

NSW Threatened Species Scientific Committee

Notice of Preliminary Determination

The NSW Threatened Species Scientific Committee, established under the Biodiversity Conservation Act 2016 (the Act), has made a Preliminary Determination to support a proposal to list the shrub *Acacia beadleana* R.H.Jones & J.J.Bruhl as a VULNERABLE SPECIES in Part 3 of Schedule 1 of the Act.

How to make a submission

The NSW TSSC welcomes public involvement in the assessment process and places preliminary determinations on public exhibition on the NSW TSSC pages on the Department of Planning and Environment (DPE) website. This public exhibition provides an opportunity for the public to comment on this preliminary determination as well as provide any additional information that is relevant to the assessment.

Postal submissions regarding this Preliminary Determination may be sent to:

Secretariat
NSW Threatened Species Scientific Committee
Locked Bag 5022
Parramatta NSW 1481.

Email submissions in Microsoft Word or PDF formats may be sent to:
scientific.committee@environment.nsw.gov.au

Submissions close 29th July 2022.

What happens next?

After considering any submissions received during the public exhibition period the NSW TSSC will make a Final Determination and a notice will be placed on the DPE website to announce the outcome of the assessment. If the Final Determination is to support a listing, then it will be added to the Schedules of the Act when the Final Determination is published on the legislation website. www.legislation.nsw.gov.au.

Privacy information

The information you provide in your submission may be used by the NSW TSSC in the assessment to determine the conservation status and listing or delisting of threatened or extinct species, threatened populations and threatened or collapsed ecological communities or to assess key threatening processes.

The NSW TSSC may be asked to share information on assessments with NSW Government agencies, the Commonwealth Government and other State and Territory governments to collaborate on national threatened species assessments using a common assessment method and to assist in the management of species and ecological communities.

If your submission contains information relevant to the assessment it may be provided to state and territory government agencies and scientific committees as part of this collaboration.

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If you wish your identity and personal information in your submission to be treated as confidential you must:

- *request your name be treated as confidential*, and
- *not include any of your personal information in the main text of the submission or attachments so that it can be easily removed.*

Dr Anne Kerle
Chairperson
NSW Threatened Species Scientific Committee

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Public Exhibition period: 29/04/2022 – 29/07/2022

Preliminary Determination

The NSW Threatened Species Scientific Committee, established under the Biodiversity Conservation Act 2016 (the Act), has made a Preliminary Determination to support a proposal to list the shrub *Acacia beadleana* R.H.Jones & J.J.Bruhl as a VULNERABLE SPECIES in Part 3 of Schedule 1 of the Act. Listing of Vulnerable species is provided for by Part 4 of the Act.

Summary of Conservation Assessment

Acacia beadleana is eligible for listing as Vulnerable, as the highest threat categories met by the taxon across all categories, under Clause 4.5 (c) and Clause 4.7 are: i) that there is a low total number of mature individuals and (ii) the geographic distribution of the species and the number of locations of the species is very highly restricted such that the species is prone to the effects of repeated wild fires or stochastic events within a very short time period.

The NSW Threatened Species Scientific Committee has found that:

1. *Acacia beadleana* was described by Jones and Bruhl (2006) as a “Single to multi-stemmed, lignotuberous, erect to spreading evergreen shrub, 0.4–2.5 m high. Stems woody, terete, roughened by phyllode scars. Branchlets terete with persistent, densely pilose indumentum; trichomes simple, hyaline appearing silver to white, antrorse to retrorse. Stipules subpersistent, narrowly triangular to triangular, 0.4–1 mm long, hairy. Pulvinus 0.5–1 mm long, sparsely hairy or sometimes glabrous. Phyllodes alternate and spiralled, crowded along the branchlets; narrowly elliptic, elliptic, linear to broadly linear, narrowly oblong, or narrowly oblanceolate 5–12.7 mm long, 0.6–1.4 mm wide, straight or recurved, often irregularly furrowed when dried; cross-section narrowly oblong to oblong; sparsely pilose; the hairs mostly restricted to abaxial margin, divergent, sometimes curved, antrorse to subappressed, hyaline and appearing silver to white; base cuneate; apex acute to short-acuminate and mucronate, mucro straight to oblique or hooked; two main veins (separating at proximal end of phyllode; one more or less central and the other closer to the abaxial edge) observed in cleared and stained phyllodes, nerves obscure in dried material; extrafloral nectary usually only one present, occasionally on the pulvinus or more often less than 2 mm distal to the pulvinus; stomata flush with phyllode surface, sometimes slightly raised. Inflorescence solitary, axillary; peduncles densely pilose, 5.8–15.5 mm long, proximally ebracteate; flower heads globular, bright golden-yellow, 32–46 flowered, 7–10 mm diameter when dried; bracteoles hairy; sepals, more than two thirds united from the base, hairy; petals sparsely hairy. Pods oblong; 20–60 mm long, 7–10.4 mm wide, glabrous, pruinose and purplish red when young, maturing to very dark brown outside and mid-tan inside, coriaceous, straight. Seeds of transverse orientation in pod; obloid or ovoid, 3.8–5 mm long, 2.5–3.5 mm wide; black to very dark brown; areole usually open, sometimes closed; aril extending to more than half the length of seed.”

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2. *Acacia beadleana* is endemic to NSW where it grows on the traditional lands described by Horton (1996) as belonging to the Gumbaynggirr First Nations people. It occurs in the Gibraltar Range National Park (west of Glenn Innes, NSW) where it is known from three sub-populations separated by at most 5km. Gibraltar Range National Park has a history of frequent fires (Croft et al. 2006) with the recent fires occurring in the park between September 16 2019 and January 7 2020 (NPWS Fire History database, 2021). *Acacia beadleana* occurs on rocky moderate slopes on skeletal sandy loams on granite boulders and in rock crevices in an *Eucalyptus williamsiana* layered open woodland with *Leptospermum trinervium*, *Callitris monticola* and *Allocasuarina rigida*.
3. The geographic distribution of *Acacia beadleana* is very highly restricted. The area of occupancy (AOO) was estimated to be 8 km², based on the species' occupying two 2 x 2 km grid cells, the spatial scale of assessment recommended by IUCN (2019). The extent of occurrence (EOO) was also estimated to be 8 km². The EOO is reported as equal to AOO, despite the range of the species (estimated to be approximately 1 km²) measured by a minimum convex polygon containing all the known sites of occurrence, being less than AOO. This is to ensure consistency with the definition of AOO as an area within EOO, following IUCN Guidelines (2019).
4. *Acacia beadleana* has a peak flowering from January – February and the main fruiting period is July to August. Plants have been recorded resprouting after drought and fire (Jones and Bruhl 2006). The species also responds to fire through new recruitment from the seedbank but it is noteworthy that after the 2019-2020 fires, there were few seedlings at the time of surveys in November to December 2020 and March to May 2021 (D. Mackay, *in litt.* September 2021). Subpopulations wax and wane in response to fire. In 2006 Jones and Bruhl (2006) noted that each subpopulation was comprised of c. 100 plants. More recently after the fires of 2019-2020, Mackay estimated 1000 plants across three subpopulations over two survey periods (November to December 2020, March to May 2021).
5. There is a risk of decline in *Acacia beadleana* if the population experiences out-of-season fires or high frequency fires that prevents a seed bank from being replenished. All individuals of *Acacia beadleana* are found in small patches that are likely to be concurrently impacted by a single fire event. A continual loss of individuals to successive fires may threaten the viability of the population if lignotubers become depleted and recruitment is insufficient to replace plants that die. While continuing decline is not currently inferred, the species should be reassessed if there is evidence of a fire free interval of less than 6 years and a lack of recruitment between fires. The subpopulation adjacent to the Gwydir Highway could be at risk from future road works.
6. *Acacia beadleana* R.H.Jones & J.J.Bruhl is not eligible to be listed as an Endangered or a Critically Endangered species.

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7. *Acacia beadleana* R.H.Jones & J.J.Bruhl is eligible to be listed as a Vulnerable species as, in the opinion of the NSW Threatened Species Scientific Committee, it is facing a high risk of extinction in Australia in the medium-term future as determined in accordance with the following criteria as prescribed by the Biodiversity Conservation Regulation 2017.

Assessment against Biodiversity Conservation Regulation 2017 criteria

The Clauses used for assessment are listed below for reference.

Overall Assessment Outcome: Vulnerable under Clause 4.5(c) and Clause 4.7.

Clause 4.2 – Reduction in population size of species (Equivalent to IUCN criterion A)

Assessment Outcome: Not met.

(1) - The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:			
	(a)	for critically endangered species	a very large reduction in population size, or
	(b)	for endangered species	a large reduction in population size, or
	(c)	for vulnerable species	a moderate reduction in population size.
(2) - The determination of that criteria is to be based on any of the following:			
	(a)	direct observation,	
	(b)	an index of abundance appropriate to the taxon,	
	(c)	a decline in the geographic distribution or habitat quality,	
	(d)	the actual or potential levels of exploitation of the species,	
	(e)	the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.	

Clause 4.3 - Restricted geographic distribution of species and other conditions (Equivalent to IUCN criterion B)

Assessment Outcome: Not met.

* Although *Acacia beadleana* meets the threshold for very highly restricted geographic distribution (EOO and AOO) for Critically Endangered, the species is currently considered to only meet one of the three conditions, i.e. it only meets (d), and not either (e) or (f). Hence for the overall assessment, Clause 4.3 is not met.

The geographic distribution of the species is:			
	*(a)	for critically endangered species	very highly restricted, or
	(b)	for endangered species	highly restricted, or
	(c)	for vulnerable species	moderately restricted,
and at least 2 of the following 3 conditions apply:			
	(d)	the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations,	

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	(e)	there is a projected or continuing decline in any of the following:
	(i)	an index of abundance appropriate to the taxon,
	(ii)	the geographic distribution of the species,
	(iii)	habitat area, extent or quality,
	(iv)	the number of locations in which the species occurs or of populations of the species,
	(f)	extreme fluctuations occur in any of the following:
	(i)	an index of abundance appropriate to the taxon,
	(ii)	the geographic distribution of the species,
	(iii)	the number of locations in which the species occur or of populations of the species.

Clause 4.4 - Low numbers of mature individuals of species and other conditions

(Equivalent to IUCN criterion C)

Assessment Outcome: Not met.

* Although *Acacia beadleana* meets the threshold for for Endangered for population size (250 to 2,500 mature individuals), the species is not currently considered to meet either (d) or (e). Hence for the overall assessment, Clause 4.4 is not met.

The estimated total number of mature individuals of the species is:			
	(a)	for critically endangered species	very low, or
	* (b)	for endangered species	low, or
	(c)	for vulnerable species	moderately low,
and either of the following 2 conditions apply:			
	(d)	a continuing decline in the number of mature individuals that is (according to an index of abundance appropriate to the species):	
	(i)	for critically endangered species	very large, or
	(ii)	for endangered species	large, or
	(iii)	for vulnerable species	moderate,
	(e)	both of the following apply:	
	(i)	a continuing decline in the number of mature individuals (according to an index of abundance appropriate to the species), and	
	(ii)	at least one of the following applies:	
		(A)	the number of individuals in each population of the species is:
		(I)	for critically endangered species extremely low, or
		(II)	for endangered species very low, or
		(III)	for vulnerable species low,
		(B)	all or nearly all mature individuals of the species occur within one population,
		(C)	extreme fluctuations occur in an index of abundance appropriate to the species.

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Clause 4.5 - Low total numbers of mature individuals of species (Equivalent to IUCN criterion D)

Assessment Outcome: Vulnerable under Clause 4.5(c).

The total number of mature individuals of the species is:			
	(a)	for critically endangered species	extremely low, or
	(b)	for endangered species	very low, or
	(c)	for vulnerable species	low.

Clause 4.6 - Quantitative analysis of extinction probability (Equivalent to IUCN criterion E)

Assessment Outcome: Data Deficient

The probability of extinction of the species is estimated to be:			
	(a)	for critically endangered species	extremely high, or
	(b)	for endangered species	very high, or
	(c)	for vulnerable species	high.

Clause 4.7 - Very highly restricted geographic distribution of species– vulnerable species

(Equivalent to IUCN criterion D2)

Assessment Outcome: Vulnerable.

For vulnerable species,	the geographic distribution of the species or the number of locations of the species is very highly restricted such that the species is prone to the effects of human activities or stochastic events within a very short time period.
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Dr Anne Kerle
Chairperson
NSW Threatened Species Scientific Committee

References:

Horton DR (1996) *The AIATSIS Map of Indigenous Australia*. Australian Institute of Aboriginal and Torres Strait Islander Studies, accessed from <https://aiatsis.gov.au/explore/articles/aiatsis-map-indigenous-australia>

IUCN Standards and Petitions Committee (2019) Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee. Downloadable from <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

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Jones, R. H., & Bruhl, J. J. (2006) *Acacia beadleana* (Fabaceae: Mimosoideae), a New, Rare, Localised Species from Gibraltar Range National Park, New South Wales. *Proceedings of the Linnean Society of New South Wales* **127**, 5–10.

Mackay, D. (2021) Survey for *Acacia beadleana*. An unpublished confidential report prepared for the NSW Threatened Species Scientific Committee. 2 pp.

NPWS Fire History database, (2021)

https://geo.seed.nsw.gov.au/Public_Viewers/index.html?viewer=Public_Viewers&locale=en-AU&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.203.NPWS%20Fire%20History