

Title: An investigation into climatic effects on UK hazel dormouse success. *University of Leeds Dissertation & Report for the Peoples Trust for Endangered Species, 2012.*

Author: L. Duffield

Country: UK

Background to study

In the context of climate change lower summer temperatures and high rainfall is expected to have negative impacts on dormouse numbers due to individuals not being able to reach the required weight prior to hibernation. Higher winter temperatures are likely to cause shorter hibernation events increasing the risk of starvation. This study aimed to look at how weight is affected by climate by addressing different climatic variables and concentrating on climatic variation at sites.

Methods

- Dormouse data (number of individuals, weight, sex, age (adult or juvenile if <17 g), number of nests and state of torpor of dormouse within each site) was obtained through PTES National Dormouse Monitoring Scheme from 1988 to 2011.
- Climatic data was obtained from weather stations across the UK and matched to each site based on distance. The effect of site, temperature (min & max), mean rainfall, air frost days and hours of sunlight per month on the success (weight and abundance) of dormouse populations at each site was investigated.

Key results

- Dry years may negatively affect the pre-hibernation weight of dormice due to lower harvests of food bearing tree and shrub species.
- Warmer winters reduce the weight and abundance of dormice the following spring which may be due to them being aroused from hibernation and having to increase their energy demands.
- Higher maximum summer temperatures had a positive effect on the pre-hibernation weight of juveniles and adults but adult weights were lower when summer temperatures at night were higher, suggesting fewer cold snaps in summer may reduce incidences of torpor and as such increase dormouse activity and energy demands.
- Juveniles were found to be more sensitive to summer weather conditions as this will greatly influence their pre-hibernation weight and over winter survival.
- Rainfall both inhibits dormouse activity but increases the productivity of their food resources; as such it has a complex relationship with dormouse success.
- Dormice are generally less abundant and weigh less towards the north and east of the UK where the climate is cooler and sites are more fragmented.
- The success of dormice was consistently influenced by year, which may indicate differences in predation, disease and the climate in previous years.

Key messages to landowners and managers derived from these results

- Efforts should be made to improve suitability of sites towards the north and east of the UK to enhance connectivity and population viability so the impact of climate is reduced.
- Where possible record local climate conditions at monitoring sites as these may increase the power to detect the effect of climate on dormouse populations.
- Deer population control and avoiding wild boar introductions to dormouse sites may lower winter mortality from trampling and predation.

Key words/phrases

Muscardinus avellanarius; climate change; pre-hibernation weight; abundance; rainfall; predation