

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 *Tasmannia purpurascens* (Vickery) A.C.Sm. as an ENDANGERED SPECIES in Part 2 of Schedule 1 of the Act, and, as a consequence, to omit reference to *Tasmannia purpurascens* (Vickery) A.C.Sm. in Part 3 of Schedule 1 (Vulnerable Species). Listing of Endangered species is provided for by Part 4 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 NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) 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 2124.

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

Submissions close 17 April 2025

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 NSW DCCEEW 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.

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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.

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.*

Professor Caroline Gross
Chairperson
NSW Threatened Species Scientific Committee

NSW Threatened Species Scientific Committee

Public Exhibition period: 17/01/2025 – 17/04/2025

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 *Tasmannia purpurascens* (Vickery) A.C.Sm. as an ENDANGERED SPECIES in Part 2 of Schedule 1 of the Act, and, as a consequence, to omit reference to *Tasmannia purpurascens* (Vickery) A.C.Sm. in Part 3 of Schedule 1 (Vulnerable Species). Listing of Endangered species is provided for by Part 4 of the Act.

Summary of Conservation Assessment

Tasmannia purpurascens (Vickery) A.C.Sm. was found to be Endangered in accordance with the following provisions in the *Biodiversity Conservation Regulation 2017*: Clause 4.3(b)(d)(e i,iii) because: 1) the species has a highly restricted geographic range with an area of occupancy (AOO) of 240–248 km² and an extent of occurrence (EOO) of 550–1,199 km²; 2) it occurs in three threat-defined locations; and 3) there is an estimated and inferred continuing decline in the area, extent and quality of habitat and number of mature individuals due to habitat clearing, fragmentation, and degradation; dieback from *Phytophthora cinnamomi* infection; habitat degradation from feral animals; invasion by *Cytisus scoparius* (Scotch broom) and *Rubus* spp. (blackberry); and adverse fire regimes, particularly high frequency fire and high severity fire.

The NSW Threatened Species Scientific Committee has found that:

1. *Tasmannia purpurascens* (Vickery) A.C.Sm. (family Winteraceae) is a “shrub 1–3 m high, apical buds and stems purplish. Leaves oblanceolate to ± obovate, mostly 8–18 cm long, 30–50 mm wide, apex obtuse, glabrous, both surfaces green and purplish towards base; secondary veins forming angles of c. 45° with midvein; ± sessile, gradually tapered to base. Petals usually 2, 8–12 mm long, white. Carpels 2–9 per flower. Ovary c. 2 mm long; stalk of carpel much shorter than the ovary. Berries ovoid to oblong, 10–15 mm long, blackish purple; usually 2–6 develop, each on stalk 1–4 mm long, peduncle 20–40 mm long.” (Harden 1990).
2. The majority of *Tasmannia purpurascens* records are in the Barrington Tops and Gloucester Tops area of the NSW Northern Tablelands. The species is also recorded in Ben Halls Gap Nature Reserve (NR), approximately 40 km to the northwest. The distribution of *T. purpurascens* occurs on the traditional lands of the Geawegal and Kamilaroi peoples (AIATIS 2023).
3. The population size of *Tasmannia purpurascens* is estimated to exceed 100,000 individuals (OEH 2021). The species is dioecious (Smith 1969; Falster et al. 2021) but the proportion of males and females is unknown, as is the proportion of mature individuals. *Tasmannia purpurascens* is common on the Barrington Plateau (M. Saunders pers. obs. November 2023). There is no long-term monitoring information available for this species and there is no information on long-term population trends. *Tasmannia purpurascens* occurs across an estimated 1–3 subpopulations, as per the IUCN (2024) definition.

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4. *Tasmannia purpurascens* has a highly restricted geographic range. The extent of occurrence (EOO) was calculated at 550–1,199 km² and is based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2024). The area of occupancy (AOO) is estimated to be 240–248 km² and was calculated using 2 x 2 km grid cells, the scale recommended by IUCN (2024).
5. *Tasmannia purpurascens* typically occurs in tall, moist eucalypt, subalpine woodland, and cool temperate rainforest (OEH 2019; PlantNet 2023) at elevations ranging from 1,050–1,560 m above sea level. *Tasmannia purpurascens* occurs on freely draining soil with good moisture retention but can also grow on heavier soils (Casey 1983).
6. *Tasmannia purpurascens* is dioecious (Smith 1969; Falster *et al.* 2021) and flowers from October to November (Falster *et al.* 2021; OEH 2021; PlantNet 2023). *Tasmannia purpurascens* fruits from February to June (FOA 2022), with fruit maturing over several months, based on what is known about *Tasmannia lanceolata* (Read 2017). *Tasmannia purpurascens* seeds are dormant at the time of release. *In situ* fruit burial studies of *Tasmannia stipitata*, with which *T. purpurascens* co-occurs, have shown the species has a delayed germination of at least 2 months (Campbell *et al.* 2012) and up to 10 months (Campbell *et al.* 2016), suggesting *T. purpurascens* is likely to have similar delayed germination under real-world conditions with the environmental conditions required to break dormancy and promote germination remaining unknown.
7. *Tasmannia purpurascens* is exposed to a broad range of threats, including habitat clearing, fragmentation, and degradation; dieback from *Phytophthora cinnamomi* infection; habitat degradation from feral animals; invasion by *Cytisus scoparius* (Scotch broom) and *Rubus* spp. (blackberry); and adverse fire regimes, particularly high frequency fire and high severity fire. Hybridisation with sympatric *Tasmannia* taxa is also occurring and appears to be an important evolutionary process among other taxa in the genus (Worth *et al.* 2010). Threats are concentrated in the Barrington Tops area, with Bens Halls Gap NR currently only affected by low densities of feral herbivores. 'Clearing of native vegetation', 'Infection of native plants by *Phytophthora cinnamomi*', 'Predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)', 'Habitat degradation and loss by feral horses (brumbies, wild horses), *Equus caballus* Linnaeus 1758', 'Invasion and establishment of *Cytisus scoparius* (Scotch broom)', 'Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants', and 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' are listed as Key Threatening Processes under the Act.
8. *Tasmannia purpurascens* occurs at three threat-defined locations as per the IUCN definition (IUCN 2024), due to the most serious plausible threats which result in the lowest number of locations being dieback from *Phytophthora cinnamomi* infection and adverse fire regimes.
9. Habitat disturbance, fragmentation, and degradation from logging operations has resulted in an estimated and inferred loss of mature individuals and a significant decline in habitat quality and extent. Targeted surveys undertaken in logging compartments in 2023 inferred logging to have resulted in or contributed to a c.

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77–100% decline in the number of individuals (in all age classes) at 5–21 years after the logging events (NSW DCCEEW 2024).

10. It is not known what effect severe fire alone has on *Tasmannia purpurascens*. However, high severity fire and its interaction with logging appears to be a serious threat to *Tasmannia purpurascens*, based on the response of the species to by logging followed by severe wildfire in 2002 at Stewarts Brook State Forest. The apparent absence of the species in 2023 in the area affected by both logging and severe wildfire suggests that the regenerating habitat is no longer suitable for supporting *T. purpurascens* (NSW DCCEEW 2024), possibly resulting in a decline in AOO, potentially EOO, and habitat quality, and an inferred decline in population size. However, additional surveys are required to confirm this.
11. The adverse effects of *Phytophthora cinnamomi* on *Tasmannia purpurascens* continues to be reported, with individuals and stands of plants observed to be dead or dying from infection (J. Cameron *in litt.* October 2023; N. Hunter *in litt.* October 2023; NSW DCCEEW 2024). In areas of Barrington Tops which have been infected with *P. cinnamomi* there has been an observed change in the understorey, from vegetation dominated by dense shrubs to vegetation dominated by snow grass (*Poa sieberiana*) (McDougall 2005). Targeted surveys undertaken in 2023 found that grassy woodland habitat had the highest proportion of the observed sick or dead *Tasmannia purpurascens*, inferred to be infected with *P. cinnamomi* (NSW DCCEEW 2024).
12. The combined and interactive effects of dieback from *Phytophthora cinnamomi*, feral pigs and horses, and invasion by *Cytisus scoparius* and exotic *Rubus* spp., and adverse fire regimes is contributing an estimated and inferred decline in the area, extent, and quality of habitat. Pigs and horses not only cause habitat degradation (OEH 2019; DPE 2022) but are likely to be vectors of both *P. cinnamomi* (Kliejunas and Ko 1976; Newsome *et al.* 2002; Li 2012; Li *et al.* 2014) and *C. scoparius* (Waterhouse 1988; DPE 2022). *Cytisus scoparius* forms dense thickets which may alter fire behaviour (Downey 2003) or compete for water (Carter *et al.* 2019), while *Rubus* spp. are likely to have a strong competitive advantage over seedlings of *Tasmannia purpurascens* (NSW DCCEEW 2024). The interactive effects of fire with *C. scoparius* are likely to favour *C. scoparius* and lead to continuing decline in habitat quality for *Tasmannia purpurascens*.
13. Climate change projections indicate a future trend of increased frequency of severe fire weather and more frequent fires in southeast Australia (Dowdy *et al.* 2019; Jones *et al.* 2022). The Hunter and North Coast regions are projected to become hotter, have fewer cold nights under 2°C, have more hot days over 35°C, have more high fire danger weather days, and have a longer fire season by 2079 (BOM and CSIRO 2022; AdaptNSW 2023). Regionally, it is projected with high confidence that climate change will result in a harsher fire-weather climate in the future (CSIRO 2023). It is plausible that these changes will lead to more frequent, intense, and severe fires, and changes in fire season, which will in turn adversely affect the *Tasmannia purpurascens* population in the future.
14. *Tasmannia purpurascens* (Vickery) A.C.Sm. is not eligible to be listed as a Critically endangered species.
15. *Tasmannia purpurascens* (Vickery) A.C.Sm. is eligible to be listed as an Endangered species as, in the opinion of the NSW Threatened Species Scientific

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Committee, it is facing a very high risk of extinction in Australia in the near 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: *Tasmannia purpurascens* was found to be Endangered under Clause 4.3(b)(d)(e i,iii).

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 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: Endangered under Clause 4.3(b)(d)(e i,iii).

| 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 taxon, |
| | | (ii) | the geographic distribution of the species, |
| | | (iii) | habitat area, extent or quality, |

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| | | |
|--|-------|---|
| | (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.

| | | | |
|--|-------|---|--|
| 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. |

Clause 4.5 - Low total numbers of mature individuals of species

(Equivalent to IUCN criterion D)

Assessment Outcome: Not met.

| | | | |
|--|-----|-----------------------------------|-------------------|
| The total number of mature individuals of the species is: | | | |
| | (a) | for critically endangered species | extremely low, or |

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| | | | |
|--|-----|------------------------|--------------|
| | (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: Not met.

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| 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. |
|-------------------------|--|

Professor Caroline Gross
Chairperson
NSW Threatened Species Scientific Committee

Supporting Documentation:

Saunders M (2024) Conservation Assessment of *Tasmannia purpurascens* (Vickery) A.C.Sm. (Winteraceae). NSW Threatened Species Scientific Committee.

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