

Wetland Research

in the NeWater Orange Basin Case Study

The Importance of Wetlands

In all parts of the world, wetlands provide a range of ecosystem goods and services. These are important both for human use and as part of a healthy freshwater system. There are several important ecological functions that they perform, such as sediment trapping, flood protection, and nutrient transfer. They provide an important habitat for a wide range of species, and provide food, fibre and medicines for local people. They are also important for cultural reasons.

Wetlands in the Orange Basin

Wetlands are very diverse systems, and in the Orange basin there are many different types. Each type of wetland has specific characteristics, and may perform different functions within a landscape. There are marked differences in the kinds of wetlands found in the basin, ranging from permanently inundated areas in the Lesotho Highlands, to almost permanently dry salt pans in the lower part of the basin, and the internationally important bird migration habitat in the delta wetlands on the Western coast of South Africa. This project focuses on the wetlands in the upper part of the Orange Basin.

Research activities

in the NeWater case study

Ecological assessment of wetland status

Analysis of wetland livelihoods

Comparative evaluation of different wetland types

Assessment of water purification by wetlands

Wetlands as a resource for farmers

Assessment of tourism options from wetlands



10 Case Study Wetlands

In consultation with local scientists, several sites were selected for detailed study. These have been chosen to represent different types of wetlands found in the Upper Orange: Floodplains, Valley Bottoms, and Hillslope seeps. Specific locations include:

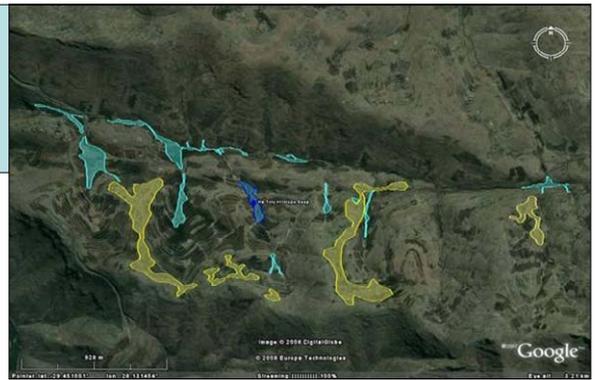
- ~ Seekoeivlei
- ~ Ha Letsie
- ~ Ha Tsiu
- ~ Klipspruit
- ~ Upper Wilge
- ~ Rapokolane
- ~ Ladybrand
- ~ Murphy's Rust
- ~ Reitspruit



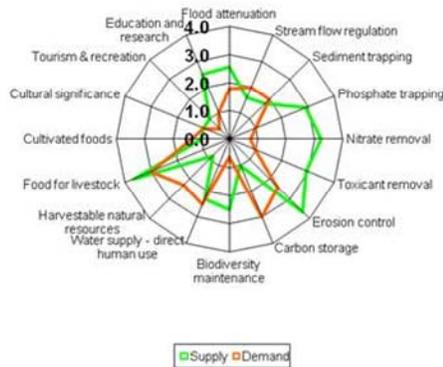
Website: www.newater.info

Wetland ecosystem services

A Hillslope seep: Ha Tsiu, Lesotho. The extent of dispersed settlements (yellow) and wetland systems (light blue) illustrate proximity of people to resources. The hillslope seepage wetland studied in detail is indicated in dark blue.



Goods & Services Assessment



The figure alongside provides a visual representation of the supply and demand for goods and services from the Ha Tsiu hillslope seep wetland. Key wetland benefits that warrant further investigation include the value of:

- *Food for livestock*
- *Harvestable natural resources*
- *Stream flow regulation (& water supply)*
- *Erosion control & sediment trapping*

Wetlands and Water Quality

The role of wetlands in water purification has been examined in the Klip River, South of Johannesburg. Using data from Rand water, changes in water chemistry upstream and downstream of the wetland have been examined, and significant changes in concentrations of chemical determinants have been found. Contributions of the wetland to achievement of DWAF water quality standards have been calculated.

Wetland Values

Valuing any kind of ecosystem is a very difficult task and wetlands are no exception. In order to incorporate these important values into our economic systems, it is necessary to assign some recognisable value to them. In this project we attempt to do this by examining the various ecosystem goods and services provided by them, and we use a variety of methods to assess both their social and financial value.

Cultural and social importance of Wetlands This type of ecosystem has provided cultural and livelihood support for communities in the upper Orange-Senqu basin for thousands of years. As part of this work, investigations into linkages between the social and ecological systems supporting such communities have been carried out by a number of researchers.

The NeWater Project is an international project funded by the European Union. It has 43 scientific partners and has case studies in the Rhine, Nile, Elbe, Tisza, Guadiana, Amudarya and Orange basins. The objective of the project is to support the transition towards more adaptive water management, particularly in the face of the uncertainties associated with climate change & other global change. Wetlands are a particular focus of the work in the Orange basin.

Key contacts for the NeWater Orange Wetlands Case Study Team:

Dr Caroline Sullivan, Oxford University, UK caroline.sullivan@ouce.ox.ac.uk (case study leader)

Myles Mander, Futureworks! Durban, South Africa Myles@futureworks.co.za

Doug Macfarlane Institute of Natural Resources, South Africa macfarlaned@ukzn.ac.za

Dr Chris Dickens, Institute of Natural Resources, South Africa dickensC@ukzn.ac.za

NOTE: There are a number of other organisations and researchers involved in this work, including the Stockholm Environment Institute (UK) and University of Osnabruck, (Germany)

Photos: D. Macfarlane