

Use of the forest canopy by bats in temperate forests in the Thayatal National Park

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Keywords

bats, canopy, forest, batcorder, Thayatal National Park

Abstract

The objective of this study is to explore the behaviour of bats in different forest strata in the area of the Thayatal National Park. Hence, the ground level activity of bats was measured and compared to the activity in the canopy level of the forest.

It is well known, that, in tropical areas, most species primarily forage in the higher canopy levels. This behaviour makes their detection from the ground with standard methods difficult. So far, very few studies had been carried out in central Europe, addressing the issue. The aim of this study was to extend our knowledge about the behaviour of forest bat species and to compare the results with pre-existing information. Furthermore, we provide guidelines for future management and monitoring of threatened forest bat species. Furthermore the data of this study were part of a full inventory project of bats the National Park from 2009- 2010. This project was performed by the Austrian Coordination Centre for Bat Conservation and Research (KFFÖ) and gives a complete overview about the actual distribution and conservation status of all bat species in the area (HÜTTMEIR & REITER 2011).

Woodland is one of the most important foraging habitats for bats, and therefore, a detailed understanding about the foraging behaviour of bats is essential (CELUCH & KROPIL 2008). The Thayatal National Park was selected as study area because of its considerable expanse of natural forests with a low amount of human interference. Furthermore, it is known that there is a high diversity of bat species in this National Park (HÜTTMEIR et. al 2011). 22 out of 28 native Austrian species can be found in this area. Due to this situation, we expected to gain a vast amount of data for a wide range of bat species and to be able to generate reliable predictions about their foraging behaviour.

The standard method for sampling bats in a forest area is observation from the ground level. However, it was suspected that some bat species tend to prefer the canopy area and therefore being underrepresented in the usual sampling methods. The sampling effort spanned 48 nights in the year 2010, with automatic recording devices, one Batcorder (ecoObs, Nuremberg, Germany, www.ecoobs.de) placed in the canopy (up to 19 m) and one on the ground level. The batcorder in the canopy was mounted using a slingshot and ropes. With some experience it was possible to install the devices within 10 minutes in the canopy (depending on the forest). Batcorders are ultrasound recording devices and with it is possible to identify the different bat species and their activity in the different strata.

Results show that at least 50 % of the studied species prefer the canopy level at least during one of the three measured seasons. Especially the Bechstein's bat (*Myotis bechsteinii*) and the Alcaholic Whiskered Bat (*Myotis alcathoe*), which are very specialized forest species, showed clear preferences for the canopy level. This results show, that species which prefer the ground level, the standard methods seems suitable. However, it is likely that for specialised forest species, which prefer old, natural forest areas, the standard monitoring methods are not sufficient underestimated their activity, and hence their conservation status is estimated incorrectly. Therefore it is important to implement the method presented in this study for future monitoring and inventory studies of these threatened species.

Due to the increase of wind energy, power plants are now also planned in forested areas. Wind turbines are a serious threat for high flying bat species. Therefore, this study presents new insights into the vertical distribution of the Austrian bat species, but further studies are required, to assess the activity level above the canopy area.

For further information see PLANK et. al (2012), where this study is presented in detail.

References

- CELUCH, M. & R. KROPIL 2008. Bats in a Carpathian beech-oak forest (Central Europe): habitat use, foraging assemblages and activity patterns. *Folia Zoologica* 57, 358-372.
- HÜTTMEIR, U. & G. REITER 2011, Fledermäuse im Nationalpark Thayatal. Unpubl. Bericht im Auftrag der NP Thayatal GmbH. 102 Seiten

HÜTTMEIR, U., REITER, A. & G. REITER 2011. Fledermäuse in den Nationalparks Thayatal und Podyji, sowie Erstdnachweis der Nymphenfledermaus (*Myotis alcathoe* Helversen & Heller, 2001) in Niederösterreich. Wissenschaftliche Mitteilungen aus dem Niederösterreichischen Landesmuseum 21, 433-444.

PLANK, M., FIEDLER, K. & G. REITER 2012. Use of forest strata by bats in temperate forests. Journal of Zoology (London), 286: 154–162.

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