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Room: Seminar Room

Age-dependent effects of predation risk on night-time hypothermia in blue- and great tits

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During winter at northern latitudes, many factors combine to constrain the energy budget of passerine birds. The days are short, there is often snow cover, and ambient temperatures can be very low. Therefore, it is crucial for these birds to maximize energy intake and minimize energy loss.

One way to conserve energy is to use night-time hypothermia, which reduces the temperature gradient between the body and the surrounding air. Together with behavioural strategies (such as ptiloerection and body posture) hypothermia reduces heat loss and consequently energy expenditure. Even shallow hypothermia (< 10 °C body temperature reduction), which is common in our study populations of great tits (*Parus major*) and blue tits (*Cyanistes caeruleus*), can reduce the metabolic demands substantially.

We know from previous studies that if blue tits are fed *ad libitum* they avoid hypothermia during the night, implying that there are costs associated with this strategy. A potential and likely cost is an increased risk of night-time predation, due to slow escape response by hypothermic birds at nocturnal predation attempts. Unfortunately, data on the effect of predation risk on nocturnal hypothermia is scarce. In this talk I will discuss a recent experiment where we increased perceived night-time predation risk by adding olfactory predator cues to nest-boxes. Roosting blue tits were less prone to use hypothermia as an energy-saving strategy at low ambient temperatures. However, this seems to hold true for first winter birds (2k) only, but not for second winter or older (3k+) birds. Interestingly, preliminary data indicate that great tits of different ages respond in a similar manner to increased perceived predation risk. Understanding these costs is important since night-time hypothermia and other facultative hypothermic responses are common and widespread across the avian phylogeny.