

Water students give back on World Water Day



Monash University

To celebrate the importance of water in our lives students from Monash South Africa studying towards a Masters of Philosophy in Integrated Water Management turned their attention to the Modderfontein Spruit in celebration of World Water Day earlier this year.

Teaming up with organisations such as the Endangered Wildlife Trust, Wildlife and Environmental Society of South Africa, Ecotone Freshwater Consultants, Plastics South Africa and Canoeing South Africa, the students conducted a river health assessment exercise, helped to clean the stream, and monitor invasive plant species found along the river banks on World Water Day earlier this year.

The Modderfontein Spruit passes through the privately-owned Modderfontein Reserve, the second largest urban conservation area in Gauteng.

The spruit and other feeder streams form part of the Crocodile (West) Marico Water Management Area.

Modderfontein Reserve is home to some 290 bird and animal species, including the African fish eagle, long crested eagle, crimson breasted shrike, mongoose varieties and African clawless otter. It has aesthetic, historical, and environmental values that support the life and well-being of the surrounding urban area. While the reserve is not completely open to the public, it is envisaged that following a restoration programme, the reserve will

house environmental educational and recreational facilities.

A river health assessment exercise was conducted on this day using MiniSASS – a standardised method of monitoring river health. MiniSASS is a simplified version of the South African Scoring System (SASS), a method that looks at the collection of aquatic macro invertebrates present in a river to determine the overall health of that river system. The principle is that a healthy river will host sensitive macro invertebrates which cannot survive even a light disturbance in quality, while only tolerant species will survive in polluted systems.

Unfortunately, the result of the Modderfontein study was not too satisfying, with results indicating poor to very poor water quality conditions. It is difficult to isolate the source of water pollution, particularly at Modderfontein as it might either come through the underground seepage, not to mention the degree of network complexity – the river network receives stormwater from no less than 11 locations, for example. Further research is recommended on trace pollutants from upstream and downstream sources.

While celebrating World Water Day, it was also a great opportunity to bring to people's attention the invasion of the plant *Acacia bailayana*, commonly known as the Cootamundra wattle at the Modderfontein spruit. The plant is among the 180 species of invasive alien plants that have been reported in South Africa, covering around 8% of the surface area of the country. These invasive species pose a threat of extinction to the indigenous biodiversity from their habitats, while using significant volumes of scarce water resources.

Cootamundra wattle originates from Australia, and grows in open woodland, stony, hilly country, on clay or clay loam derived from grains. In foreign countries the plant has profound effects on native flora, threatening already vulnerable indigenous species by consuming

much oxygen, light, and water from the native vegetation and soil, thus making the soil too dry to support other plant species.

Within the Modderfontein reserve, the invasive plant has the potential to contribute to significant reduction of the stream flow as well as the general reduction of the integrity and capacity of an ecosystem to produce goods and services. Despite these negative effects, the plant can be grown for ornamental purposes, used as fuel wood and its seedlings can also be used a green manure.

In an attempt to control this alien species two groups were constituted; one group working on the mechanical removal of the tree with a tree popper and the other group using selective herbicide. Using a knapsack sprayer, the herbicide was sprayed on the leaves of smaller plants.

Commemorating World Water Day at Modderfontein highlighted the relative difficulty of sustainable water management in urban contexts with competing multiple socio-economic activities. For example, while on site the students had to endure blasting from a nearby explosive testing ground, while the Gautrain railway has been established alongside

the reserve. The stream's location within an urbanised realm, coupled with the fact that the Modderfontein Spruit is fragmented by dams, adds to its poor water quality.

Urban conservation areas should be viewed as symbols of environmental awareness to the public and the foundation to building an alternative and better urban future. Hence, conservation areas need healthy river systems to sustain healthy ecosystems and diverse species. □



Monash University

Above: The Monash University Integrated Water Management Masters students who spent their World Water Day giving back to the Modderfontein Spruit. From left to right are Indrawan Prabaharyaka (from Indonesia), Quinex Chiluwe (Malawi), Jackton Obala (Kenya) and Machaya Chomba (Zambia).

Below: Monash University Masters student, Quinex Chiluwe, undertaking a river health assessment exercise using the MiniSASS method.



Monash University