

COLBYN VALLEY

– The ultimate urban wetland survivor



Few residents of the City of Tshwane are even aware that, against all odds, a functioning wetland – which includes a 7 000-year-old peatland, persists in the heart of Pretoria. Article by Tamsyn Sherwill.

Located just 5 km from the Union Buildings, and flanked by the N4 and N1 highways, the Colbyn Valley wetland is a unique asset to the capital city. The wetland, which covers an area of about 15 ha, is formed by back-flooding of the Hartbeesspruit as it flows through a poort between two quartzitic ridges, along with the contribution of groundwater and subsurface drainage from seeps upstream. This has also created favourable conditions for the accumulation of peat. Peat forms when low-energy flows and permanent water-logging enable partially-decomposed plant material to accumulate. Active accumulation of peat depends on a slow rate of decay in oxygen-deprived (anaerobic) conditions.

Peatlands anywhere in South Africa are a relatively rare discovery – only about 10% of our wetlands contain peat. And, once discovered, peat is often exploited as a resource, mined to use as a potting medium, fuel source, adsorbent or filter material. Flow through a peatland is often diverted or channelled and the peat is left high and dry, catches fire and, after millennia of slow accumulation, is gone.

Yet the Colbyn peatland persists, tucked away under a dense bed of reeds. Occupying just over a hectare, the peat layer in Colbyn has been estimated to be about 7000 years old, and is 2.4 m thick at its deepest point, with an average thickness of 1.5 m. The total volume of peat in Colbyn amounts to about 15 000 m³.

Peatlands, or mires as they are also known, can be further classified as either fens or bogs, depending on whether they receive their water from direct precipitation only or from surface runoff or groundwater. Fed by a stream and groundwater the Colbyn peatland is a fen – and, more specifically – a tall

emergent (having emergent vegetation) reed-sedge (the type of emergent vegetation that ultimately becomes peat) fen.

Wetlands in general provide irreplaceable natural infrastructure for managing our water resources. The Colbyn wetland plays a vital role in ground-water retention, which helps to ensure year-round flow in the Hartbeesspruit. Wetlands are formed by slow flow, and their emergent vegetation slows this flow even further, dampening floods, and resulting in deposition of suspended particles and removal and retention of sediment. Chemical pollutants are also trapped or adsorbed, and the incredibly productive wetland vegetation is able to take up excess nutrients which could contribute to increased algal and water-weed growth in dams and reservoirs downstream.

HOTSPOT AND CORRIDOR FOR URBAN BIODIVERSITY

Though wetlands by their very nature are relatively species poor (usually being dominated by a very specific vegetation type), they form vital patches in the overall landscape mosaic, greatly increasing the overall number of species which an area can support. The greater Colbyn Valley is now conserved within the recently proclaimed Colbyn Wetland Nature Reserve, covering an area of about 60 ha, and including areas of grassland as well as the neighbouring tree-covered rocky ridges. Several animal species depend for at least part of their lifecycle on the wetland or surrounds – notable sightings over the years have included genet, duikers, hedgehogs, elephant shrews, water mongooses, and even the threatened red rock rabbit. The renowned bird expert, Geoff Lockwood, once described Colbyn Valley as ‘the best birdwatching spot in Pretoria’, and today almost 150 species can still be spotted here.

A collection of interconnected natural areas has far more value for biodiversity conservation than a single isolated reserve, and Colbyn Valley plays a critical role in this regard as a node connecting several of the capital’s natural or open spaces. As most of Pretoria’s green belts run east-west, along the east-west striking quartzite ridges, the north-south link provided by the Hartbeesspruit is vital in linking the Strubenskop and Meintjieskop ridges with the Magaliesberg, and then, further on, to Rooideplaas Dam. The reserve also forms part of an east-west corridor connecting the Silverton Ridge and Pretoria National Botanical Garden with Meintjieskop and beyond.

A COLOURFUL HISTORY OF USE, ABUSE, THREAT AND RESCUE

The area known as Colbyn Valley was originally part of the farm Koedoespoort, allocated to Lourens Cornelius Bronkhorst in 1859, whose heir sold the farm to the Wesleyan Methodist Missionary Trust in 1885. The portion of the farm on which the wetland is located was later allocated to the University of Pretoria for agricultural research, and eventually donated to the then Pretoria City Council as a ‘nature area’. Damaging impacts on the wetland date back to its use for agriculture – drainage ditches and irrigation trenches have drained parts of the wetland and caused much of the peatland to dry up.

The historic NZASM railway line, remains of which can still be seen in the reserve, was routed around the wetland area, but the more recently built Koedoespoort line now divides the wetland in two, and has caused compaction of the soil and altered drainage conditions. In the 1970s a block of flats

Dr Piet-Louis Grundling demonstrates the water-holding capacity of peat. Dr Grundling’s association with the wetland as a volunteer specialist has continued since the late 1990s.



Tamsyn Sherwill

was built below the wetland's keypoint at the exit of the poort, close to the 1:50 year floodline. This resulted in channelling of the stream, a deepened river course and headward erosion into the wetland. To add insult to injury, the wetland has also been bisected by the N4/N1 highway interchange, bringing with it increased high-energy stormwater loads. With no fencing or access control, the area attracted illegal dumping as well as 4x4 owners, who raced their vehicles along parts of the wetland, compacting areas of peat.

In the 1990s the City Council put in an application to develop the site as a golf course. This was finally a big enough threat to stir local residents and wetland lovers to action – the Friends of Colbyn was formed, and was able to successfully oppose the development. Then in the late 1990s an unlikely band of wetland guardians emerged – a group of Grade 11 pupils from CR Swart High School decided to adopt the Colbyn wetland as a rehabilitation project, under the auspices of the National Youth Development Trust. Their interest in the wetland had been sparked by a discovery of what they thought was peat moss, and which they called on local wetland specialist Dr Piet-Louis Grundling to verify.

Uncertain whether there was even peat in Colbyn, Dr Grundling visited the wetland with the group and discovered peat deposits in an old agricultural drain along a tributary of the Hartbeesspruit. The pupils gave the badly degraded wetland area the name 'Mosstrosity' (a play on peat moss, though no peat moss has ever actually been found to occur in Colbyn), referring to their group as the 'Mosstrosities'.

Heavy rain in early spring causes flash flooding: floodwaters overflow the spillway of the gabion weir at the wetland keypoint.



The Mosstrosities and Friends of Colbyn became instrumental as environmental watchdogs and intervention agents in the Colbyn Valley. In August 1999, when a pipeline was put through the wetland without an EIA having been done, compensation was requested from the City Council, and eventually granted in the form of money for wetland rehabilitation. At about the same time, headward erosion at the keypoint had begun to undercut the railway line, leaving the Koedoespoort service, literally, 'hanging'. Friends of Colbyn and the Mosstrosities were able to convince Metro Rail that a full wetland assessment should be done before a decision could be made on any actions to secure the railway line.

On the basis of the resulting report, a number of rehabilitation measures were planned and implemented, with the assistance of the city's Nature Conservation department: Compaction caused by the pipeline was addressed by loosening of the soils and re-vegetation, restoring subsurface drainage to downstream areas. A construction drain was filled up, and excavation rubble flattened. A fence was put up to prevent 4x4 traffic and dumping. While loosening the compacted areas, invasive aliens such as kikuyu were removed, and the areas reseeded with wetland grasses. Once drainage had been restored to downstream areas, bulrushes (*Typha capensis*), cottonwood grass (*Imperata cylindrica*) and a sedge were planted in the rehabilitated areas. Finally, Metro Rail and the City of Tshwane constructed a significant erosion prevention structure – a gabion weir – in the poort, thereby stabilising the wetland's keypoint. In 2002, Working for Wetlands also installed a series of smaller gabion weirs to stabilise the natural stream channel, and to facilitate rewetting of the area extending back to Stanza Bopape (previously Church) Street.

AN UNCERTAIN FUTURE?

Disaster averted, interest in the wetland from the public and volunteers began to wane, and it was only the emergence of a new threat in 2012, with the identification of a site adjoining the wetland as the likely future location of a major park-and-ride facility, that led to efforts to revive the Friends of Colbyn – now re-established as the Friends of Colbyn Valley. As every lobbyist knows, drumming up support and creating awareness is much easier in the face of a direct and imminent threat for people to rally around. But several more indirect and ongoing threats challenge the health and integrity, and even the continued existence, of

the Colbyn wetland. Though protection of the area as a nature reserve is a comforting new development, this protected status doesn't extend to the catchment.

The catchment includes the suburb of Hatfield, which is becoming ever more densely developed with time. An increase in the area of hard surfaces like tar and concrete leads to increased high-energy runoff, with the potential to erode the wetland and stream banks and deepen the river channel downstream. Further development of the catchment is also likely to result in deteriorating water quality.

Another silent but no less destructive assault comes in the form of botanical invaders. Colbyn Valley has been infiltrated by a number of alien plants, such as kikuyu, morning glory, bugweed, poplar, syringa and lantana, and, most recently, the deadly pompom weed. Alien plants displace indigenous ones, along with all of the life these support, and often also use large amounts of water.

There are also direct human impacts on the broader nature reserve. A number of people use the area as a pedestrian shortcut, and cut the fence to do so, and others have made the reserve their home, leading to problems of litter, cutting of trees, increased erosion from the development of footpaths, disturbance or killing of wildlife, and accidental or intentional setting of fires in the winter months, which has led to most of the reserve now burning on an annual basis. A recent disturbing development is the targeting of the area by a group of young men who have been spotted hunting in the reserve with a pack of trained dogs.

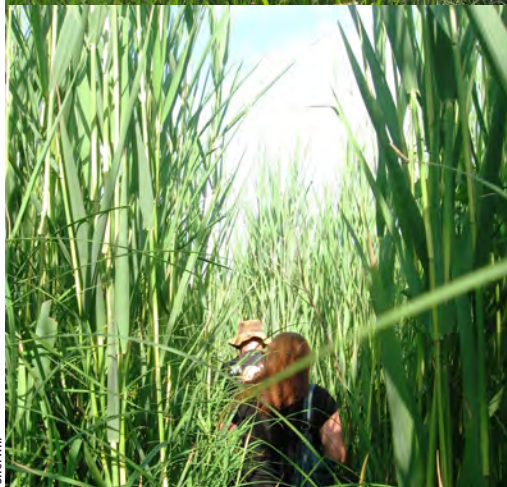
Finally, the many and often conflicting priorities of local government have resulted in relatively little money or manpower being available for any but the most basic management activities. But the biggest threat to the Colbyn wetland could also turn out to be the biggest opportunity to secure its survival – its urban location makes it an ideal site for wetland and other environmental education initiatives. Colbyn Valley is a living textbook of wetland structure, function, degradation, and rehabilitation. And as our cities become ever more built-up, congested, noisy and ugly, natural areas within the city are valued ever more highly by residents, as an essential contributor to their wellbeing and quality of life. It is clear that the Colbyn Wetland Nature Reserve already plays such a role, for residents and visitors alike. Some have even mentioned having a connection to the wetland and a desire to see it persist simply from driving past it every day.



Imperata cylindrica (cottonwool grass) in full flower during spring.



Birders enjoying Colbyn Valley.



The reedbed in the peatland just 3 months into the growing season, after having been reduced to ashes the previous winter.



A reedbed in the Hartbees-spruit catches fire during winter.

SHARING THE LOVE – SHARING THE LOAD

The continued existence of the Colbyn Valley wetland and peatland is a tribute to the efforts of ordinary citizens, vocal residents and vision-ary schoolchildren. Fortunately, the law is now firmly on the Colbyn wetland's side, with protection offered by legislation such as the National Water Act and Protected Areas Act, and which didn't exist in earlier days when the wetland took its biggest blows from development.

Effective catchment management is key to conserving aquatic ecosystems. Recent developments in stormwater management and green technologies offer a means to mitigate the effects of catchment development and reduce the intensity of stormwater runoff, for example, through implementation of sustainable urban drainage systems and permeable pavements.

But the law and technology can only do so much, and the efforts of volunteers and activists will continue to play a central role in promoting and acting for the conservation of wetlands and other 'wild' places. Unfortunately, the role of the Colbyn wetland in residents' everyday lives has shrunk over the years. Whereas previously the area was well-used by local families for walking and other recreation, this is almost unheard of now due to perceptions that the area – like many open spaces – is unsafe. As fewer people visit this becomes a self-fulfilling prophecy, as the area becomes more unsafe and more attractive to vagrants or criminals.

Building a wetland model, as part of a 'wetland basics for kids' course held to celebrate World Wetlands Day 2014.



The recently revived WESSA-affiliated Friends group for the area, the Friends of Colbyn Valley, have thus focused their initial efforts on raising awareness by getting people back into the wetland. In the words of Jeff Johnson in the documentary film *180° South*: "If you love a place, you have a duty to protect it. And to love a place, you have to know it first." Efforts to know the wetland and reserve better include securing the services of volunteers for specialist surveys of the fauna and flora. A rare Lycaenid butterfly was recorded in the area in a 1991 survey, and efforts are now being made, with the help of local consultants Afribugs as well as the Lepidopterists' Society, to find it again.

More direct interventions planned for the future include the construction of a fish ladder to help fish overcome the barriers presented by the gabions, and putting in litter traps to reduce the importing of rubbish via the stream. The Department of Environmental Affairs, facilitated by ICLEI's Local Action for Biodiversity programme, has recently begun a process to pilot the development of a Biodiversity Management Plan for an Ecosystem (BMP-e), as outlined in the Biodiversity Act and subsequent Norms and Standards, in the Colbyn Valley. If successful, the resulting management plan for the Colbyn wetland could be the country's first ever BMP-e.

As the story of Colbyn shows, one of the greatest challenges to maintaining momentum is when lobbying efforts succeed, threats are neutralised and complacency starts to creep in. It is also often the case that efforts of community-based organisations tend to pivot around a small group of – or often even lone – 'champions', and when they become disillusioned or exhausted, or their circumstances change, energy toward the cause dissipates and can take years to build up again.

These challenges can only be overcome by proactive vision-oriented approaches that actively work against people's more reactive, threat-focused habits. Networks can buffer against the ups and downs of isolated champions. For example, Friends of Colbyn Valley is a member of the Adopt-Moreletaspruit forum, part of the Department of Water and Sanitation's Adopt-a-River programme, which is able to successfully support and channel the concerns and actions of a range of smaller stakeholder groups. Hopefully, as the Colbyn wetland begins to again take up its rightful place in the capital's collective imagination and experience, a shared passion to protect this special site will become self-sustaining.

- Sources: Knoll C (2000) Schoolgroup spearheads rehabilitation of urban wetland/peatland. *Urban Green File* July/August 2000. □