

Abutilon otocarpum Desert Lantern

Taxonomy

Abutilon otocarpum F. Muell.

Current conservation status

Categorised as Vulnerable in the 2014 Advisory list of rare or threatened flora (DEPI 2014).

Proposed conservation status

Endangered in Victoria

Criteria B1ab(i,iii,v)+2ab(i,iii,v)

Species Information

Description and Life History

Sprawling or upright perennial (can die back severely in dry times) shrub to 70 cm tall; branchlets velvety, with glandular and stellate hairs below longer simple hairs. Leaves ovate, to 8 cm long and 6 cm wide, slightly discolorous; apex shortly acuminate to acute. Flowers solitary in upper axils; calyx 5-angled and ribbed, \pm urceolate, 10–18 mm long; lobes ovate, clearly keeled basally, long-acute at apex; corolla just exceeding calyx; lobes 4–9.5 mm long, rounded apically; staminal column 1–2 mm long, glabrous; styles 10–17. Fruit very broadly ovoid, brownish, c. 10 mm high, stellate-pubescent with longer hairs along sutures, adjacent mericarps adhering for less than a quarter of their surface, eventually dissociating; mericarps 3-seeded, 6.5–7 mm high, 3–3.5 mm wide, notched at base; apically rounded, acuminate or with an erect awn to 0.5 mm long (VicFlora 2019).

During extended dry conditions the plant dies back quite severely and drops its leaves (Cunningham et al. 1981). The seeds are large, with high long-term viability. The seeds are poorly dispersed with no conspicuous adaptation to long-distance dispersal; only medium-range dispersal is likely to be water mediated within the catchment, as the seeds are too large to be wind dispersed or with any capacity to be biotically dispersed. There is weak recolonization capacity between catchments.

Generation Length

The generation length of *Abutilon otocarpum* is inferred to be 3 to 20 years. Generation time is stochastic and irregular, dependent on the periodicity of summer rains and flood levels sufficient to maintain the water table, ensuring moist soils to support germination and recruitment success. The longevity is only 2 to 3 years. Generation time is also inferred from other perennial Australian species from arid/semi-arid regions.

Distribution

In Victoria, the taxon is confined to the far north-west (e.g. Hattah, Mildura and Robinvale areas). It is also present in all mainland states.

Habitat

In Victoria, the taxon is confined to red loam ridges and dunes near the floodplain of the Murray River in the far north-west. It grows in a semi-arid environment with unpredictable rainfall.

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Outside Victoria it grows on all soil types except on heavy clays, and it is a component of many different plant communities. In western NSW it is most common on sandplain soils, tending to be less frequent on gravelly or loamy soils.

Threats

Past decline was primarily caused by land clearing, and by browsing and grazing by kangaroos and exotic herbivores, notably rabbits and goats. This decline was arrested in Victoria by control programs. There are fewer kangaroos now, predominantly Red Kangaroos which graze more strongly than browse, compared with Western Grey Kangaroos which were previously the dominant macropod.

The rabbit control program in Victoria started in the early 1990s but was highly effective in the Murray Sunset National Park, with browsing pressure visually reduced. By comparison, the Hattah-Kulkyne program started in the 1980s but was harder to maintain since landscape elements include riverine floodplain woodlands which readily support kangaroos, and provide feeding grounds juxtaposed with dunes supporting rabbit burrows. Both species recover rapidly following treatment i.e. shooting or ripping of burrows. Recovery requires browsing reduction supported by ensuing wet summer seasons.

This equally applies to Millewa, Ned's Corner, Hattah-Kulkyne, Pink Lakes and Sunset Country. There is some confidence of recovery in Ned's Corner and Hattah-Kulkyne, but little confidence of successful recruitment across rural landscapes, where the numerical majority of records are concentrated.

The taxon requires moist soils to support germination and recruitment success, so it is threatened by reduced rainfall and droughts, exacerbated by climate change.

IUCN Criteria

| Criterion A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4 | | | |
|--|-----------------------|------------|------------|
| | Critically Endangered | Endangered | Vulnerable |
| A1 | ≥ 90% | ≥ 70% | ≥ 50% |
| A2, A3, A4 | ≥ 80% | ≥ 50% | ≥ 30% |

| | | |
|--|---------------------------------------|---|
| <p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> | <p>based on any of the following:</p> | <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p> |
|--|---------------------------------------|---|

Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 9 to 60 years is inferred to be 30 to 35%, based on (c) and (e) above, and on the extent of land clearing in the Murray River area between Mildura and Swan Hill.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 9 to 60 year period, including both past and future, is estimated to be 10 to 35%, based on (c) and (e) above.

This is based on the extent of past land clearing and on the increasing trend of drying into the future.

| Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy) | | | |
|---|--|--------------------------|--------------------------|
| | Critically Endangered Very restricted | Endangered Restricted | Vulnerable Limited |
| B1. Extent of occurrence (EOO) | < 100 km ² | < 5,000 km ² | < 20,000 km ² |
| B2. Area of occupancy (AOO) | < 10 km ² | < 500 km ² | < 2,000 km ² |
| AND at least 2 of the following 3 conditions: | | | |
| (a) Severely fragmented OR Number of locations | = 1 | ≤ 5 | ≤ 10 |
| (b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals | | | |
| (c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals | | | |

Evidence:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,117 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

It is inferred to have 1 location, based on the impacts of significant drought. It has a continuing decline in (i), (iii) and (v) above, based on the decline of suitable habitat.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 82 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has inferred to have 1 location and a continuing decline in (i), (iii) and (v) above.

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| Criterion C. Small Population size and decline | | Critically Endangered | Endangered | Vulnerable |
|--|---|--|---|--|
| Number of mature individuals | | < 250 | < 2,500 | < 10,000 |
| AND at least one of C1 or C2 | | | | |
| C1 | An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future): | 25% in 3 years or 1 generation (whichever is longer) | 20% in 5 years or 2 generations (whichever is longer) | 10% in 10 years or 3 generations (whichever is longer) |
| C2 | An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions: | | | |
| (a) | (i) Number of mature individuals in each subpopulation | ≤ 50 | ≤ 250 | ≤ 1,000 |
| | (ii) % of mature individuals in one subpopulation = | 90 – 100% | 95 – 100% | 100% |
| (b) | Extreme fluctuations in the number of mature individuals | | | |

Evidence:

Eligible under Criterion C as Vulnerable

It is estimated that there are 2,000 to 10,000 mature individuals, based on multiple observations across subpopulations at Neds Corner Station, SE of Colignan, south of Lake Walla Walla.

There is estimated to be a continuing decline of 10 to 20% within three generations.

| Criterion D. Very small or restricted populations | | Critically Endangered | Endangered | Vulnerable |
|--|--|-----------------------|------------|--|
| Number of mature individuals (observed or estimated) | | < 50 | < 250 | < 1,000 |
| D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time. | | - | - | D2. Typically: AoO < 20 km ² or number of locations ≤ 5 |

Evidence:

Ineligible under Criterion D

It is estimated that there are 2,000 to 10,000 mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Browne, J.H. (1986). Members of the Malvaceae family in North Western Victoria. *Victorian Naturalist* 103 (5):150-157.



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Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. and Leigh, J.H. (1981). *Plants of Western New South Wales*. Soil Conservation Service.

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Abutilon otoparpum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/6a04d39c-5fea-4f0a-bc83-6fdb8eeefbb>