



## *Haegiela tatei* Small Nut-heads

### Taxonomy

*Haegiela tatei* (F. Muell.) P.S. Short & Paul G. Wilson

### 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 A2ace; B2ab(ii,iii,iv,v)c(iv)

### Species Information

#### Description and Life History

The taxon is a cobwebbed annual herb c. 2-8 cm high; branches ascending to erect. Leaves ovate, lanceolate, obovate or linear, 2.5-7 mm long, 0.5-2 mm wide, glabrous or cobwebbed. Capitula 2-3 mm diam. Involucral bracts 15-20; outer bracts ovate to widely elliptic, 2.4-3.5 mm long, inner bracts 1-1.5 mm long; female florets c. 20-50, corolla c. 1.5 mm long; bisexual florets 7-11. Cypselas 0.5-0.7 mm long. The taxon flowers from September to November (VicFlora, 2017).

#### Generation Length

The generation length of *Haegiela tatei* is inferred to be 3 to 7 years. This is based on the frequency of La Niña wet seasons.

#### Distribution

The taxon is rare in Victoria, located in the far west and north-west area, e.g. Pink Lakes, Mitre Lake, Dimboola district, and Towan Plains. It also occurs in Western Australia and South Australia (VicFlora, 2017).

There has been an absence of collections in wet years experiencing exceptional (spring-) summer rain, particularly from 1974 - 1978 which coincided with La Niña wet seasons (Ian Sluiter pers. comm. 10/7/18).

There have been pronounced fluctuations in collection frequency across all years ranging from 1880 to 2010, with exceptional concentrations in 1983 and 1986, which had 10 and 25 collections respectively. There have been more collections since 2010, although these numbers appear to be artefacts of survey efforts by a team of collectors near the mouth of the Murray River in 1986, and by Neville Scarlet and Howard Browne at two sites in Victoria in 1983 (Ian Sluiter pers. comm. 10/7/18).

#### Habitat

The taxon is restricted to saline, often gypseous habitats, and often grow in samphire flats or low chenopod shrubland (VicFlora, 2017).

#### Threats

Two sites, including Pine Plains in Wyperfeld NP, were the worst sites for rabbit infestation post the 1989 recommendations to cease sheep grazing, with massive rabbit warrens every 50-100m, and intense grazing or

browsing. However, rabbits now appear to be controlled in key areas for this taxon (Ian Sluiter pers. comm. 10/7/18).

The key current and future threat for this taxon is rising ground water and increasing salinity, as described for *Maireana oppositifolia*.

### 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%
<div> <div> A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.  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.  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]  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. </div> <div> based on any of the following: </div> <div> (a) direct observation [except A3]  (b) an index of abundance appropriate to the taxon  (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat  (d) actual or potential levels of exploitation  (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites </div> </div>			

### Evidence:

#### Eligible under Criterion A2 as Endangered

The population reduction over the past 9 to 21 years is inferred to be 50 to 75%, based on (a), (c) and (e) above.

This is based on a paucity of records in the last 10 years, despite excellent winter to early spring rain that is highly favourable for the recruitment of annuals in a number of seasons including 2016. There were no Victorian collections in 2005, which was a near average annual rainfall, and there have been no collections at all since 2010 and no site records in recent surveys.

The causes of the reduction may not have ceased, be understood or be reversible.

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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 88 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented based on the habitat specificity of the taxon and short-range dispersal of the taxon which is likely to be restricted to individual stands of samphire or low chenopod shrubland.

It is inferred to have 1 location, and has a continuing decline in (ii), (iii), (iv) and (v) based on the key threat of rising groundwater and increasing salinity applying across the Victorian range of the taxon.

It is estimated to have extreme fluctuations in (iv) above, based on recruitment that is cued by winter rain, which is highly variable across the Mallee range and Wimmera. Therefore, the taxon is arguably subject to extreme fluctuations in population size between El Niño drought and La Niña wet seasons, which are projected to increase in severity.

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:

#### Ineligible under Criterion C as Data Deficient

The total population size is impossible to estimate at any point in time since the taxon is subject to extreme fluctuations in population size in response to seasonal conditions.

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 <sup>2</sup> or number of locations ≤ 5

### Evidence:

#### Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.

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

### References

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)



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Short, P.S. (1996). *Haegiela*. In N.G. Walsh and T.J. Entwisle (Eds.), *Flora of Victoria Vol. 4, Cornaceae to Asteraceae*. Melbourne: Inkata Press.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Haegiela tatei*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/67203570-367f-4fd3-8ac0-f66fe096e41f>