

Biodiversity and biogeography of diatom (Bacillariophyta) communities in tropical high-elevation lakes in the Rwenzori Mountains (Uganda DR Congo)

As a result of global warming, ice caps and glaciers in the mountain regions of tropical Africa are expected to disappear within two decades. Clearly, loss of permanent ice from the tops of the highest mountains in Africa will have profound effects on the hydrology and temperature regime of the unique tropical cold-water lakes located downstream from those glaciers. This by itself may have a severe impact on the integrity and function of Afro-alpine aquatic ecosystems and the biological diversity they harbour, in addition to the direct effects of a regional rise in air temperature. Consequently, there is an urgent need to characterize the aquatic fauna and flora of these still relatively pristine mountain lakes, to determine their uniqueness in relation to both African lowland lakes and alpine lakes in temperate regions, and to monitor future changes in their biological diversity. In this context, we sampled the aquatic biota of 17 lakes and 11 pools in the Rwenzori Mountains (Uganda-DR Congo), the majority of which are located at or above 3500 m asl in the Ericaceous (~3100-3800 m), Alpine (~3800-4300 m) or Nival zone (>4300 m). The lakes can largely be divided into two groups: (1) lakes located near or above 4000 m, with at least some direct input of glacial meltwater and surrounded by rocky catchments or alpine vegetation; and (2) lakes located mostly below 4000 m, remote from glaciers and surrounded by Ericaceous vegetation and/or bogs. The former group are mildly acidic to neutral clear-water lakes with often above-average dissolved-ion concentrations; the latter group are mildly to strongly acidity waters stained by dissolved organic carbon and more modest transparency. This thesis aims to characterize the floral biodiversity in these contrasting lake types, with special emphasis on the diatoms (Bacillariophyta).

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