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## Artificial light at night affects sleep behaviour differently in two closely related hole-nesting songbird species

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Artificial light at night (ALAN) or light pollution is an increasing and worldwide problem. There is growing concern that because of the disruption of natural light cycles, ALAN may pose serious risks for wildlife. While ALAN has been shown to affect many aspects of animal behaviour and physiology, few studies have experimentally studied whether individuals of different species in the wild respond differently to ALAN. Here, we investigated the effect of ALAN on sleep behaviour in two closely related songbird species inhabiting the same study area and roosting/breeding in similar nest boxes. We experimentally exposed free-living great tits (*Parus major*) and blue tits (*Cyanistes caeruleus*) to artificial light inside their nest boxes and observed changes in their sleep behaviour compared to the previous night when the nest boxes were dark. In line with previous studies, sleep behaviour of both species did not differ under dark conditions. ALAN disrupted sleep in both great and blue tits. However, compared to blue tits, great tits showed more pronounced effects and more aspects of sleep were affected. Light exposed great tits entered the nest boxes and fell asleep later, woke up and exited the nest boxes earlier, and the total sleep amount and sleep percentage were reduced. By contrast, these changes in sleep behaviour were not found in light exposed blue tits. Our field experiment, using exactly the same light manipulation in both species, provides direct evidence that two closely related species respond differently to ALAN, while their sleep behaviour under dark conditions was similar. Our research suggests that findings for one species cannot necessarily be generalised to other species, even closely-related species. Furthermore, species-specific effects could have implications for community dynamics.