

Threatened Species of the Northern Territory

D.A Cooke (ASTERACEAE)

Olearia macdonnellensis

Conservation status

Australia: Vulnerable

Northern Territory: Endangered



Description

Olearia macdonnellensis is a viscid aromatic shrub to 1.2 m high. The leaves are green and varnished. The ray florets have white ligules, the disc florets yellow (Cooke 1988).

Flowering: Feb, July–October.

Fruiting: July, August, October.

Distribution

Olearia macdonnellensis is endemic to the arid southern region of the Northern Territory (NT). This species is confined to the MacDonnell Ranges Bioregion where it is currently known from several isolated subpopulations, mainly in the central-western portion of the MacDonnell Ranges (Cooke 1986). Most of these are in an area of less than 30 km by 10 km. All subpopulations are small, usually widely spaced and surrounded by apparently suitable habitat.

There is an additional record of a highly disjunct population in the central East MacDonnell Ranges, but the exact location is unknown and a targeted search for it in 2004 was unsuccessful (A. Duguid *pers. obs.*).

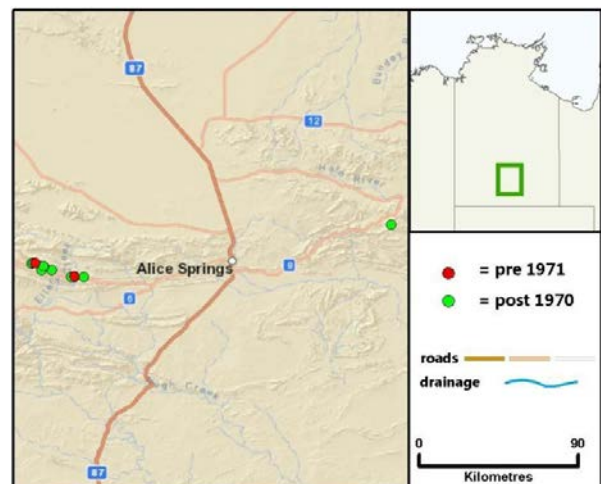
If this eastern sub-population is considered no longer extant (or the location details were

incorrectly recorded in the first place), then the extent of occurrence of this species is <math><100 \text{ km}^2</math>.

The latitudinal range is 31 km and the longitudinal range is 187 km. The extent of occurrence excluding discontinuities within the overall distribution of the species (*viz.* large areas of obviously unsuitable habitat) is <math><5 \text{ 000 km}^2</math>.

The largest population in the West MacDonnell Ranges likely comprises more than 1 000 individuals, but data are presently lacking (A. Schubert *pers. obs.*).

Conservation reserves where reported:
West MacDonnell National Park.



Known locations of *Olearia macdonnellensis*

Ecology

This species occurs on a variety of aspects but consistently in areas with some natural protection from wildfires. There is typically an overstorey of trees, notably *Eucalyptus trivalvis*, but also other species including *Acacia aneura*.

The West MacDonnell's populations are centred along a single valley on the south side of the Heavitree Range. Landforms include north facing gullies, east facing slopes, southern slopes, north-west facing slopes and drainage lines, but mostly with similar vegetation associations. These populations predominantly occur in areas of deeply weathered geological deposits from the Tertiary, often with areas of eroding 'break-aways' with distinctly pallid or bleached soils.

Conservation assessment

Olearia macdonnellensis is classified in the NT as **Endangered** (under criteria B1ab(ii,iii,v) + B2ab(ii,iii,v)) based on:

- the extent of occurrence <100 km² and the area of occupancy less than this;
- subpopulations are severely fragmented; and
- there is continuing decline in:(ii) area of occupancy; (iii) area of extent or (iv) quality of habitat; and (v) number of mature individuals due to wildfire.

Threatening processes

Olearia macdonnellensis is threatened by fire. In 2002, many subpopulations were burned by hot wildfire. Subsequent visits to some of the affected stands (in 2004 and 2005) revealed that most (possibly all) adult plants had been killed by fire, and that there was no evidence of post fire recruitment (D. Albrecht and P. Latz *pers. obs.*; A. Schubert *pers. obs.*). This showed that the species has no capacity

to tolerate fire, and that its local persistence is dependent on fire intervals exceeding recolonisation time frames.

Olearia macdonnellensis is potentially threatened by Buffel Grass invasion. Buffel Grass has the ability to directly negatively affect *O. macdonnellensis* through resource competition, especially at early life stages.

Olearia macdonnellensis would be particularly affected if, like many of its congeners, it has a light requirement for germination. Buffel Grass would additionally result in increased fire frequency and severity at badly infested sites.

The specific threats posed by climate change to *macdonnellensis* are currently poorly understood. The process represents a future threat given its potential to disrupt reproductive output and germination and to decrease adult vigour and survival during extended drought phases.

Olearia macdonnellensis is potentially threatened by small-population effects such as inbreeding depression and genetic drift through low gene flow. There is no information on the population genetics of this species, but given its fragmented distribution, it is possible that there is little genetic exchange among subpopulations and a high level of inbreeding within.

Conservation objectives and management

A national recovery plan has been developed for this species (Nano & Pavey 2008). The specific objectives are:

- i. carry out targeted surveys for additional populations within the MacDonnell Ranges;
- ii. mapping of subpopulations;
- iii. carry out population and habitat monitoring at selected sites;

- iv. Implement management strategies for key threatening processes as required;
- v. undertake research on fire ecology, reproductive biology, and seed storage potential;
- vi. store seeds from different subpopulations in seed-banks;
- vii. determine the degree of genetic differentiation using molecular techniques;
- viii. engage Indigenous people in the management of the species; and
- ix. community and stakeholder education and information.

Complied by

Catherine Nano
Raelee Kerrigan
David Albrecht
Angus Duguid
Andrew Schubert
[updated December 2012]

References

- Cooke, D.A. (1988). Two new species of *Olearia* Moench (Compositae: Astereae) from Central Australia. *Muelleria* 6, 181-184.
- Nano, C. and Pavey, C. (2008). National Recovery Plan for *Olearia macdonnellensis*, *Minuria tridens* (Minnie Daisy) and *Actinotus schwarzii* (Desert Flannel Flower). Department of Natural Resources, Environment, the Arts & Sport, Northern Territory
- White, M., Albrecht, D., Duguid, A., Latz, P., and Hamilton, M. (2000). *Plant species and sites of botanical significance in the southern bioregions of the Northern Territory. Volume 1: significant vascular plants*. A report to the Australian Heritage Commission. (Arid Lands Environment Centre, Alice Springs.)