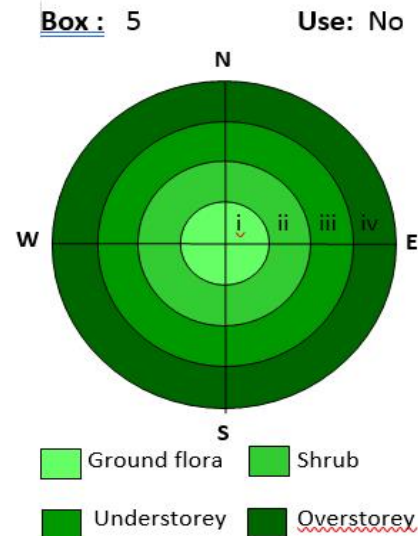








# Habitat Assessment



## Features:

All zones approximately 50% bare ground, of which 25% moss.

## NW

- ii: *Rubus fruticosus*
- iii: *Corylus avellana*, *Crataegus monogyna*
- iv: *Betula pendula*



## NE

- i: *Urtica dioica*
- ii: *Rubus fruticosus*, *Circaea lutetiana*
- iii: *Sorbus aria*, *Crataegus monogyna*, *Fraxinus excelsior*, *Salix* sp.
- iv: *Betula pendula*



## SW

- i: *Urtica dioica*, *Circaea lutetiana*, *Mercurialis annua*
- ii: *Rubus fruticosus*, *Cornus sanguinea*
- iii: *Prunus avium*, *Sorbus aria*, *Crataegus monogyna*



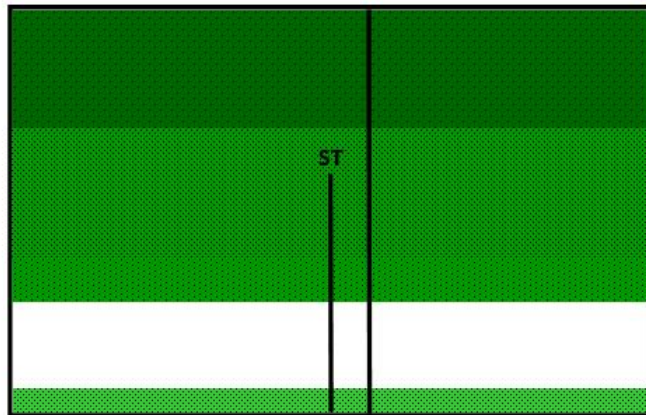
## SE

- i: *Urtica dioica*, *Circaea lutetiana*, *Mercurialis annua*
- ii: *Rubus fruticosus*
- iii: *Crataegus monogyna*, *Corylus avellana*
- iv: *Betula pendula*, *Salix* sp.

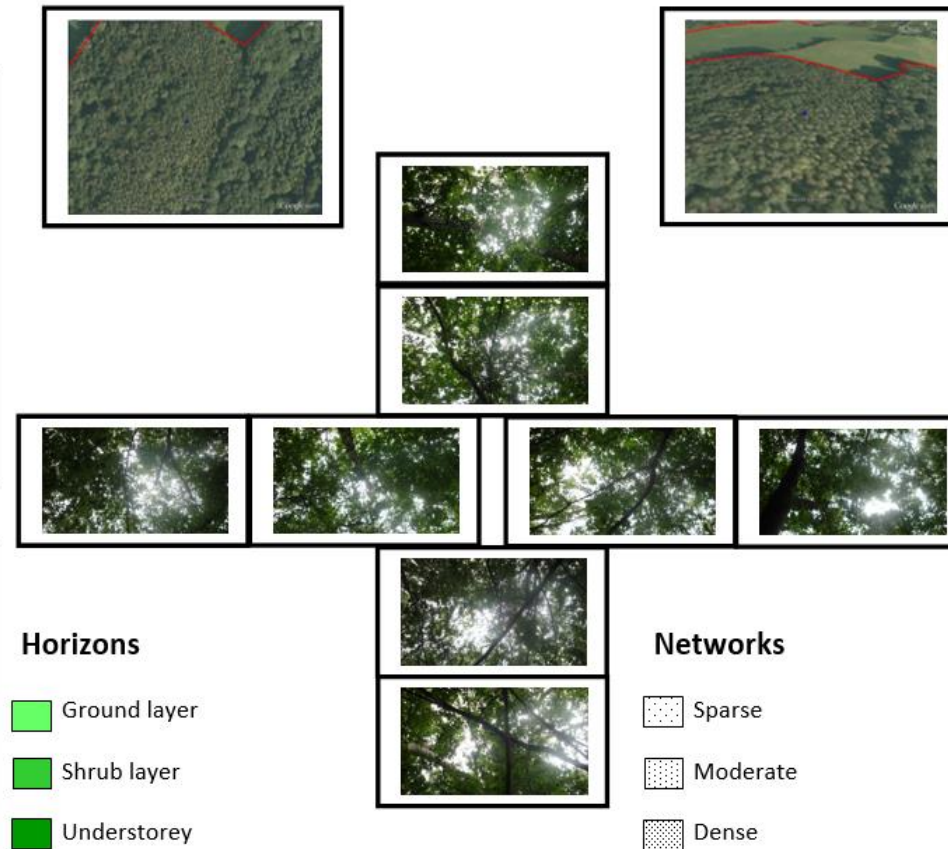
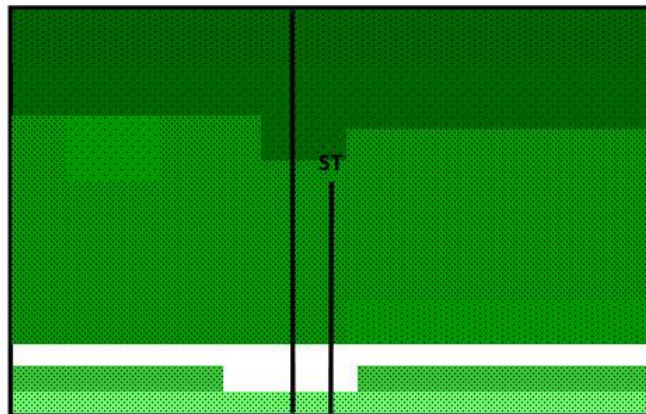


# Habitat Assessment


Box: 5      Tallest Tree Height: 18.01m  
North of ST at 14m






South of ST at 12m



### Horizons

-  Ground layer
-  Shrub layer
-  Understorey
-  Overstorey

### Networks

-  Sparse
-  Moderate
-  Dense

# Habitat Assessment

Abbreviation	Definition
GF	Ground flora
SL	Shrub layer
US	Understorey
OS	Overstorey
ST	Study tree (housing the nest box)
N	North/Northern
E	East/Eastern
S	South/Southern
W	West/Western

Figure 4.9 List of abbreviations used in habitat survey results

Box	Floral species diversity	Vegetation diversity summary	Height of tallest tree	Structure summary
VII	GF: 6 SL: 7 US: 5 OS: 6	N/S divide for most vegetation layers. Different species in N to S with greater diversity in S Quadrants. Only US has common species, but still <u>more variety</u> in S.	6.41m	Uniform dense and comprehensive arboreal network in US and OS. US approximately 3 – 4 times size of OS. minimal GF visible from S.
XV	GF: 5 SL: 2 US: 3 OS: 2	Minimal diversity, particularly in W quadrants. Only 1 or 2 species for each vegetation category. NE most diverse with GF 4, US 3, SL and OS 2.	14.10m	Moderately connective network in OS. US two tiers, upper level dense, lower level moderate with varying heights and gaps. Dense SL connecting with US in places.



## Results





## Results



# Results

Year	Position	Box																							Total
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	
2012	high					■				■			■		■					■					5
	low									■						■				■					3
2013	high		■				■	■		■					■	■				■			■		8
	low	■				■		■					■			■						■		■	7
2014	high		■	■						■				■		■				■				■	7
	low				■	■	■	■		■		■		■		■				■	■		■		11

# Results

Year	Position	Box																							Total
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	
2012	high					■				■			■		■					■					5
	low									■						■				■					3
2013	high		■				■	■		■					■	■				■			■		8
	low	■				■		■					■			■						■		■	7
2014	high		■	■						■				■		■				■				■	7
	low				■	■	■	■		■		■		■		■				■	■		■		11

## Results

- 20 high
- 21 low
- 8 trees both boxes used simultaneously in a year
- 2 instances of a high or low box used one year and the alternative the following year

No discernible difference in selection influence



## Results

### Habitat Assessment

- Unable to detect correlations between box occupancy and habitat composition or structure
- Highlights the complexity of capturing and quantifying habitat features for non human species

## Nest materials

Green leaves are regarded  
As an identifying feature of  
dormouse nests





The reality seems to  
be that they are  
opportunists





## Where do all the brown leaves come from?

Monitoring of green leaves in boxes over a 12 week period (weekly inspection) revealed very little

chlorophyll breakdown: the leaves stayed green

This suggests the woodland floor can be a source for nest material



## Conclusion

### **Raised more questions than answers**

- Can we conclude height is not an important factor in box selection?
- What alternative method for refining identification of habitat features/characteristics could be trialled?
- Are dormice less strictly arboreal than received wisdom suggests?

# Sissinghurst Project

## Research Questions

Is the frequency of artificial nesting opportunity exploitation influenced by structural arboreal habitat features?

Does the positioning of nest boxes at points of greater habitat connectivity (arboreal networks) increase the probability of use?



## Method

Reduce variables and biases as possible from previous study

- Tree selection
- Familiarity with boxes as nesting feature
- Disturbance regime

# Sissinghurst

Virgin site with  
known presence





# Sissinghurst

## 3 placement protocols

Box A: anti-thesis (boxes placed at standard height but on isolated stands - posts)





# Sissinghurst

## 3 placement protocols

**Box A: anti-thesis (boxes placed at standard height but on isolated stands - posts)**

**Box B: attached to tree stem at standard height (1 - 1.5m) within 5m of Box A on lateral plain**





# Sissinghurst

## 3 placement protocols

**Box A: anti-thesis (boxes placed at standard height but on isolated stands - posts)**

**Box B: attached to tree stem at standard height (1 - 1.5m) within 5m of Box A on lateral plain**

**Box C: attached to tree stem at variable height (at nexus of greatest arboreal connectivity) within 5m of box A on lateral plain.**





# Sissinghurst





# Sissinghurst Project

What next?

Box monitoring

Formal habitat analysis (possible use of remote sensing technology)

Refine methodology to enable repetition across a range of sites

# ACKNOWLEDGEMENTS

University of Greenwich

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Peoples Trust for Endangered Species

Haboke Forestry



Thank you for listening – any questions?







**CHANGE  
STARTS  
HERE**

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