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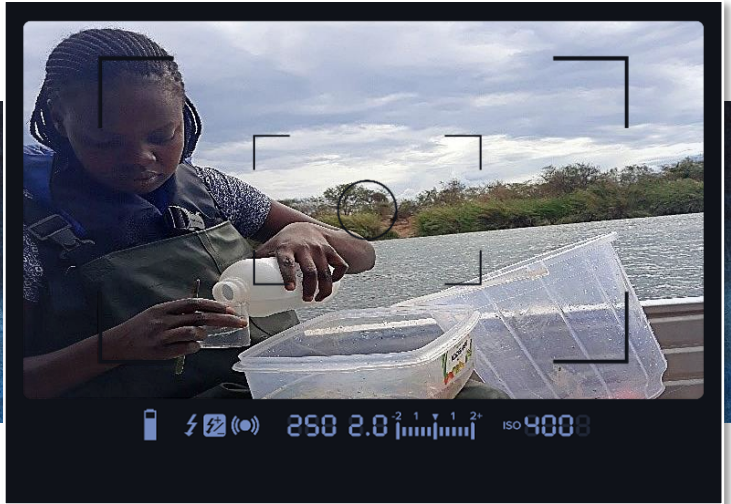Climate Change and
Adaptive Land Management
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STUDENT FEATURE

Victoria Ngwenya

Ecological river health assessment of the Barotse Floodplains

Victoria is enrolled in a Master of Science in Integrated Water Resource Management at the Integrated Water Resources Management Centre, University of Zambia, Lusaka, Zambia. Her thesis title is "Ecological river health assessment of the Barotse Floodplains ".

Figure 1: Victoria (Msc UNZA) in the field sampling Benthic Macro-invertebrates. With her study, she aims to assess the ecological river health of the Barotse flood plains.

What contribution Victoria wants to make with her study?

One of the greatest challenges of this century is to sustain the functional attributes of ecosystems. Ecosystems worldwide are continually threatened by various anthropogenic activities such as agriculture, waste disposal and deforestation. In order to effectively protect river ecosystems, there is a need to constantly assess the ecological condition of the ecosystem.
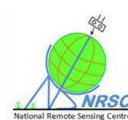
With her study, Victoria aims to assess the ecological river health of the Barotse flood plains. The floodplain will be assessed for its biological, physical and chemical integrity using the Shannon diversity index, habitat evaluation index (QHEI) and water quality index respectively.

The parameters to be used in the assessment of QHEI will include vegetation cover, flow and channel alteration. Furthermore, a land-use map will be generated to assess which anthropogenic activities in the floodplain affect the ecological health.

Figure 2: Sampling of Benthic Macro-invertebrates

Data collection and methodology

During the first field campaign which was carried out in November 2019, water samples were collected across the floodplains and tested for their physiochemical parameters i.e. pH, temperature, conductivity and Dissolved oxygen (DO). Benthic Macro-invertebrates were collected using a standard net and the physical habitat condition was visually inspected.

To obtain insight into the vegetation cover, Victoria is using Landsat imagery for a Land Use classification, which she has for delineation of integrated units of sampling. These integrated units are zones with similar characteristics such as similar geomorphology (e.g highland areas), similar land cover/land use (floodplain vegetation or woodland area), hydrology (high runoff or high discharge areas). These indicators are integrated into one map to create zones. Moreover, Victoria will explore how to differentiate vegetation types using the Copernicus satellite data Sentinel 1 ASAR dataset.