



## **Identifying drivers of biodiversity change from fossil long-lived lakes: lessons for risk and resilience of today's long-lived lake biota.**

Frank Wesselingh

Netherlands (frank.wesselingh@naturalis.nl)

Several fossil long-lived lake systems exist that have a very good spatiotemporal geological and faunal record enabling us to study timeseries of biodiversity change. These complexes, such as the Miocene Pannonian and Quaternary Pontocaspian systems of Europe, Quaternary Lake Biwa in Japan and the Miocene Pebas System in South America enable us to assess the impact of environmental stability and perturbation on component processes of turnover, e.g. migration, speciation and extinction/ extirpation. Also, the temporal dimensions of such processes can be clarified and compared to the nature and rates of current turnover in long-lived lake systems. Our studies suggest that we are currently witnessing dramatic biodiversity loss caused mostly by habitat degradation and destruction in smaller lakes and invasives in larger lakes that may exceed the potential of endemic lake biota to recover. Long-lived lakes should serve as an excellent illustration of the magnitude of the current anthropogenic-induced biodiversity crisis.