



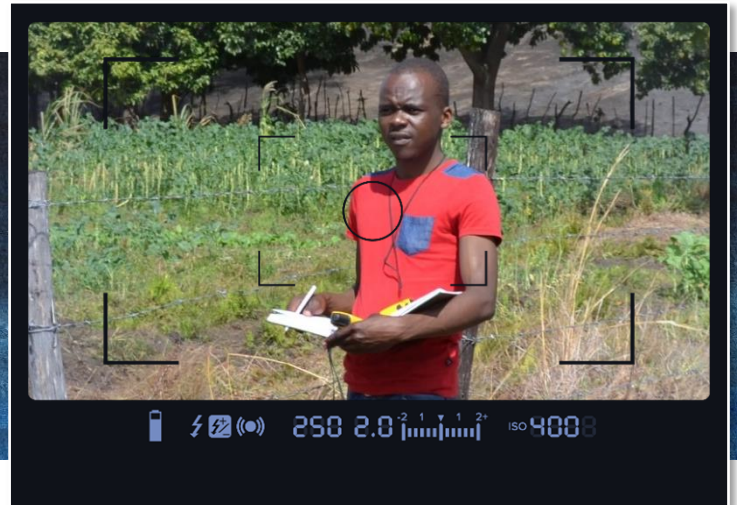
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## STUDENT FEATURE

### Musasa Tatenda

Sustainability of wetland resource utilisation patterns in the Driefontein and Intunjambili wetlands in Zimbabwe



Musasa is enrolled in a Master of Philosophy in Geography and Environmental Studies at the Department of Geography and Environmental Studies, Midlands State University, Gweru, Zimbabwe. His thesis title is "Sustainability of wetland resource utilisation patterns in Driefontein and Intunjambili wetlands, Zimbabwe".

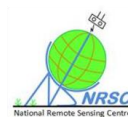


Figure 1: Musasa Tatenda (MPhil at MSU) gathering ground truthing information in the field. Musasa will use satellite imagery from the Copernicus programme and from other satellite providers, to assess land cover or land use changes in the Driefontein and Intunjambili wetlands.

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### *What contribution Musasa wants to make with his study?*

Musasa explains that the aim of his thesis will be to examine the sustainability of wetland resource utilisation patterns in the Driefontein and Intunjambili wetlands in Zimbabwe. In order to achieve this, his study focuses on factors that influence wetland utilisation in the Driefontein and Intunjambili wetlands.

He plans to conduct a detailed analysis on the provisioning and cultural services that the surrounding local communities derive from wetlands. Given the inherent subjectivity of qualitative methods of data collection, remotely sensed data from the Copernicus programme and other satellite providers will be used to assess land cover or land use changes in the Driefontein and Intunjambili wetlands.



Figure 2: The satellite images of the Driefontein wetland in 1997 (Landsat 4) and the Driefontein wetland in 2019 (Sentinel 2B) show some land use changes in the area, with more crops in the north-east part of the 2019 image as opposed to 1997, which is explained by higher population density in the area, necessitating crop production for subsistence farming.

The sustainability of current human wetland use patterns will be analysed using the [WET-Sustainable Use](#) framework. Whilst several frameworks have been developed to assess the sustainability of land use practices ([Kotze and Malan, 2010](#)), information on the sustainability of wetland resource utilisation patterns across Sub Saharan Africa is still inadequate. In 2016, [Marambanyika et al](#) argued that to ensure that wetlands can continue to provide valuable ecosystem services in the future,

site specific studies should be conducted to assess the impact of human activities on wetland ecological conditions. Therefore, the study will go beyond the existing body of literature on wetland utilisation patterns by assessing the sustainability of current human wetland use practices.

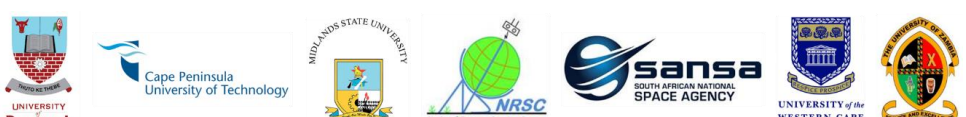
### *Musasa's work will contribute to a Wetland Monitoring and Assessment Service*

It is envisaged that the study will contribute invaluable information on sustainable wetland use practises that will consequently be integrated to produce the WeMAST Service (Wetland Monitoring and Assessment Service for Transboundary basins in Southern Africa), that is being developed by the

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WeMAST consortium. In December 2019, the WeMAST consortium formally engaged its users during a [Stakeholder Engagement and User Needs Assessment Workshop](#). During this workshop, the [Chirumhanzu community](#) at the Driefontein explained that since they've occupied the Driefontein wetland in 2000, they have noted the wetland decreasing in size. During a follow-up [field trip](#) to the Driefontein wetland, it was clear that the community reveres their wetland and as such the WeMAST consortium was requested to advise on sustainable wetland use practices to ensure that future generations still benefit from the wetland.

It is therefore clear, that the study will also contribute to the realisation of the Sustainable Development Goals (SDGs) 1 (No poverty), SDG 2 (Zero Hunger, achieve food security, improved nutrition and promote sustainable agriculture) and SDG 14 (Conserve and sustainably use the oceans, seas, wetland and marine resources for sustainable development).

### *Reconnaissance, community engagement and data collection*



Figure 3: Tatenda engaging with a community elder from the Chirumhanzu community at the Driefontein RAMSAR wetland

As a part of the student's study methodology, reconnaissance surveys have been conducted to familiarise himself with the study sites in the Driefontein wetland in Chirumhanzu district, Midlands province followed by the visit to the Intunjambili wetland in Matobo district, Matabeleland South.

During the familiarisation trip the student conducted ground truthing operations and collected geo information on features of interest (artificial wells, gardens, wetland boundaries). First maps for the study sites have been generated. Landsat imagery for the years 1997, 2000, 2005, 2010, 2015 and Sentinel 2 images for the years between 2017 and 2019 have been sourced in order to determine the extent to which human activities have altered the wetland's environmental conditions.

The WeMAST consortium looks forward to Tatenda sharing the results of his study and wish him the very best success for the months to come.

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