

NSW Threatened Species Scientific Committee

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Notice of and reasons for the Final Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Final Determination to remove *Ancistrachne maidenii* (A.A.Ham.) Vickery from the Schedules of the Act by omitting reference to this species from Part 3 of Schedule 1 (Vulnerable species). The omission of species from the Schedules is provided for by Part 4 of the Act.

Summary of Conservation Assessment

The NSW Threatened Species Scientific Committee has found that:

1. *Ancistrachne maidenii* (A.A.Ham.) Vickery (Family Poaceae) has been described by Harden (1993, Flora of NSW, Vol. 4) as: “a scrambling perennial grass with slender, rigid decumbent stems and ascending branches. Leaves: sheath sparsely hairy; ligule ciliate; blade subcordate at the base. Racemes terminal or axillary, c. 4 cm long, the latter ones shorter and partially enclosed in the sheath. Spikelets falling entire at maturity, 2.5 - 3 mm long. Lower glume abaxial, a hyaline scale to 0.25 mm long or often reduced or absent. Upper glume distinctly 5 - nerved, subequal to the spikelet, obtuse to subacute and, together with the lower lemma, sprinkled with fine, mostly curved, tubercle-based hairs. Lower lemma like the upper glume, distinctly 7 - nerved, sterile, without a palea. Fertile floret elliptic to lanceolate, obscurely nerved, produced into a short but distinct mucro to 0.25 mm long, the palea subequal to the lemma and similar in texture.”
2. *Ancistrachne maidenii* is endemic to New South Wales (NSW) and occurs in three disjunct regions; the northern Sydney Basin region, the lower Blue Mountains region, and the Clarence–Moreton region surrounding Grafton (NSW Government 2021; Australian Government 2018). These are within the traditional lands of the Eora and Bundjalung Nations respectively (City of Sydney 2017; Lismore City Council 2022).
3. *Ancistrachne maidenii* is currently known from 23 discrete sites across these three regions. Given the proximity of *A. maidenii* sites within and the distances between each region, the three regions are considered to be separate subpopulations, as per the IUCN definition (IUCN 2022).
4. *Ancistrachne maidenii* occurs on low nutrient sandstone-derived sandy soils with good drainage, on Hawkesbury, Narrabeen, and Clarence Sandstone (NSW Government 2021). The species has been recorded on rocky slopes of major river systems, including along the Hawkesbury River at Berowra Waters, Brooklyn, and Wisemans Ferry in the northern Sydney subpopulation, and along the Orara River, Clarence River and Shannon Creek areas in the Clarence-Moreton subpopulation (DPE BioNet 2022).
5. In the northern Sydney and Blue Mountains subpopulations, *Ancistrachne maidenii* grows in open dry sclerophyll forest at altitudes from 0-200m (Benson and

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McDougall 2005), in association with *Angophora floribunda*, *A. costata*, *A. bakeri*, *Eucalyptus punctata*, *Breynia oblongifolia*, *Persoonia linearis*, *Bursaria spinosa*, *Allocasuarina littoralis*, *Poa affinis*, *Astrotricha floccosa*, *Glochidion ferdinandi*, *Lomandra longifolia*, *L. confertifolia*, *Cissus hypoglauca*, *Xanthorrhoea arborea*, *Dodonaea multijuga*, *Platysace clelandii*, *Entolasia stricta* and *Xanthosia pilosa* (DPE BioNet 2022). The species appears to prefer an open tree canopy, and not heavy shading (Benson and McDougall 2005). On the Clarence Sandstones in the Clarence-Moreton subpopulation, *Ancistrachne maidenii* grows in open forests, woodlands and shrublands on outcropping sandstone soils. Dominant trees include *Eucalyptus planchoniana*, *Corymbia gummifera*, *Angophora robur*, *Eucalyptus psammitica*, *Eucalyptus pilularis/pyrocarpa*, *Leptospermum trinervium*, *Leptospermum microcarpum*, *Banksia serrata*, *Lambertia formosa*, *Banksia oblongifolia*, *Dodonaea crucifolia*, *Grevillea banyabba*, *Pultenaea rostrata*, *Prostanthera sejuncta*, *Entolasia stricta* and *Philothrix deusta*.

6. It is estimated that the minimum population size of *Ancistrachne maidenii* is 37,287-69,877 mature individuals across the three subpopulations. The Clarence-Moreton subpopulation contains 79% of the total population, the northern Sydney subpopulation 20% and the Blue Mountains contains less than 1%. All subpopulation estimates are likely to be underestimates, according to species experts (P. Sheringham *in litt.* August 2022; G. Phillips pers. comm. August 2022).
7. *Ancistrachne maidenii* has an Extent of Occurrence (EOO) of 27,067 km², calculated as a minimum convex polygon containing all known occurrences, the method of assessment recommended by IUCN (2022). The Area of Occupancy (AOO) is estimated to be 208 km² based on 2 x 2 km grid cells, the scale recommended by IUCN (2022). Both EOO and AOO were calculated using GeoCAT software (Bachman *et al.* 2011). *Ancistrachne maidenii* is very likely to be more widespread and common than currently known based on the extent of unsurveyed suitable habitat within and outside of the current known range. Associated habitats extend throughout Yengo and Wollemi National Parks north of Sydney and into the Greater Blue Mountains, and further north towards Lismore in the Clarence-Moreton region (DPE 2022; S. Douglas *in litt.* August 2022; P. Sheringham *in litt.* August 2022), so the potential for further sites to be found remains high.
8. Observations of native perennial grasses suggest that they can be long lived, surviving upwards of two years with some individuals persisting for fifteen to twenty years when there is an appropriate disturbance regime for the species (Blair *et al.* 2014). Seed can be produced within the first year of growth for most perennial grasses (Prober & Thiele, 2005). For *A. maidenii*, longevity has been estimated to be ~18-20 years (G. Phillips *in litt.* August 2022). *Ancistrachne maidenii* probably requires an intermediate level of disturbance to ensure maximum longevity in line with other similar genera such as *Eriochloa* sp. (G. Phillips *in litt.* August 2022).
9. It is not inferred that there will be ongoing decline in the current extent or quality of *Ancistrachne maidenii* habitat, number of locations or subpopulations or number of mature individuals. There is a lack of sufficient monitoring across the species' distribution over any length of time to show a declining population trend. However,

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surveys over the last 20 years (and as recently as 2022) have increased the known distribution of the species significantly, with 78 additional discrete records, 20 additional sites and 2 additional sub-populations found since the initial listing as Vulnerable in 1999. This suggests large areas of unsurveyed suitable habitat are very likely to contain additional sites, and potentially new subpopulations of the species.

10. The most serious plausible threat for *Ancistrachne maidenii* may be multiple, short interval fires that could potentially exhaust the seed bank and kill mature plants that fail to resprout after multiple impacts from reoccurring fire. Conversely, if fire regimes were to become less frequent, the open grassy woodland vegetation structure which the species prefers could experience a shift towards a closed canopy forest shading the species out (G. Phillips pers. comm. August 2022). However, it is very unlikely that changed fire regimes could occur at all the sites at intervals that would prevent the species from persisting within each of the known subpopulations. 'High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' is listed as a Key Threatening Process under the Act.
11. Despite minor impacts from other threats including human disturbance along walking tracks, inadvertent spraying, pollution from run-off, road and track maintenance and weed competition, there is no evidence to suggest that these threats are causing decline for any subpopulation of *A. maidenii*. The species also predominantly occurs (95% of the total population) within protected areas.
12. In view of the above, the NSW Threatened Species Scientific Committee is of the opinion that *Ancistrachne maidenii* (A.A.Ham.) Vickery is not eligible to be listed as a threatened species in any category under the Act.

Assessment against *Biodiversity Conservation Regulation 2017* criteria

The Clauses used for assessment are listed below for reference.

Overall Assessment Outcome:

Ancistrachne maidenii was found to be ineligible for listing as a threatened species as none of the criteria were met.

Clause 4.2 – Reduction in population size of species

(Equivalent to IUCN criterion A)

Assessment Outcome: Data deficient

(1) - The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the species:			
	(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,	

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	(b)	an index of abundance appropriate to the species,
	(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: Criterion 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,	
	(e)	there is a projected or continuing decline in any of the following:	
		(i)	an index of abundance appropriate to the species,
		(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 species,
		(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: Criterion 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:		

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		(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.		

Clause 4.5 - Low total numbers of mature individuals of species

(Equivalent to IUCN criterion D)

Assessment Outcome: Criterion not met

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: Criterion not met

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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Acting Chairperson
NSW Threatened Species Scientific Committee

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Supporting Documentation:

Taylor CT (2022) Conservation Assessment of *Ancistrachne maidenii* (A.A.Ham) Vickery (Poaceae) NSW Threatened Species Scientific Committee

References:

Australian Government (2018) Bioregion Assessments. Context statement for the Clarence-Moreton bioregion. Available at: <https://www.bioregionalassessments.gov.au/assessments/11-context-statement-clarence-moreton-bioregion#:~:text=The%20population%20of%20the%20Clarence-Moreton%20bioregion%20is%20around,Clarence-Moreton> (Accessed 14th June 2022)

Bachman S, Moat J, Hill AW, De Torre J, Scott B (2011) Supporting Red List threat assessments with GeoCAT: Geospatial Conservation Assessment tool. *ZooKeys* 150 117.

Benson D, McDougall L (2005) Ecology of Sydney plant species: Part 10, Monocotyledon families Lemnaceae to Zosteraceae. *Cunninghamia* **9(1)**: 16–212

Blair J, Nippert J, Briggs J (2014) Grassland Ecology. In 'Ecology and the Environment' (Ed. RK Monson) pp. 389–423. Springer, New York.

City of Sydney (2017) Aboriginal Histories. Aboriginal history and the Gadigal People - City of Sydney. Available at: <https://www.cityofsydney.nsw.gov.au/history/aboriginal-histories> (Accessed June 14th June 2022)

DPE BioNet (2022) BioNet Atlas [*Ancistrachne maidenii* dataset] Available at: <https://www.environment.nsw.gov.au/AtlasApp/> (Accessed May 2022)

DPE (Department of Planning and Environment) (2022). *NSW State Vegetation Type Map C1.1M1*. Source: NSW Department of Planning and Environment GIS layer, exported 31 August 2023.

Ecoplanning (2022) Field survey of threatened species to support conservation assessments – *Ancistrachne maidenii* – Sydney Region. Unpublished Data

Lismore City Council (2022) Our first peoples – Lismore City Council. Available at: <https://lismore.nsw.gov.au/our-first-peoples> (Accessed; 8th August 2022)

NSW Flora Online (PlantNet). *Ancistrachne maidenii* Available at: <https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Ancistrachne~maidenii> (Accessed 24 May 2019)

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NSW Government (2021) *Ancistrachne maidenii* *Ancistrachne maidenii* - profile | NSW Environment, Energy and Science. Available at:
<https://www.environment.nsw.gov.au/threatenedspeciesapp/profileData.aspx?id=10050&cmaName=Sydney+Basin> (Accessed 14th June 2022)

PlantNET (The NSW Plant Information Network System) Royal Botanic Gardens and Domains Trust (2012) [*Ancistrachne maidenii* dataset] *Flora Online*. *National Herbarium of NSW*. Retrieved 17th May 2022.

Prober SM, Thiele KR (2005) Restoring Australia's temperate grasslands and grassy woodlands: integrating function and diversity. *Ecological Management and Restoration* **6(1)**: 16–27.