

# Why are wetlands important?

## The million dollar question

By Michelle Nel

**No water, no life – it's that simple. But wetlands give us a whole lot more than just water, says David Lindley of the Mondi Wetlands Programme.**

When water was doled out, South Africa was pretty near the end of the queue. We are not only short of water but frequently ravaged by floods followed by droughts. Unfortunately, everything from agriculture to industry depends on water so our only option is to make the best of what we have by managing it well. That's where wetlands come in.

Wetlands are able to reduce the severity of droughts and floods by regulating streamflow. Wetlands also purify water and provide habitat for many different plants and animals. In fact wetlands provide a host of services or **functions** (such as water management) and goods or **values** (such as fish, fibre and wildlife). No wonder *Nature* – one of the most respected scientific journals in the world – reported recently that worldwide, wetlands are worth some \$4.9 trillion (over R30 trillion) a year! Read on to discover their riches.

### Six fabulous functions

#### 1) Flood reduction (and flow regulation)

By slowing down the water and detaining it for a while, wetlands act like sponges. They can absorb large amounts of water due to their high organic content. This reduces floods and prolongs streamflow during low flow periods. Less water is lost into the atmosphere from a vegetated wetland than from an open water area such as a dam because because of the cover provided by wetland vegetation.

Wetlands slow down water moving through the catchment because of:

- characteristic gentle slopes
- resistance offered by the dense wetland vegetation
- water being spread out over a wide area
- having few well defined channels (which speed up the movement of water)

#### 2) Filling the wells

Wetlands may have an important influence on the recharge and discharge of groundwater. Groundwater recharge refers to the movement of surface water down through the soil into the water table. Wetlands also provide a point of exit for groundwater and free access to a resource that would otherwise be costly to retrieve.

#### 3) Fancy filtration

Wetlands are natural filters, helping to purify water by trapping pollutants (they do this by removing the sediment, excess nutrients such as nitrogen and phosphorus, heavy metals, disease-causing bacteria and viruses and synthesised organic pollutants such as pesticides. Wetlands are able to purify water because:

- they **slow down** the flow of water (see flood reduction and streamflow regulation) causing sediment to be deposited and other pollutants (such as phosphorus) attached to soil particles to be trapped;
- surface water is **spread out** over a wide area, making it easier for chemical interactions between soil and water;
- there are many different **chemical processes** taking place in wetlands that remove pollutants from the water. For example, wetlands provide a good place for conversion of polluting nitrates (NO<sub>2</sub>) to atmospheric nitrogen which is not a pollutant;
- some pollutants such as NO<sub>2</sub> are **utilised by the rapidly growing wetland plants**;
- the abundant organic matter in wetland soils provides suitable surfaces for **trapping** certain pollutants such as heavy metals; and
- wetland micro-organisms help **decompose** man made organic pollutants such as pesticides.

#### 4) Firming the soil

Wetland vegetation is generally good at controlling erosion by:

- **Reducing wave and current energy.** Wetland plants slow down the water and lower its erosive power.
- **Binding and stabilising the soil.** The roots of the wetland vegetation bind the soil and deposited silt to the wetland floor and this prevents the soil from being washed downstream.
- **Recovering rapidly from flood damage.** When flood damage does occur the vegetation can rapidly grow back.

#### 5) Supporting our furry friends

Wetlands are one of the richest ecosystems in terms of biodiversity they rank right up there with rainforests – though many wetland species are small and go unnoticed. Wetlands often have a rich plant growth because of the abundance of water and nutrients in the soil. The plants, in turn, provide food and shelter for animals. Several wetlands species, such as the white-wing flufftail and wattled crane, are listed as Red Data species.

#### 6) Furnace fighters

Intact wetlands could help us combat global warming! In wetlands, the decomposition of organic matter is slowed down by the anaerobic conditions present in wetlands. This results in wetlands trapping carbon as soil organic matter instead of releasing it into the atmosphere as carbon dioxide. Presently too much carbon dioxide is being released into the atmosphere when fossil fuels (such as coal and oil) are used to produce energy, resulting in the global climate being disrupted. Coal is, in fact, formed from plant material accumulated under wetland conditions in swamps that existed millions of years ago. Thus, instead of destroying wetlands and releasing carbon dioxide into the atmosphere, we should be conserving them.

## Eight weighty values

#### 1) Funneling

Because water is stored in wetlands, they provide sites for the supply of water for domestic and agricultural use such as livestock watering and for irrigation.

#### 2) Flushing

Natural wetlands purify water 'free of charge'. People have realised they are onto a good thing so many artificial wetlands are being created for wastewater treatment.

#### 3) Fodder

Wetlands, especially temporarily and seasonally waterlogged areas, may provide very valuable grazing lands for domestic and wild grazers. This is particularly so in winter and the early growing season. During droughts when grazing reserves are low in the surrounding veld, the wetlands continue to produce a lot of grazing. Permanently wet marsh areas tend to have a lower grazing value because most mature marsh plants are unpalatable, and the water may keep animals out. Utilisation needs to be sustainable if the wetland is to maintain its value for grazing.

#### 4) Fibre

Wetland plants have been used for thousands of years, providing valued materials for products such as mats, baskets and paper (produced from papyrus, which is a sedge). There are several plant species which are suitable and are used extensively for making handicrafts in South Africa, such as the rush *Juncus kraussii*, and the sedges *Cyperus latifolius* and *C. textilis*. The common reed (*Phragmites australis*) is used for construction purposes. Some wetland plants are also collected for medicines.

Handcraft production from harvested wetland plants has many benefits as a development option in poor communities: it makes use of local traditional skills, it has the potential for immediate cash returns and, by increasing the financial benefits to the local people, it increases the incentive not to destroy the wetland. However, harvesting needs to be sensitive to the functioning of the wetland.

#### 5) Fish

Although the value of wetlands for fisheries varies greatly, floodplain wetlands (such as Pongola River Flats) and estuaries (Kosi Bay) are typically valuable in the production of fish for human consumption. Many marine fish rely on estuaries as breeding grounds. To a large degree the marine fishing industry in South Africa is dependent on the condition of the estuaries and those wetlands in the upper catchment for its survival.

#### 6) Fowl

Some wetlands are important places where waterfowl (including ducks and snipe) and other wildlife such as reedbuck can be sustainably hunted. In the USA duck hunters have helped to conserve many wetlands.

### **7) Food**

Wetland soils are potentially productive. However, the anaerobic conditions associated with wetlands exclude most commonly grown crops except for those specially adapted, such as madumbes (*Colocasia esculenta*), an indigenous type of sweet potato, and rice. However, when wetlands are drained for planting dryland crops, wetland functions are destroyed.

### **8) Fun**

Wetlands are good places to see birds. Large numbers of birds are often attracted to wetlands, with many of these birds found only in wetlands. Wetlands also add to the diversity and beauty of the landscape. Wetlands give South Africans numerous places to relax in beautiful surroundings.