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Eawag Seminar Invitation

Linking Internal Phosphorus Loading and Internal Waves in Lakes to Rapid Daphnia Evolution via Cyanobacterial Blooms

Speaker **Prof. Nelson Hairston, Jr.,**
Cornell University, Department of Ecology and Evolutionary Biology, Ithaca, New York, USA

When **October 12, 11.00 – 12.00 a.m.**

Where **Forum Chriesbach, room C20, Eawag Dübendorf**

Abstract Limnology is such a stimulating discipline: within a single system one can discover tight and important connections between many different branches of science. In this talk I will show for shallow lakes, in the Finger Lakes region of New York State, how an accumulation of phosphorus in the hypolimnion due to anoxic chemical reducing conditions, is transported to the epilimnion by high-amplitude internal waves travelling along the thermocline, leading to significant late-summer cyanobacterial blooms (in a lake with low external P loading). I then show how seasonally changing phytoplankton composition selects for evolution of distinct Daphnia clones over the course of a single season, with genotypes that are highly sensitive to dietary cyanobacteria (good growth on spring diatoms and cyryptophytes – poor growth on cyanobacteria) dominating in spring, and different genotypes that are relatively tolerant of dietary cyanobacteria dominating in late summer. Thus my talk moves from redox dynamics, to internal phosphorus loading, to hydrodynamics, to phytoplankton composition, to evolution of a planktonic consumer. Limnology is pretty terrific!