

Einladung zum Vortrag
im Rahmen des Kolloquiums Biologie und Umweltwissenschaften



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Physiological fitness indicators: a tool for ecosystem assessment and experimental ecology

Generally, environmental stress for a specific organism is caused by biotic and abiotic conditions differing from its environmental requirements. The capability to cope with this stress and the potential negative effects determines whether the particular organism is able to survive in the given habitat and whether it is possible for that species to maintain a stable population. This capability itself is determined by the physiological traits of the organism.

The general relationship between stress response and ecology of organisms has been well known for a long time. However, in many fields of ecology scientists observe patterns of habitat use or species composition in order to deduce environmental requirements rather than analysing environmental stress response directly. This might be caused by a lack of suitable indicators which can be measured under field conditions or are easy to analyse in ecological laboratories from field-collected organisms.

Within our studies over the last years we applied several physiological indicators to observe reactions of many different species to environmental conditions and the effects of species interactions. In particular, the amount of stored energy (measured as triglyceride and glycogen concentrations) and the growth proxy RNA:DNA ratio appear to be useful indicators of physiological fitness.

Within my talk I will present a short introduction to the theoretical and methodological background of applying these physiological indicators. Further, I highlight the possible future use of fitness indicators by selected case studies of stress responses observed in the field or simple laboratory experiments. The examples cover species interactions in amphipods, environmental stress in fish eggs and response of different benthic invertebrates to micro pollutants from waste water treatment plants.

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