Population- and community-level plant trait variability in changing arid environments

Initiative: zukunft.niedersachsen (nur ausgewählte Ausschreibungen)

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Plant communities are strongly affected by shifts in environmental conditions. These shifts can be caused by natural processes or human action and are not easily predictable, especially in extreme habitats such as deserts. To generate relevant and precise predictions about the fate of plant communities in changing environments, a mechanistic understanding of the key ecological processes occurring at the population and community levels is necessary. In this project, the variability in traits of plant species growing in arid conditions will be studied, where both water availability and soil salinity strongly limit plant growth. The differences in plant traits and the range of variability within and between species along environmental gradients will be used as an indication for the different strategies employed by species to cope with harsh environments. The true rose of Jericho will be used as exemplary study species, because it exhibits many traits related to drought and salinity. With field observations, field experiments and greenhouse studies, the relative role of plant traits and their variability for species success will be estimated. Strategic trait-based simulation models will also be developed that reflect population- and community dynamics of plants in arid environments. As field data become available during the course of the project, the strategic models will be turned into data-driven models. The main goal of the models is to project plant population- and community dynamics to broader temporal and spatial scales. The ultimate aim is to predict the potential changes in the composition of plant communities under various scenarios of future climate change based on plant traits.

Projektbeteiligte

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Es werden die Institutionen genannt, an denen das Vorhaben durchgeführt wurde, und nicht die aktuelle Adresse.

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