

Adaptations of Wildlife Communities to the Anthropocene

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The world is rapidly changing and wildlife will have to adapt to these changes to survive. With an increasing human population, more and more wildlife have to live in landscapes that are dominated by human activities. The survival of wildlife in these human-dominated landscapes is dependent on the tolerance of people to wildlife. We will thus need to strive for human-wildlife coexistence if we want to preserve the world's wildlife. At the same time, climate change might limit the adaptive capacity of wildlife to survive in novel landscapes.

As different species have different tolerances to both climate and habitat, wildlife communities might change in their composition. This might lead to cascading effects on ecosystems as wildlife play an important role in many ecosystem functions, from the dispersal of seeds and distribution of nutrients, to the transmission of pathogens. My research focusses on the monitoring of wildlife communities and studying how land-use and climate affect these communities. I use a combination of conservation technology – camera traps and acoustic sensors – and citizen science to strive for a collaborative monitoring of wildlife communities.

In this lecture, I will show the challenges associated with studying elusive wild animals, and how we can use technology, crowd-sourcing, and advanced statistical modelling to overcome these challenges. First, I will show how camera traps can be used to study whole wildlife communities with minimum disturbance. Then, I will show how we can use hierarchical models to overcome the issues related to how good we are at detecting different species.

I will show several examples of how the presence of animals in different parts of the landscape is influenced by both land-use and climate, and how wildlife species differ in their occurrence in human-dominated landscapes. The occurrence of a species in human-dominated landscapes, however, does not mean that this species is also thriving there. However, it is difficult to study fitness effects of coexisting with humans. A first step would be to gain information on reproduction and survival of individuals in different parts of the landscape. I will show how I aim to use conservation technology – camera traps and machine learning – in combination with advanced statistical models to estimate survival and reproduction of wildlife at a landscape scale.

A key characteristic of wildlife communities is the interaction among species. I will show how these species interactions are affected by both climate and land-use, as well as how species interactions might influence a species' capacity to adapt to changes in climate and land-use. Ultimately, the survival of wildlife in human-dominated landscapes depends on the tolerance of people. At the end of my lecture, I will share my vision of how I think technology might help to allow wildlife and people to coexist.