

THE BIOINDICATION POTENTIAL OF PARASITIC FAUNA INFECTING MACROINVERTEBRATES IN AFRICAN WETLANDS

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The growing communities of Sub-Saharan Africa draw vital support from the region's lakes and rivers. These precious freshwater areas, including wetlands, are threatened by climate change and the increase of anthropogenic exploitation. To ensure sustainable management and protection of these vital water resources, continuous water quality monitoring protocols must be established. As part of water quality monitoring practices worldwide, the community composition of freshwater macroinvertebrates is used to inform on the biological health of wetland ecosystems. Different groups of macroinvertebrates are more or less sensitive to changes in the physicochemical properties, making them suitable for use in bioindication. Parasites infecting the macroinvertebrate hosts can act as sensitive bioindicators, serving as a magnifying lens for ecosystem change. Parasites can also provide valuable insights into the overall state of the ecosystem, as their reliance on specific transmission pathways offers information about their host organisms and the impacts of anthropogenic stressors. Due to the often overdispersed nature of their populations, parasites appear to be more sensitive to subtle environmental changes than their hosts. As such, they can integrate the effects of stressors (e.g. through heavy metal accumulation in soft tissues) throughout time. Within the AfroWetMaP programme, this PhD project aims to add parasitological perspectives into water quality monitoring. We promote an ecologically holistic and One Health-aligned approach to conservation by considering the role parasites and their macroinvertebrate hosts play in ecosystem function. We aim to develop and refine ecosystem health monitoring techniques such as barcoding protocols that will make eDNA-based monitoring possible. As a starting point, we are identifying and barcoding macroinvertebrates and their

associated parasite fauna collected from diverse wetland localities in Burundi including Rusizi National Park.