

Title: Why are Dormice rare? A case study in conservation biology, *Mammal Review*, 1996

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Background to study

The Dormouse has disappeared from about half of its geographical range in the UK over the last century and evidence suggests that this is a result of numerous factors such as habitat loss and fragmentation. This decline has supposedly been exacerbated by the species' low dispersal ability, low density and low reproductive output. Climate is also thought to play a role.

Method

- Review of research to investigate the habitat requirements of dormice and the effects of habitat loss, fragmentation and deterioration and climate on their UK distribution and abundance.

Key results

- Dormice are selective feeders and are unable to exploit easily available foods such as leaves as they are unable to digest large amounts of cellulose. Dormice select nutritious food sources, namely flowers, fruits and insects from trees and shrubs which are seasonally available.
- Food preferences include flowers from hawthorn in spring and from oak, sycamore, broom, honeysuckle and sweet chestnut in early summer. Vegetal food sources in mid-summer are in short supply and dormice eat insects. Soft mast trees and shrubs are exploited in autumn (yew, bramble, wayfaring tree) alongside hazel nuts once ripe which provide the principal source of food used for fattening up before hibernation.
- Dormice live at low density, are wholly arboreal and range c. 1 ha annually. They obtain food via interconnecting branches in small areas and as such are vulnerable to habitat fragmentation and operations including clear fell and coppicing which may reduce availability of suitable habitat.
- Tree hollows are likely to be the principal nest sites used by dormice and nest box occupancy increases at sites where tree holes are absent or rare. The density of dormice may also increase in response to increasing nest box density.
- Dormice hibernate on the ground and may utilise coppice stools, rock crevices or tree stumps, they rarely hibernate in nest boxes.
- Loss of semi-natural ancient woodlands has caused local extinctions and isolated planted woodlands on historical sites are unlikely to be naturally recolonised. Where relict woodlands remain connected within landscape via hedgerows/woodland strips, dormice persist.
- Cessation of coppice management may be the greatest cause for dormice decline as old coppice becomes self-shaded and develops into high forest where the understorey is unproductive.
- Dormouse incidence is reduced in isolated woods that aren't connected to other patches via hedgerows and isolated woodlands <20 ha may not be able to support viable populations.
- Roads fragmenting woodland threaten dormice who are reluctant to cross open space.
- Dormice do not have water repellent fur and heavy rainfall during dormouse activity periods result in curtailed activity and dormice will enter torpor in response to lower temperatures alongside food shortages and this frequently results in lower annual recruitment.
- Climate affects food production and as such determines species distribution and has influenced previous population extinctions. They may be negatively impacted by climate change.

Key messages to landowners and managers derived from these results

- Dormouse habitat needs to contain a high diversity of interconnecting trees and shrubs to ensure a continuity of food throughout the seasons. Prevent the canopy from shading out the understorey preventing flowering and fruiting of shrub, by thinning.

- Oak, sycamore and hazel support abundant insects and as such provide an important source of food during mid-summer when vegetal sources are in short supply.
- Natural nest searches to establish dormouse presence may be unsuitable in high canopy woodlands where dormice are more likely to utilise tree holes for nesting.
- Monitoring dormice using nest boxes is likely to be most effective in coppice woodland where natural nest sites (tree holes) are less abundant. Increasing the density of nest boxes may help increase population density in such habitats.
- Livestock grazing in woodlands is not advised as hibernating dormice may be trampled and the understorey damaged, reducing available food. Increasing pressure from deer may also threaten dormice via competition for shrub species.
- If reinstating coppicing, ensure that this is done in small management units and on longer rotations to ensure that fruiting productivity of coppiced species is high and ensure that large areas of suitable habitat are retained to maintain a viable population on site.
- Maintaining connectivity between small woodlands (<20 ha) is recommended to allow dispersal between woodlands which may be utilised seasonally by dormice.
- When surveying small woodlands for dormice, survey more than once per season if woods are connected via hedgerows to account for seasonal use.
- Dormice may be suitable bio-indicators for climate change and annual monitoring is encouraged.

Key words/phrases

Dormice; *Muscardinus avellanarius*; England; habitat requirements; habitat fragmentation; isolation; hedgerows; nest; coppice; climate; distribution