UNIVERSITÄT KOBLENZ · LANDAU

SystemLink

„Crossing boundaries: Propagation of in-stream environmental alterations to adjacent terrestrial ecosytems“

THE GRADUATE SCHOOL SYSTEMLINK INVITES TO

LECTURE SERIES

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Title: **Artificial light at night affects biotic linkages between aquatic and riparian ecosystems**

Abstract:

Among the most prominent consequences of artificial light at night (ALAN) are alterations of animal behavior and movement. This can lead to large-scale changes in migratory patterns and to small-scale redistributions within and across ecosystems. Many organisms move from freshwater systems to the adjacent riparian areas and constitute important trophic subsidies for consumers in recipient ecosystems. However, the natural dynamics of these subsidy fluxes are increasingly threatened by anthropogenic alterations of both aquatic and terrestrial areas. The extent to which these fluxes are affected by ALAN is still under evaluation. In a two-year field experiment conducted in artificial flumes of a sub-alpine stream in Northern Italy and in an agricultural drainage ditch system in Northern Germany, previously ALAN-naïve systems were illuminated with artificial illumination, and the response of local aquatic and terrestrial arthropod communities was assessed. When riverine benthic invertebrates were exposed to ALAN, there was a decrease in total drift and a subsequent increase in total benthic density. We also observed an increase in the number of emerging aquatic insects under ALAN, increasing the subsidy biomass for riparian consumers. The streetlights attracted both freshwater and terrestrial flying insects into the riparian area. The community composition of riparian arthropods was affected by artificial illumination resulting in a selection for specific predatory and scavenging taxa.

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