

On the road to recovery from extinction: collecting seed from the pyramid mulla-mulla

by Andrew Crawford

The pyramid mulla-mulla (*Ptilotus pyramidatus*) is a small, annually renewed perennial herb, known only from a single population in a patch of remnant bushland in the midst of suburbia. The first collection was made by the botanist James Drummond in 1845, however, the location of that collection remains unknown. In 1991, the species was listed as being 'presumed extinct' as no plants had been recorded for over 140 years. Nineteen years later an unknown *Ptilotus* species was collected by Cate Tauss, while conducting a flora survey of the area.

The discovery was brought to the attention of the Western Australian Herbarium's *Ptilotus* expert, Rob Davis, who thought the find was a new species of *Ptilotus*. Rob and Cate went on to formally describe and name the species as *P. christineae*. A year later, while curating *Ptilotus* specimens at the WA Herbarium, Rob came across a line drawing of *P. pyramidatus* and realised in an instant that it was a picture of the plant he and Cate had so recently named. This was cause for much excitement, as it confirmed that after being presumed extinct and not being seen in more than 160 years, the species was still alive.

This discovery was brought to the attention of staff at the Department of Biodiversity Conservation and Attractions' (DBCA) Threatened Flora Seed Centre (TFSC) who put the species on their target list for seed collection. The centre is a conservation seed bank whose purpose is to collect and safely store seed from species of conservation significance in WA. This seed is available to help future work aimed at improving the conservation status of the State's threatened plants.



Road to Recovery

The pyramid mulla-mulla in flower.
Photo – Andrew Crawford.

Being at risk from a range of threatening processes, such as damage by off-road vehicles, weed invasion, grazing by rabbits and growing in bushland not managed for conservation meant that the pyramid mulla-mulla was considered critically endangered and was listed as such under both State and Federal legislation. Collection and conservation of seed was identified with other recovery actions as being of high importance.

Unfortunately, early attempts to collect seed of the pyramid mulla-mulla were unsuccessful with no evidence of seed production seen. Over the next few years several attempts at collecting seed were made, but again seed production wasn't noted. In 2017, the Western Australian Planning Commission (land manager of the *P. pyramidatus* site) provided funds for a range of conservation measures. These are being undertaken to gain knowledge about the species and to reduce its extinction risk. DBCA has thoroughly surveyed and mapped the known occurrence of the species and searched, without success so far, for additional populations. We have also established trials, to investigate the impact of weeds on the species and ways to safely control them.

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The pyramid mulla-mulla flowered well in the summer of 2017; the plants were observed to be the healthiest they had looked, and hopes were high for successful seed collection. However, initial observations of seed production burst this bubble of expectation. Although there was evidence of fertilisation and seed development beginning, closer examination revealed that these seeds were aborting prior to maturation. Not to be put off, we placed small bags over the inflorescences of a number of plants to trap any seed produced as it matured and shed from the plant.

In early 2018, the bags were retrieved and the samples were taken back to the TFSC for examination. It was with great excitement that, when the first bag was examined, not one but two seeds were found. This may not seem like much, but this was the first time seed for this species had been seen. In total 65 seeds were obtained in the collection showing that persistence pays off and seed collection of this species is indeed possible.



*A seed falling out of a mature flower of pyramid mulla-mulla.
Photo – Andrew Crawford.*

Seed collection wasn't the only success story of the summer. A number of cuttings taken in late 2017, to establish an *ex situ* 'insurance' population, successfully struck with the resulting plants being grown at Kings Park for safe keeping. The plan is now to follow up on both the cuttings to gain better numbers and diversity in the *ex situ* living collection and to attempt to collect more seed in the coming summer. Ultimately these plants and seed will be used to establish a new population in a secure site to reduce the extinction risk of the species.

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*Bagging helps collect seed that ripens and sheds quickly or, as in this case, where very few seed reach maturity. The seed bags are a very fine gauze that lets moisture out and keeps insect predators out as well. In summer the flowerheads are still visible but the leaves and stems have shrivelled and dried. We needed to keep these bags on until the seed had shed naturally before removing them from the plants.
Photo – Andrew Crawford.*