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Salle Wegener 105, bât. B35 (rez-de-chaussée, aile nord)

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Diversification in Darwin's dreamponds: a comparative perspective on organismal evolution in the African Great Lakes

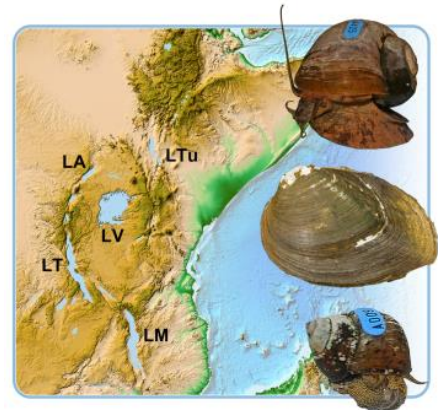


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The East African Great Lakes (EAGL) are collectively the earth's most remarkable and species-rich freshwater feature. Intrinsic biological factors and extrinsic ecological opportunities allowed much of the lakes' spectacular biodiversity to evolve through evolutionary (often adaptive) radiation and explosive speciation. The clearest testimony of this evolutionary success in terms of morphological and behavioral disparity as well as species richness is presented by cichlid fishes. However, various aquatic invertebrates likewise diversified markedly in the EAGL and here I highlight aspects of this invertebrate biodiversity, notably of mollusks. Considerable extant diversity and rich archives of well-preserved, identifiable fossils present an exceptional opportunity to study the evolutionary patterns and processes that have contributed to invertebrate evolution in the EAGL. I exemplify these opportunities with studies on gastropods from Lake Malawi. Integrating paleontological and evolutionary ecological perspectives I focus on the role of neutral and selective processes in evolutionary radiations and how the effects of these processes interact in space. To study how these processes interact in time I examine evolutionary stasis in a fossil gastropod lineage. These studies reveal that rapid changes in morphology over historical periods can be reconciled with limited accumulated change over long (paleontological) timescales. Beyond detailed studies in single lake basins the EAGL presents a 'natural laboratory of quasi-replicate systems' on a continental scale, and, hence, the opportunity for comparative studies (focusing on various lake basins and/or several taxa) of organismal evolution. I present insights into continent-wide patterns of diversity, but generalizations are difficult to draw from the taxonomically restricted set of current examples. Nevertheless, insights into evolutionary patterns over various spatial scales (from that of a basin to that of the continent) provide a promising basis to synthesize micro and macroevolutionary perspectives on organismal evolution in the EAGL.



Bert Van Boxclaer is an integrative evolutionary biologist broadly interested in patterns and processes of organismal diversification. He is also a research associate at Ghent University (Belgium) and at the Smithsonian National Museum of Natural History (DC, USA).