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Museum Koenig Bonn

## High from the air, drones help survey sand lizard habitat

Understanding the space use and habitat needs of animals is essential for effective species conservation. Small animals use small structures that are difficult to monitor. LIB researchers have now used drones in a study to depict these small structures in high-resolution habitat maps. The research team was able to show how important low blackberry bushes are for sand lizards in the Dellbrücker Heide in Cologne. The drone method can find application in nature conservation and landscape planning.

"What is their neighborhood or quarter for people is their home range for wild animals," explains Dr. Dennis Rödder, curator of Herpetology section at the Leibniz Institute for the Analysis of Biodiversity Change (LIB), Museum Koenig Bonn. This area is familiar to them, it's where they move around and it fulfills their ecological needs in their daily lives, from food to shelter. After exploring the surrounding area, the animals usually return to this area. Therefore, mapping the habitat in the home range can provide valuable insights into the spatial and structural needs of wildlife. Understanding these requirements is becoming increasingly important as human impacts alter landscapes. "We hope that our work will not only remain theoretical, but will also find application in conservation and landscape planning," explains Vic Clement, PhD student at the LIB, Museum Koenig Bonn.

Sand lizards and their home range are small, as are the structures in their habitat. High-resolution maps depicting individual bushes, grass, sand or trees are therefore required for monitoring. Drones provide a remedy here: from a low altitude, they take high-resolution images of the area so that individual structures can be easily distinguished. The LIB researchers now merged the observed home ranges of the animals studied with the detailed map, and were thus able to examine the structure of the habitat within the boundaries of the home range and compare it with the surrounding area. Clement, Schluckebier, and Rödder demonstrated that sand lizards in the Dellbrücker Heide favor low brambles, while avoiding open sandy areas and high vegetation. Preferences for grass and other low bushes, on the other hand, vary from animal to animal.

"The sand lizard as a cultural successor is often a victim of disturbance, destruction, or fragmentation of its habitats by human activities. Compensatory and protective management could now be better formulated with our data," also hopes Rieke Schluckebier, Master's candidate in the Herpetology section at the LIB, Museum Koenig Bonn. In recent years, drones have increasingly proven to be a useful tool for answering ecological questions. This time-efficient method of surveying habitat structures can be of great benefit in the management of protected areas.

### Source

Clement, V.F., R. Schluckebier, & D. Rödder (2022). About lizards and unmanned aerial vehicles: assessing home range and habitat selection in *Lacerta agilis*. *Salamandra*, 58: 24–42.

<https://www.salamandra-journal.com/index.php/home/contents/2069-clement-v-f-r-schluckebier-d-roedder>

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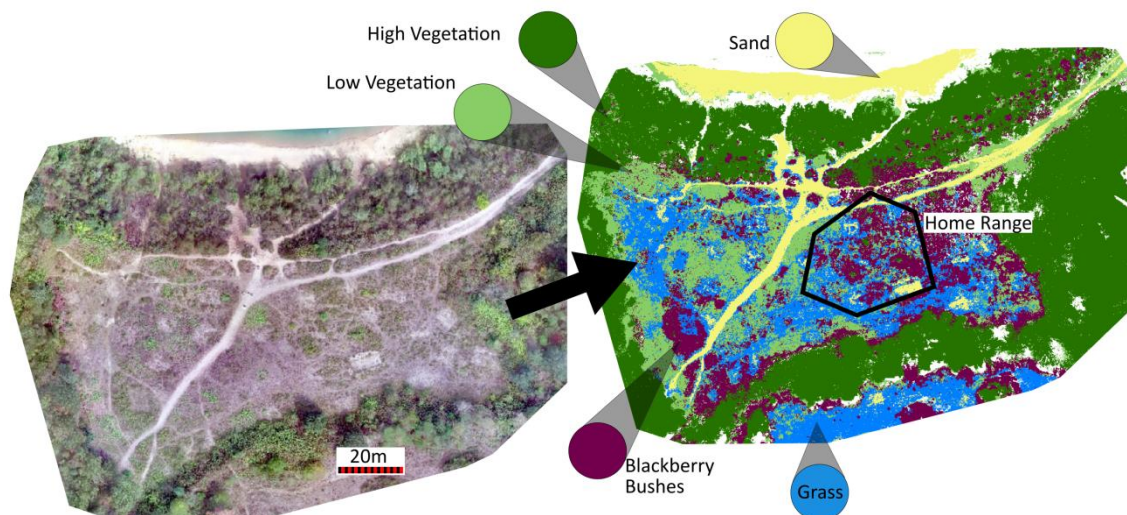
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**About the LIB**

The LIB is dedicated to researching biodiversity and its changes, the results of which are disseminated to the wider society in an educational manner. In order to better understand the current mass extinction of flora and fauna, researchers are looking for connections and causes of – often – man-made changes. The goal is to develop solutions for the preservation of ecosystems and species in order to maintain the basis of current life.

**About the Leibniz-Association**

The Leibniz Association combines 96 independent research institutes. Their focus ranges from the natural, engineering, and environmental sciences to the humanities and the business, space, and social sciences. The Leibniz institutes focus on relevant social, economic, and ecological issues. They perform knowledge-oriented and applied research (also among the cross-disciplinary Leibniz research alliances), are or support scientific infrastructures, and offer research-based services.



Caption: From a map generated from drone images, a categorical map is created with the help of the computer on which the home range is plotted. This allows the comparison of the habitat structure in the studied home range with the surrounding area.

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Caption: Male sand lizard (*Lacerta agilis*) on a branch.  
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