

# Sleeping through danger: the dormouse approach to survival

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Amid the general rejoicing over the first signs of spring, spare a thought for the humble dormouse, which is about to embark on the most dangerous period of its life. This is the surprising finding of a long-term study of dormouse survival rates in five different countries in Europe, coordinated by the group of Thomas Ruf at the University of Veterinary Medicine, Vienna. The results have recently been published online by the journal *Ecography*.

The dormouse in Alice in Wonderland was well advised to stay asleep – especially as doing so did not prevent it from taking a full part in the tea-time conversation. Dormice in Europe spend about eight months of the year asleep and are extremely safe during this extended period, with almost all of them surviving the winter. This result comes from a study of dormouse [survival rates](#) in Austria, the Czech Republic, England, Germany and Italy.

Karin Lebl was a PhD student in Ruf's group. Together with collaboration partners in these countries, she examined how the survival of dormice living in the wild varies according to a number of factors, including the time of the year, various climatic factors and the animals' reproductive behaviour. In contrast to some species of marmot, for which hibernation is known to be associated with high mortality rates, the dormouse seems well able to accumulate enough fat reserves to survive even the harshest winter. Nevertheless, the work of Ruf's group showed that dormice in all five study countries are particularly vulnerable in early spring, immediately after they awake from

hibernation. The animals clearly lose weight as a result of spending eight months without food, so afterwards they spend a large amount of time foraging, which presumably makes them more susceptible to predators: owls, weasels, pine martens and both wild and domestic cats.

## **The risk of having young**

Unusually for small mammals, dormice do not breed every year. Instead, they "save" their reproductive efforts for years when there are good supplies of acorns or beech nuts. Such events occur irregularly and at different rates: in Germany, for example, seeding is considerable more frequent than in the study area in the northern Italian Alps. Lebl and Ruf found that mortality rates were significantly higher in years when the animals had young than in years when they did not. This may relate to the increased time the parents spend looking for food for their young or it may stem from the direct energy costs of reproduction. The upshot, though, is that dormice in "good" habitats in Germany, where oaks and beech trees frequently produce seeds, live on average for less than four years while dormice in the "poorer" habitats in northern Italy live on average for more than twice as long. Perhaps because they expect to die younger, German dormice tend to have larger litters than their longer-lived Italian cousins. Even so, dormice in Germany simply do not have time to produce the same number of young in their lifetimes as dormice in Italy.

So why do dormice in the Italian Alps live for so long? As Ruf says, "we can't really explain it. Despite what we may think, differences in the climate cannot account for our results – and we have no evidence to suggest that climate change is having any effect on the animals' survival. Our working hypothesis is that the major factor influencing the dormouse population is the type and number of predators. Maybe there are fewer predators in Italy or perhaps the Italian dormice have particularly successful methods for avoiding being eaten."

**More information:** The paper Survival rates in a small hibernator, the edible dormouse: a comparison across Europe by Karin Lebl, Claudia Bieber, Peter Adamík, Joanna Fietz, Pat Morris, Andrea Pilastro and Thomas Ruf has recently been published online by the journal *Ecography* and is available at [onlinelibrary.wiley.com/doi/10.1111/ecog.12500](https://onlinelibrary.wiley.com/doi/10.1111/ecog.12500)

Provided by University of Veterinary Medicine -- Vienna

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