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## Tackling soil degradation and environmental changes in Lake Manyara Basin, Tanzania to support sustainable landscape/ecosystem management.

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### Abstract

The Lake Manyara Basin (LMB), which encompasses Lake Manyara National Park a world ranking World Biosphere Reserve, is of great ecological and socio-economic value because it hosts a small-holder rain fed and extensive irrigation agriculture, grazing grounds for pastoralists, terrestrial and aquatic habitat for wildlife and tourism business contributing to poverty alleviation. Despite these multiple ecosystem services that support the local communities, the LMB is threatened by; (a) siltation from eroded soil fed from the wider catchment and rift escarpment of the basin and (b) declining water levels due to water capture by agriculture and possibly climate change. These threats to the ecosystem and its services are augmented by increasing human population, pollution by agricultural pesticides, poaching, human encroachment and infrastructure development, and illegal fisheries. Despite these challenges, here is a dearth of information on erosion hotspots and to date soil erosion and siltation problems in LMB have been interpreted largely in qualitative terms, and no coherent interpretative framework of these records exists. Despite concerns that modern sediment fluxes to the Lake may exceed long-term fluxes, little is known about erosion sources, how erosion rates and processes vary across the landscape and how erosion rates are influenced by the strong climate gradients in the basin. This contribution describes a soil erosion and sediment management project that aims to deliver a demonstration dataset generated from inter-disciplinary sediment-source tracing technologies and approaches to assess erosion hotspots, processes and spatial patterns of erosion in the area. The work focuses on a sub basin, the Monduli Sub catchment, located within the greater LMB. This is part of efforts to establish an understanding of soil erosion and landscape degradation in the basin as a pathway for generating and developing knowledge, building capacity to assist conservationists, farmers and pastoralists, agro-entrepreneurs, and their support agents to address the problems while feeding the information into the national development policies in Tanzania and the entire East African region.