Poorly known South African mountain endemic appears to be a very valuable keystone species

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The Amathole mountain endemic *Macowania revoluta* is more than just a pretty face. Credit: Joanne Bentley

Mountain ecosystems are valuable providers of key resources including

water. These ecosystems comprise diverse species, some of which appear to be especially important to the ecosystem's functioning. In poorly studied mountain environments in biodiversity-rich countries, these keystone species can often be overlooked and undervalued.

Macowania is a group of yellow daisy shrubs occurring in the alpine-like regions of the Drakensberg and highlands of Ethiopia, Eritrea and Yemen. Doctoral student Joanne Bentley, University of Cape Town, studied the genetic relationships between the various *Macowania* species and relatives during her Masters degree studies. Her research led to the first collection of the poorly known species *Macowania revoluta* (known also as the Amathole Macowania) in about 40 years.

The story of *Macowania revoluta* is published in the open access journal *PhytoKeys*.

The Amathole Macowania appears to be an exceptionally important keystone species. This is because it forms one of the dominant members of the valuable mountain wetland communities and, thus, likely plays a very important role in wetland functioning and soil protection.

It appears to be somewhat tolerant of woody alien species and a valuable pioneer species protecting its native co-habitants. Plants like this one buffer more sensitive plants from sudden changes in environment (such as forestry, alien invasion and fire), and provide an opportunity for the ecosystem to 'bounce back'.

The Amathole mountain endemic *Macowania revoluta* as a young plant. Credit: Ralph Clark

Restricted to the Amathole mountains in the Eastern Cape Province, South Africa, the Amathole Macowania was first collected sometime before 1870 by the pioneer botanist Peter MacOwan, and was well documented until around 1949. After that, except for one record in 1976, the plant quietly disappeared.

"This was the first *Macowania* species that we found during our fieldtrip across the greater Drakensberg. We had combed several of the localities where it had been collected before; mostly from several decades ago, some from more than a century ago!" says Joanne Bentley. "We became increasingly doubtful about finding the plant, given the heavily transformed plantation landscape."

"Ready to throw in the towel, we came across a peaty area on the margins of the forest and decided on one last investigation. We were lucky: it was growing prolifically! It was a very special moment."

The growth form of the 'Amathole Macowania' suggests that it is a valuable keystone species that can be used to buffer the mountains from further degradation. Credit: Ralph Clark

As it often happens, exciting discoveries come in bulk. Joanne's discovery of the plant in July 2010 was followed by another record in October 2010, by the Curator of the Schonland Herbarium, Tony Dold. In 2014 at least three additional localities were recorded along the popular Amathole Hiking Trail by Dr Ralph Clark, Rhodes University. A further record was added in 2015 by Vathi Zikishe, South African National Biodiversity Institute. The verdict: this is a very localised but patchily abundant species, and an ecologically valuable component of the Amathole flora.

Listed as 'Data Deficient' in the Threated Plants List for South Africa, this string of modern records of the species also provided the first opportunity to get an idea of its ecology and abundance, as well as the first photographs.

"The practical value of this species in local land restoration projects still needs to be explored, but the opportunities are exciting," says Dr Clark. "The discovery that this obscure endemic mountain plant is not only abundant, but is, in fact, fulfilling an extremely important ecological role, highlights the value of detailed mountain biodiversity research in southern Africa."

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