

Environmentally driven changes in resource selection behaviour over time

Level: Master

Start: Anytime

Project form: Literature review, data processing & analysis

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Anthropogenic climate and land use change affects species' behaviour (Sih et al. 2011), populations (Selwood et al. 2014) and distributions (Sunday et al. 2012), which in turn causes further ecological change (Wilson et al. 2020). GPS data from animals can give us valuable insights into the role of environmental drivers since it allows us to quantify their relative importance to an animal's decision-making process (Van Moorter et al. 2015). While there are several methods available to examine what role environmental variables such as rainfall, vegetation, and land cover play in an animal's movement process and habitat choice, these responses are often estimated for an animal's entire available movement trajectory, averaging across months or even years. However, recent studies on wolves (Uboni et al. 2015) and lynx (Nagl et al. 2022) showed that there is temporal variation in habitat selection behaviour and the relative importance of environmental variables to one individual can change. The aim of this project is to answer whether such changes can be observed in other species, and if they can be explained by fluctuations in the environment. You will conduct a literature review, identify which environmental variables drive the movement behaviour of the focal species, annotate GPS data with these variables, conduct resource selection analyses and analyse whether there is a relationship between selection coefficients and ongoing environmental change. This project will require experience with data management and statistical analysis in R.

References:

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- Wilson, M.W., Ridlon, A.D., Gaynor, K.M., Gaines, S.D., Stier, A.C. and Halpern, B.S. (2020), Ecological impacts of human-induced animal behaviour change. *Ecol. Lett.*, 23: 1522-1536.
- Selwood, K.E., McGeoch, M.A. and Mac Nally, R. (2015), The effects of climate change and land-use change on demographic rates and population viability. *Biol Rev*, 90: 837-853.
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- Van Moorter, B., Rolandsen, C.M., Basille, M. and Gaillard, J.-M. (2016), Movement is the glue connecting home ranges and habitat selection. *J Anim Ecol*, 85: 21-31.
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