Title: Daily torpor in free-ranging common dormice *(Muscardinus avellanarius* L.*)* in Lithuania, *Mammalian Biology, 2005*

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Background to study
Due to their size, common dormice are more sensitive to changes in temperature and as such are likely to enter daily torpor during their activity season to maximise energy conservation during periods of cold, stress or shortage of food and water. To date, few studies have been conducted on daily torpor patterns in free-ranging common dormice.

Method
- Capture-mark-recapture study of dormice in a 60 ha area of middle-aged mixed forest located in the Šakiai district of south-western Lithuania. Study was conducted from 1997 to 2004.
- Nest boxes were erected at 50 m intervals at 4/ha density and checked monthly throughout the activity season. All individuals were marked using rings and juveniles <10 g with toe amputations. Data on weight, sex, age and activity state; torpid (totally immobile), active or intermediate (limited mobility) was obtained.
- Torpid and intermediate dormouse encounters of 1038 dormice between 1997 and 2004 were pooled to calculate the prevalence of torpor. The effects of time of day, ambient temperature (forest recordings), mean temperature (recorded <50 km away), age and sex were investigated on dormouse encounters using 357 nestboxes, checked twice per month during 2003 and 2004.

Key results
- The proportion of torpid dormice encountered varied between months, increasing when the mean monthly air temperature was lower. The lowest proportion of dormice found in torpor was observed in August and September when dormice accumulate fat reserves for hibernation.
- The presence of torpid dormice was related to ambient temperature and time of day. In spring and summer dormouse torpidity increased when ambient temperature as <14-15 °C and were recorded am and pm when the temperature remained low all day, notably in spring. More frequently, torpid dormice were encountered in the mornings when the temperature was lower.
- In autumn, dormouse torpidity was less prolific, despite low ambient temperatures. This is likely to be due to dormice exploiting food resources to gain fat reserves before hibernation.
- Torpor was more frequent in male than female dormice (75% and 46% respectively). Pregnant females and those with litters were primarily active and seldom in intermediate stage of torpor.
- Young-of-the-year entered torpor less frequently than adults in July and October.
- In autumn, heavier (22.3 g) young-of-the-year dormice were found in torpor in comparison to lighter (17.5 g) individuals of the same age. Conversely in spring, individuals <15 g were frequently found in torpor, becoming more active in autumn.

Key messages to landowners and managers derived from these results
- Dormouse box checks should be conducted later in the day to prevent disturbing torpid dormice.
- The daily torpor of dormice is affected by both environmental (weather and food availability) and biological (weight, sex and breeding condition) factors. Increasing tree and shrub diversity to provide successional food resources for dormice throughout their activity season will help reduce the need for daily torpor caused by food shortages.

Key words/phrases
Common dormouse; *Muscardinus avellanarius*; Lithuania; daily torpor; ambient temperature; season