Project Advert 2023: Call for Applications

Phenology of vegetation and invertebrate communities at high-elevation wetlands in South Africa

Wetlands are formed in areas where water collects and is sustained by rainfall, springs or groundwater seepage. Globally, wetlands cover 8.6% of the land surface and take on a variety of different forms from mangroves to high-elevation peatlands. Wetlands provide a variety of provisioning, regulating, supporting and cultural ecosystem services to both local (e.g., water purification and storage) and global communities (e.g., carbon sequestration in peat). They are also strongholds of biodiversity with the degree of wetness being the strongest determinant for explaining species variability within them.

Wetlands have been long under threat from anthropogenic disturbances, with drainage being the leading threat to wetlands globally. This in part stems from the idea that wetlands are unfavourable and better used for agricultural purposes or land development. Wetlands are also negatively impacted by mining, afforestation, grazing, pollution and peat fires. Consequently, inland wetlands have been recently identified as one of the most threatened and unprotected habitat types in South Africa.

The services provided by wetlands to society makes their conservation imperative. A better understanding of wetlands, their structure and functioning, and the species that inhabit them are necessary to inform policy and better manage these complex ecosystems. This is especially true for plant and invertebrate communities that form the basis of most food chains. Plants and invertebrates are widely used as indicators of the integrity and functioning of ecosystems. Furthermore, they are effective surrogates to compare sites with different land management practices and environmental conditions.

Vegetation and invertebrate data were recorded at high-elevation wetlands in Mpumalanga Province, South Africa for three summer seasons: Middelpunt Wetland (cattle farm) and Verloren Valei (nature reserve). Several related environmental variables were also collected such as weather, water and soil characteristics. The objective of the study is to describe and explain the phenology (or seasonality) of the (1) vegetation and/or (2) invertebrate communities of these wetlands.

The following two options are available:

1. One MSc candidate

The candidate will explore both the vegetation and invertebrate datasets in separate chapters.

2. Two Honours students

One candidate will focus on the vegetation dataset and the other on the invertebrate dataset.

These results will be used in a larger project researching and conserving waterbirds and other faunal groups. The student will have freedom to refine the overarching objective as they explore the provided dataset. No further fieldwork is envisioned, but additional fieldwork can be arranged. The ideal student for this project has good numerical skills, experience analysing data in R, a willingness to learn new analytical programmes and familiarity with African ecology. The project will be co-supervised by the University of the Free State, University of Pretoria and BirdLife South Africa.

Applicants are to send the following information to marlize.muller@birdlife.org.za by 10 March 2023:

- One-page cover letter detailing why the applicant is interested in this project
- One-page CV highlighting the experiences of the applicant
- Certified proof of identification