

How to wreck a wetland in eight easy ways

By Michelle Nel

Wetland uses which provide good economic returns are not necessarily sustainable. The Mondi Wetlands Programme (MWP) explains how easily wetlands can be degraded.

There it lies on your farm – that soggy old marsh. You calculate how much it costs just to have it lying there doing *nothing*. Now wouldn't it be much better if you got rid of the water and put the land to good use?

Well, if you left the wetland or used it in such a way that it remained intact, it would manage your water for free. Wetlands hold back water during floods and release it during dry periods. And in a dry country like South Africa, this is crucial. By regulating water flows during floods, wetlands reduce flood damage and help prevent soil erosion. Wetlands also purify water by acting as natural filters and trapping pollutants, including heavy metals and disease-causing bacteria and viruses. In addition to these valuable water management functions, wetlands are treasure troves of biodiversity, which may have tourism implications for your farm. When taking into account the enormous range of wetland types from seeps to coral reefs, the biological diversity of wetlands ranks with that of rainforests.

However, if you are still determined to drain or devastate your wetland, read on.

1 Become a drain surgeon

Why not dig some whopping great drains to lead the water out of your wetland and dry it out? Then plant crops. When wetlands are converted to cropland most of the functions of the wetland are lost. Drained wetlands are less effective at regulating streamflow and purifying water because the drainage channels speed up the movement of water through the wetland. You'll therefore have less water in the dry season, and of poorer quality. But then who cares? Drainage increases the danger of soil erosion by concentrating water flow and increasing the erosive power of the water. As a bonus, you'll also get reduced soil organic matter and moisture levels and, if you're really lucky, increased risk of underground fires. It goes without saying that you will also eliminate all wetland animals that may threaten any crops you planted in the wetland. Pretty neat huh?

2 Set up a crop shop

Cultivate your dried out wetland, and really finish it off (cultivation refers to the mechanical or manual disturbance of the soil for the propagation of a crop or pasture). Crops do not bind or cover the soils as well as natural wetland vegetation. So by destroying the natural vegetation, erosion in the wetland is controlled less effectively. This can be a very serious problem in areas with high erosion potential. Adding fertiliser and pesticides (which may leach into the river system) further reduces the effectiveness of the wetland in purifying water. The amount of organic matter in the soil may also be decreased. All in all, a one-way ticket to dirty water and depleted soils. Oh yes, don't forget to shoot the cranes that may try to eat the mealies that you have planted in your dried out wetland.

3 Become a pyromaniac

Burn wetland burn! Wetlands are burnt for many reasons: to improve the grazing value for livestock by removing old dead material and increase productivity; to improve the habitat value for wetland dependent species; to assist in alien plant control; and, to reduce the risk of run-away fires. Well-managed wetland fires usually only burn above ground plant parts and most plants recover rapidly from this. Poorly managed fires, by contrast, burn soil and plant parts below the ground, which usually destroys the plants. This, you will be pleased to know, can really do damage, for example, by increasing the risk of headcut and donga erosion in your wetland. The overall effect of your fire depends on timing, frequency and extent of the fire, and the type of fire (determined by conditions at the time of the fire, such as humidity and air temperature). Early winter or summer burns are more likely to affect breeding animals.

4 Invest in many munching maniacs

Graze and trample your wetland to death. Heavy grazing may cause valuable grazing species to be replaced by less productive or palatable species. Some wetlands erode easily when disturbed by trampling and grazing. Overgrazing and excessive trampling denudes the soil of plants which hold it together. These areas become prone to headcut erosion which results in dongas and the drying out of the wetland. Thus to wreck the wetland nicely, grazing pressure should be excessively high and cattle need to be encouraged to go into those areas where the flow is concentrated. Remember, in poorly managed wetlands which are grazed short, the diversity of habitats is decreased so you'll do your bit for the destruction of wildlife as well.

5 Become a forest fiend

Dry your wetland out with exotic timber plantations. Gum and pine trees that have been planted in wetlands have a high impact on the water storage function of wetlands. This occurs because a lot of water is lost by the trees through transpiration. These trees also use more water than the indigenous wetland plants and their roots penetrate deeper into the water table. This usually alters the hydrological regime of the wetland which can lead to it drying out. Trees also provide too much shade for many wetland plants and aliens infestations then take over.

6 Practice some highway robbery

Help erode away your wetland, by building a couple of roads through it. Road crossings may greatly modify water flow patterns in wetlands if the water is not spread out over the natural width of the wetland. To save money, most people are often mean with the number of causeways and culverts they provide for the water to flow under the road. So all the water flowing across a broad wetland is concentrated to flow into one or two narrow culverts. This often results in serious gully erosion at the culvert because of this concentration of water. To increase this effect, dig a drain alongside the road to help channel the water into the culvert

7 Why not build a dam?

A quick way to destroy a wetland is to simply dam it. To add insult to injury chuck a couple of exotic trout in. This can have a great effect on down stream biodiversity if the dam wall breaks. Many wetlands in South Africa have been flooded by dams, as wetlands are often found in places which are ideal dam sites. Whilst dams perform certain wetland functions (for example sediment trapping and water storage) they do not perform other functions well (such as the purification of pollutants other than sediment, flood attenuation and the maintenance of biodiversity). The habitat required by specialised wetland species is frequently lost when a wetland is dammed. When a series of too many dams occurs along a stream, the cumulative effect in reducing the streamflow to your neighbouring farmers may be considerable. But whose worried about them anyway?

8 Beautify with wattle (and other alluring aliens)

The more you damage your wetland and dry it out, the greater the invasion by alien plants. This may greatly reduce the indirect benefits provided by a wetland, and help you further your cause of wetland destruction:

- the quality of habitat and the biodiversity functions are reduced
- many alien plants are less effective in controlling erosion
- most aliens lose more water through transpiration than the indigenous plants
- the grazing value of most alien plants is lower

The real reason

Of course as a champion of wetlands, the MWP doesn't seriously advocate that you do any of the above. Our intention was to show you how easy it is to trash a wetland. Next time you are tempted to damage, degrade or dam, why not remember how many functions an intact wetland will provide you for free. Consider this. You *can* still allow limited and careful grazing and you can burn with caution. You can even sustainably harvest some of the reeds or waterfowl. However, in the main, the MWP suggests you trade in your pick and shovel for a pair of binoculars and enjoy the birds and frogs while saving on your water bills.

Calculating the loss

It is important to be able to judge the severity of impacts that may affect the wetland (drains dug to dry out wetland, alien plant infestations, erosion and agriculture in the wetland and so on). To do this, the following factors need to be considered:

- What amount of wetland **surface area** is lost?
- What is the **cumulative loss** of wetland area in the broader landscape?
- How much is the **flow pattern** of water through the wetland being altered through on-site modifications to the wetland?
- How great is the addition of **pollutants** to the wetland?
- How extensively is the **soil being disturbed**?
- What amount of organic **soil material is mechanically removed** or oxidised as a result of an altered water regime?
- How much is the **roughness** of the wetland surface reduced or vegetation cover reduced?
- What amount of natural wetland vegetation do **alien plants** replace?
- To what extent are wetland dependant **species negatively affected**?