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Deeply torpid bats can change position without elevation of body temperature

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Abstract

Because body temperature is tightly coupled to physiological function, hibernating animals entering deep torpor are typically immobile. We analysed thermal behaviour and locomotory activity of hibernating greater mouse-eared bats *Myotis myotis* and found two types of movement behaviour related to body temperature, i.e. movement at high fur temperature and at low fur temperatures (Tflow; < 5 °C). First Tflow movements appeared at the beginning of March and often occurred during long torpor bouts. In most cases, Tflow events represented slow displacements between clusters of bats. In several cases, however, departure or arrivals from and into clusters was also recorded without any elevation in body temperature. Distance travelled, flight duration and speed of locomotion during Tflow events was lower than in high fur temperature events. Such behaviour could allow bats to save energy long-term and prolong torpor bouts. Tflow movement in torpid bats significantly changes our understanding of basic hibernation principles and we strongly recommend further studies on the subject.

Abbreviations