
Response to Human Induced Changes

Effects of artificial light at night on behavior of two small mammal species

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Natural light functions as an important zeitgeber in many animal species which use this external stimulus to adapt to predictable environmental changes throughout the day and season (Zordan et al. 2001). Besides the increasing spatial spread and intensity of nighttime illumination there is a shift towards new lighting techniques such as light emitting diodes (LEDs) that are characterized by a broad spectrum with a large proportion of blue light (Gaston et al. 2012). This portion of the spectrum is known to most affectively suppress melatonin production (Brainard et al. 1984) and thereby influencing activity rhythms. What is missing are experiments under more natural conditions that clarify if laboratory results are applicable to animals in the wild and take into account possible effects of artificial light at night on species interaction and competition. In this study, the effect of artificial light at night emitted by LEDs on the activity and space use of bank voles (*Myodes glareolus*) and striped field mice (*Apodemus agrarius*) was investigated in semi-natural outdoor enclosures via automated VHF radio telemetry. The data indicates that both species show an increased spatial range during nights with artificial illumination that is similar to their home ranges during daytime. Additionally, they are less active during the day that follows an illuminated night. Changes in home range overlap between individuals could not be found in dyads consisting of the two different species but within one species reduced overlap when subjected to light at night. These observations indicate that artificial light at night effects individual space use as well as interactions between individuals which potentially has severe ecological consequences for natural populations and communities.

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6th International Conference of Rodent
Biology and Management
and
16th Rodens et Spatium

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Book of Abstracts



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