WATER RESEARCH COMMISSION

October 2009

The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

TECHNICAL BRIEF

Wetlands

Tools for effective management and rehabilitation of wetlands

A new series of integrated tools for effective management and rehabilitation of wetlands is now available from the WRC.

The WET-Management Series

The ***WET-Management Series*** is a set of integrated tools for assisting users to achieve well-informed and effective wetland management and rehabilitation.

It is the product of the Wetland Rehabilitation component of the National Wetlands Research Programme, an initiative of the Water Research Commission (WRC). This component was jointly funded by the WRC and the former Department of Environmental Affairs and Tourism, through the South African National Biodiversity Institute (SANBI). Other key partners include the Department of Water Affairs, Mondi Wetlands Project, provincial conservation agencies, universities and private enterprise.

Why are wetlands valuable

Wetlands are fascinating and dynamic ecosystems that provide indispensable ecosystem services. Commonly referred to as marshes, swamps, bogs or vleis, they constitute about 7% of South Africa's surface area. They support a range of specialised plant, insect, bird and mammal life and also supply wild food, grazing, building and craft materials to people. They absorb flood waters, improve water quality and regulate streamflow, helping to maintain ecosystem functioning downstream.

In many parts of South Africa wetlands are important sites for small-scale subsistence agriculture. Many culturally and economically important species are found in wetlands, including wild food, craft and medicinal plants that are important for rural communities.

Why rehabilitate wetlands?

Wetland loss in South Africa has been significant. Because wetlands are transitional between aquatic and terrestrial (water and land) ecosystems, they are vulnerable to impacts on both. In addition to direct impacts, such as draining for pastures and crops, or the construction of infrastructure such as roads that impede and concentrate water flows, there are also severe ongoing impacts from pollution and erosion in catchments as well as from excessive water abstraction, loss of vegetation cover, climate change and land use change.

Many of South Africa's wetlands are already lost because of agriculture, timber plantations, mining and urban development. Studies in several major catchments have revealed that between 35% and 60% of the wetlands, and the benefits they provide, have been lost or severely degraded. But degradation is not necessarily permanent, and international and South African experience has shown that it is possible to recover some of the health and values of degraded wetlands through rehabilitation.

Wetland rehabilitation as a means of addressing past degradation forms part of an effective wetland conservation strategy, as does protection and wise use. In South Africa, wetland conservation is being increasingly addressed through a range of policy and legislative frameworks, particularly within the environment and water sectors. Furthermore, several multilateral agreements to which South Africa is a party have incorporated the two-pronged approach to maintaining healthy wetlands while rehabilitating degraded ones.

What is wetland rehabilitation?

Wetland rehabilitation is the action taken to reverse or halt the decline of the health of the ecosystem, thereby returning it to a healthy state, and allowing some or even all of the lost wetland services to be recovered. Intervention is usually aimed at reinstating the driving forces – hydrological, ecological and geomorphological – that sustain and characterise wetlands, through measures such as:

- The building of concrete, earth or gabion structures to arrest erosion, trap sediment and resaturate drained wetland areas;
- Using structures and landscaping to reinstate diminished flood mitigation and water quality enhancement functions;
- Plugging of artificial drainage channels;
- Addressing off-site causes of degradation, such as inappropriate agricultural practices;
- Re-vegetation and bio-engineering;
- Eradicating invasive alien plants;
- Raising awareness of wetlands among workers, landowners and the public;
- Providing technical skills; and
- Developing management plans for the rehabilitated wetlands.

Challenges of wetland rehabilitation

The challenges of wetland management and rehabilitation span a range of spatial scales and institutional levels, from the national and provincial to the level of specific wetland sites involving individual landowners. Whereas national policy and legislation provide clear direction and support for rehabilitation, the very complex links between people and wetlands mean that actions aimed at sustainably rehabilitating and conserving wetlands will depend on the dedication and commitment of all stakeholders, especially landowners and wetland users.

When planning rehabilitation, it is therefore necessary to consult openly and comprehensively, and incorporate the contributions of landowners, land users and other key stakeholders such as municipal bodies or provincial departments who will also benefit from the rehabilitation.

Care must be taken to address both the causes and symptoms of wetland degradation. Clear measurable objectives are required and rehabilitation plans need to be developed with a multidisciplinary team that includes expertise in both ecological functioning and the design of rehabilitation structures.

What the *WET-Management Series* offers

The series of wetland management and rehabilitation tools (individually mentioned in brackets) offer a sound scientific basis for planning, implementing and evaluating wetland rehabilitation, providing guidelines to:

- Develop an overall planning framework (*WET-RehabPlan*);
- Assessing the condition of catchments and individual wetlands (*WET-Health*);
- Assessing the functions and values of individual wetlands (*WET-EcoServices*);
- Evaluating the need for rehabilitation (*WET-Prioritise* and *WET-Legal*);
- Identifying why wetlands degrade and what rehabilitation interventions are appropriate (*WET-Origins* and *WET-RehabMethods*);
- Guiding the selection and implementation of rehabilitation methods (*WET-RehabMethods*); and
- Monitoring the success of rehabilitation projects (*WET-RehabEvaluate* and *WET-EffectiveManage*).

Further reading:

- *Wet-RoadMap – A Guide to the Wetland Management Series* (**Report No: TT 321/07**)
- *WET-Origins – Controls on the Distribution and Dynamics of Wetlands in South Africa* (**Report No: TT 335/08**)
- *WET-Management Review – The Impact of Natural Resource Management Programmes on Wetlands in South Africa* (**Report No: TT 335/08**)
- *WET-RehabPlan – Guidelines for Planning Wetland Rehabilitation in South Africa* (**Report No: TT 336/08**)
- *WET-Prioritise – Guidelines for Prioritising Wetlands at National, Regional and Local Scales* (**Report No: TT 337/08**)
- *WET-Legal – Wetland Rehabilitation and the Law in South Africa* (**Report No: TT 338/08**)
- *WET-Ecoservices – A Technique for Rapidly Assessing Ecosystem Services Support by Wetlands* (**Report No: TT 339/08**)
- *WET-Health – A Technique for Rapidly Assessing Wetland Health* (**TT 340/08**)
- *WET-RehabMethods – National Guidelines and Methods for Wetland Rehabilitation* (**Report No: TT 341/08**)
- *WET-RehabEvaluate – Guidelines for Monitoring and Evaluating Wetland Rehabilitation Projects* (**Report No: TT 342/08**)
- *WET-OutcomeEvaluate – An Evaluation of the Rehabilitation Outcomes at Six Wetland Sites in South Africa* (**Report No: TT 343/08**)

To obtain these and other reports contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; E-mail: orders@wrc.org.za; or Visit: www.wrc.org.za