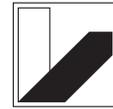


BayCEER Kolloquium

Lectures in Ecology and
Environmental Research

WS 2018/19



UNIVERSITÄT
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Thursday

22.11.2018

12:00 in H6, GEO

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Plant Ecology, BayCEER, UBT

How to tackle nonlinear and disequilibrium responses in ecology and environmental research

Traditional views in ecology assumed “relatively stable dynamic equilibrium” in ecosystem states and dynamics reflected in the “balance of nature” paradigm which stretches back into the early Greek culture. This equilibrium assumption dominated ecological research until the early 1970’s on all organizational scales from the physiological reaction of single individuals to ecosystem responses to changing environmental conditions. During the last decades, ecologists and environmental scientists increasingly realized that ecological responses to environmental changes are often nonlinear and in disequilibrium with the current environmental conditions. However, nonlinearity and disequilibrium dynamics remain still ignored when ecological data is collected and analyzed e.g. in ecological experiments. Pronounced nonlinearity and disequilibrium responses can however separate the observed ecological response from its real cause (environmental driver) which challenges researchers when seeking for mechanistic understanding of ecological processes. Missed or incompletely detected responses open the door for invalid assumptions about the mechanistic links between the observed responses and applied treatments, further leading to unreliable predictions about ecosystem functioning and service provisioning. A central reason for this disregard prevailing in ecology and environmental research might be that guidelines for the practical implementation of nonlinearity and disequilibrium responses in study design and data analysis are still insufficient.

In this talk I want to present some alternative approaches for data collection and analysis capable of capturing nonlinearity and disequilibrium conditions in ecological and environmental data and to stimulate discussion about the potential of such alternative ways for ecological and environmental research.