



Consultation on Species Listing Eligibility and Conservation Actions

Pomaderris gilmourii var. *cana* (grey deua pomaderris)

You are invited to provide your views and supporting reasons related to:

- 1) the eligibility of *Pomaderris gilmourii* var. *cana* (grey deua pomaderris) for inclusion on the EPBC Act threatened species list in the Critically Endangered category; and
- 2) the necessary conservation actions for the above species.

The purpose of this consultation document is to elicit additional information to better understand the status of the species and help inform on conservation actions and further planning. As such, the below draft assessment should be considered to be **tentative** as it may change following responses to this consultation process.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment.

Responses are to be provided in writing by email to: species.consultation@awe.gov.au. Please include species scientific name in Subject field.

or by mail to:

The Director
Bushfire Affected Species Assessments Section
Department of Agriculture, Water and the Environment
John Gorton Building, King Edward Terrace
GPO Box 858
Canberra ACT 2601

Responses are required to be submitted by 5 January 2022.

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General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the department's website at: <https://www.awe.gov.au/environment/biodiversity/threatened/recovery-plans>.

Public nominations to list threatened species under the EPBC Act are received annually by the department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at: <https://www.awe.gov.au/sites/default/files/env/pages/d72dfd1a-f0d8-4699-8d43-5d95bbb02428/files/tssc-guidelines-assessing-species-2021.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at: <https://www.awe.gov.au/environment/biodiversity/threatened/nominations>.

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the department's website at: <https://www.awe.gov.au/environment/biodiversity/threatened/recovery-plans>.

Privacy notice

The Department will collect, use, store and disclose the personal information you provide in a manner consistent with the Department's obligations under the Privacy Act 1988 (Cth) and the Department's Privacy Policy.

Any personal information that you provide within, or in addition to, your comments in the threatened species assessment process may be used by the Department for the purposes of its functions relating to threatened species assessments, including contacting you if we have any questions about your comments in the future.

Further, the Commonwealth, State and Territory governments have agreed to share threatened species assessment documentation (including comments) to ensure that all States and Territories have access to the same documentation when making a decision on the status of a potentially threatened species. This is also known as the '[Common Assessment Method](#)' (CAM). As a result, any personal information that you have provided in connection with your comments may be shared between Commonwealth, State or Territory government entities to assist with their assessment processes.

The Department's Privacy Policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint. A copy of the Department's Privacy Policy is available at: <https://www.awe.gov.au/about/commitment/privacy>.

Information about this consultation process

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

CONSULTATION QUESTIONS FOR *POMADERRIS GILMOURII* VAR. *CANA*

SECTION A - GENERAL

1. Is the information used to assess the nationally threatened status of the *Pomaderris gilmourii* var. *cana* (Grey Deua Pomaderris)? Have all the underlying assumptions been made explicit? Please provide justification for your response.
2. Can you provide additional data or information relevant to these assessments?
3. Have you been involved in previous state, territory or national assessments of this species? If so, in what capacity?

PART 1 – INFORMATION TO ASSIST LISTING ASSESSMENT

SECTION B DO YOU HAVE ADDITIONAL INFORMATION ON THE ECOLOGY OR BIOLOGY OF THE SPECIES? (If no, skip to section C)

Biological information

4. Can you provide any additional or alternative references, information or estimates on longevity, average life span and generation length?

5. Do you have any additional information on the ecology or biology of the species not in the current advice?

SECTION C **ARE YOU AWARE OF THE STATUS OF THE TOTAL NATIONAL POPULATION OF THE SPECIES? (If no, skip to section D)**

Population size

6. Has the survey effort for the Grey Deua Pomaderris been adequate to determine its national adult population size? If not, please provide justification for your response.
7. Do you consider the way the population size has been derived to be appropriate? Are there any assumptions and unquantified biases in the estimates? Do you accept the estimate of the total population size of the variety? If not, please provide justification for your response.
8. If not, can you provide a further estimate of the current population size of mature adults of the variety (national extent)? Please provide supporting justification or other information.

If, because of uncertainty, you are unable to provide a single number, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of possible species numbers, and also choose the level of confidence you have in this estimate:

Number of mature individuals is estimated to be in the range of:

☐ 0–10 ☐ 10–50 ☐ 50–100 ☐ >100 ☐ >500 ☐ >1 000

Level of your confidence in this estimate:

- ☐ 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- ☐ 31–50% - more than a guess, some level of supporting evidence
- ☐ 51–95% - reasonably certain, information suggests this range
- ☐ 95–100% - high level of certainty, information indicates quantity within this range
- ☐ 99–100% - very high level of certainty, data are accurate within this range

9. Do you consider the single population of Grey Deua Pomaderris to be extinct?

SECTION D **ARE YOU AWARE OF TRENDS IN THE OVERALL POPULATION OF THE SPECIES? (If no, skip to section E)**

10. Does the current and predicted rate of decline used in the assessment seem reasonable? Do you consider that the way this estimate has been derived is appropriate? If not, please provide justification of your response.

Evidence of total population size change

11. Are you able to provide an estimate of the total population size during the early 1980s for the Grey Deua Pomaderris (*at or soon after the start of the most recent three generation*)? Please provide justification for your response.

If, because of uncertainty, you are unable to provide a single number, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of possible species numbers, and also choose the level of confidence you have in this estimate.

Number of mature individuals is estimated to be in the range of:

☐ 0–10 ☐ 10–50 ☐ 50–100 ☐ >100 ☐ >500 ☐ >1000

Level of your confidence in this estimate:

- ☐ 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- ☐ 31–50% - more than a guess, some level of supporting evidence
- ☐ 51–95% - reasonably certain, information suggests this range
- ☐ 95–100% - high level of certainty, information indicates quantity within this range
- ☐ 99–100% - very high level of certainty, data are accurate within this range

12. Are you able to comment on the extent of decline in the taxon's total population size over the last approximately 20 years (i.e. three generations)? Please provide justification for your response.

If, because of uncertainty, you are unable to provide an estimate of decline, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of decline, and also choose the level of confidence you have in this estimated range.

Decline estimated to be in the range of:

☐ 1–30% ☐ 31–50% ☐ 51–80% ☐ 81–100% ☐ 90–100%

Level of your confidence in this estimated decline:

- ☐ 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- ☐ 31–50% - more than a guess, some level of supporting evidence
- ☐ 51–95% - reasonably certain, suggests this range of decline
- ☐ 95–100% - high level of certainty, information indicates a decline within this range

☐ 99–100% - very high level of certainty, data are accurate within this range

13. Please provide (if known) any additional evidence which shows the population is stable, increasing or declining.

SECTION E ARE YOU AWARE OF INFORMATION ON THE TOTAL RANGE OF THE SPECIES? (If no, skip to section F)

Current Distribution/range/extent of occurrence, area of occupancy

14. Does the assessment consider the entire geographic extent and national extent of the variety? If not, please provide justification for your response.
15. Has the survey effort for this variety been adequate to determine its national distribution? If not, please provide justification for your response.
16. Is the distribution described in the assessment accurate? If not, please provide justification for your response and provide alternate information.
17. Do you agree that the way the current extent of occurrence and/or area of occupancy have been estimated is appropriate? Please provide justification for your response.
18. Can you provide estimates (or if you disagree with the estimates provided, alternative estimates) of the extent of occurrence and/or area of occupancy?

If, because of uncertainty, you are unable to provide an estimate of extent of occurrence, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of extent of occurrence, and also choose the level of confidence you have in this estimated range.

Current extent of occurrence is estimated to be in the range of:

☐ <100 km² ☐ 100 – 5 000 km² ☐ 5 001 – 20 000 km² ☐ >20 000 km²

Level of your confidence in this estimated extent of occurrence

- ☐ 0–30% - low level of certainty/ a bit of a guess/ not much data to go on
- ☐ 31–50% - more than a guess, some level of supporting evidence
- ☐ 51–95% - reasonably certain, data suggests this range of decline
- ☐ 95–100% - high level of certainty, data indicates a decline within this range
- ☐ 99–100% - very high level of certainty, data is accurate within this range

If, because of uncertainty, you are unable to provide an estimate of area of occupancy, you may wish to provide an estimated range. If so, please choose one of the ranges

suggested in the table below of ranges of area of occupancy, and also choose the level of confidence you have in this estimated range.

Current area of occupancy is estimated to be in the range of:

☐ <10 km² ☐ 11 – 500 km² ☐ 501 – 2 000 km² ☐ >2 000 km²

Level of your confidence in this estimated extent of occurrence:

☐ 0–30% - low level of certainty/ a bit of a guess/ not much data to go on

☐ 31–50% - more than a guess, some level of supporting evidence

☐ 51–95% - reasonably certain, data suggests this range of decline

☐ 95–100% - high level of certainty, data indicates a decline within this range

☐ 99–100% - very high level of certainty, data is accurate within this range

SECTION F ARE YOU AWARE OF TRENDS IN THE TOTAL RANGE OF THE SPECIES? (If no, skip to section G)

Past Distribution/range/extent of occurrence, area of occupancy

19. Do you consider that the way the historic distribution has been estimated is appropriate? Please provide justification for your response.

20. Can you provide estimates (or if you disagree with the estimates provided, alternative estimates) of the former extent of occurrence and/or area of occupancy?

If, because of uncertainty, you are unable to provide an estimate of past extent of occurrence, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of past extent of occurrence, and also choose the level of confidence you have in this estimated range.

Past extent of occurrence is estimated to be in the range of:

☐ <100 km² ☐ 100 – 5 000 km² ☐ 5 001 – 20 000 km² ☐ >20 000 km²

Level of your confidence in this estimated extent of occurrence

☐ 0–30% - low level of certainty/ a bit of a guess/ not much data to go on

☐ 31–50% - more than a guess, some level of supporting evidence

☐ 51–95% - reasonably certain, data suggests this range of decline

☐ 95–100% - high level of certainty, data indicates a decline within this range

☐ 99–100% - very high level of certainty, data is accurate within this range

If, because of uncertainty, you are unable to provide an estimate of past area of occupancy, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of past area of occupancy, and also choose the level of confidence you have in this estimated range:

Past area of occupancy is estimated to be in the range of:

☐ <10 km² ☐ 11 – 500 km² ☐ 501 – 2 000 km² ☐ >2 000 km²

Level of your confidence in this estimated extent of occurrence:

☐ 0–30% - low level of certainty/ a bit of a guess/ not much data to go on

☐ 31–50% - more than a guess, some level of supporting evidence

☐ 51–95% - reasonably certain, data suggests this range of decline

☐ 95–100% -high level of certainty, data indicates a decline within this range

☐ 99–100% - very high level of certainty, data is accurate within this range

PART 2 – INFORMATION FOR CONSERVATION ADVICE ON THREATS AND CONSERVATION ACTIONS

SECTION G DO YOU HAVE INFORMATION ON THREATS TO THE SURVIVAL OF THE SPECIES? (If no, skip to section H)

21. Do you consider that all major threats have been identified and described adequately?
22. To what degree are the identified threats likely to impact on the variety in the future?
23. Can you provide additional or alternative information on past, current or potential threats that may adversely affect the taxon at any stage of its life cycle?
24. Can you provide supporting data/justification or other information for your responses to these questions about threats?

SECTION H DO YOU HAVE INFORMATION ON CURRENT OR FUTURE MANAGEMENT FOR THE RECOVERY OF THE SPECIES? (If no, skip to section I)

25. What planning, management and recovery actions are currently in place supporting protection and recovery of the variety? To what extent have they been effective?

26. Can you recommend any additional or alternative specific threat abatement or conservation actions that would aid the protection and recovery of the variety?
27. Would you recommend translocation (outside of the taxons' historic range) as a viable option as a conservation actions for this variety?

SECTION I DO YOU HAVE INFORMATION ON STAKEHOLDERS IN THE RECOVERY OF THE SPECIES?

28. Are you aware of other knowledge (e.g. traditional ecological knowledge) or individuals/groups with knowledge that may help better understand population trends/fluctuations, or critical areas of habitat?
29. Are you aware of any cultural or social importance or use that the variety has?
30. What individuals or organisations are currently, or potentially could be, involved in management and recovery of the variety?
31. How aware of the Grey Deua Pomaderris are land managers where the taxon is found?
32. What level of awareness is there with individuals or organisations around the issues affecting the variety?
 - a. Where there is awareness, what are these interests of these individuals/organisations?
 - b. Are there populations or areas of habitat that are particularly important to the community?

PART 3 – ANY OTHER INFORMATION

33. Do you have comments on any other matters relevant to the assessment of the Grey Deua Pomaderris?

Conservation Advice for *Pomaderris gilmourii* var. *cana* (grey deua pomaderris)

**This draft document is being released for consultation on the
species listing eligibility and conservation actions**

The purpose of this consultation document is to elicit additional information to better understand the status of the species and help inform conservation actions, further planning and a potential recovery plan. The draft assessment below should therefore be considered **tentative** at this stage, as it may change as a result of responses to this consultation process.

Note: Specific consultation questions relating to the below draft assessment and preliminary determination have been included in the consultation cover paper for your consideration.

This document combines the approved conservation advice and listing assessment for the taxon. It provides a foundation for conservation action and further planning.



Sketch of grey deua pomaderris (*Pomaderris gilmourii* var. *cana*) © Copyright J Miles (from Royal Botanic Gardens and Domain Trust)

Conservation status

Pomaderris gilmourii var. *cana* (grey deua pomaderris) is proposed to be transferred from the Vulnerable category to the Critically Endangered category of the threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The grey deua pomaderris was originally listed under the *Endangered Species Protection Act 1992* before being transferred to the EPBC Act.

Pomaderris gilmourii var. *cana* was assessed by the Threatened Species Scientific Committee to be eligible for listing as Critically Endangered under Criterion 2, 3 and 4. The Committee's assessment is at Attachment A. The Committee assessment of the taxon's eligibility against each of the listing criteria is:

- Criterion 1: Insufficient data
- Criterion 2: B1ab(iii,v)+2ab(iii,v): Critically Endangered
- Criterion 3: C2a(i,ii): Critically Endangered
- Criterion 4: D Critically Endangered
- Criterion 5: Insufficient data

The main factors that make the taxon eligible for listing in the Critically Endangered category are the very restricted geographic range and small number of locations, evidence of continuing decline and an extremely low number of mature individuals.

Species can also be listed as threatened under state and territory legislation. For information on the current listing status of this taxon under relevant state or territory legislation, see the [Species Profile and Threat Database](#).

Species information

Taxonomy

Conventionally accepted as *Pomaderris gilmourii* var. *cana* N.G.Walsh.

Description

The following description for grey deua pomaderris has been adapted from Walsh (1989), DECC (2008), and Wood (2019). The grey deua pomaderris is a shrub to 4 m high in the family Rhamnaceae. Leaves are elliptical, to 35 mm long by 4-13 mm wide. Leaves alternate up the stem. Leaves are hairless on the upper surface, except for a line of minute hairs along the midvein. The small five lobed flowers are creamish to yellow, lack petals and form in clusters (2–5 cm diameter at the ends of branchlets) that are shorter than the leaves. Flowers fall early. The lobes of the flower (sepal) are approximately 1 mm long and the style has dense hairs on the outer surface above the point of division. The fruit is unknown, but in other species of *Pomaderris* it is a 3-chambered capsule.

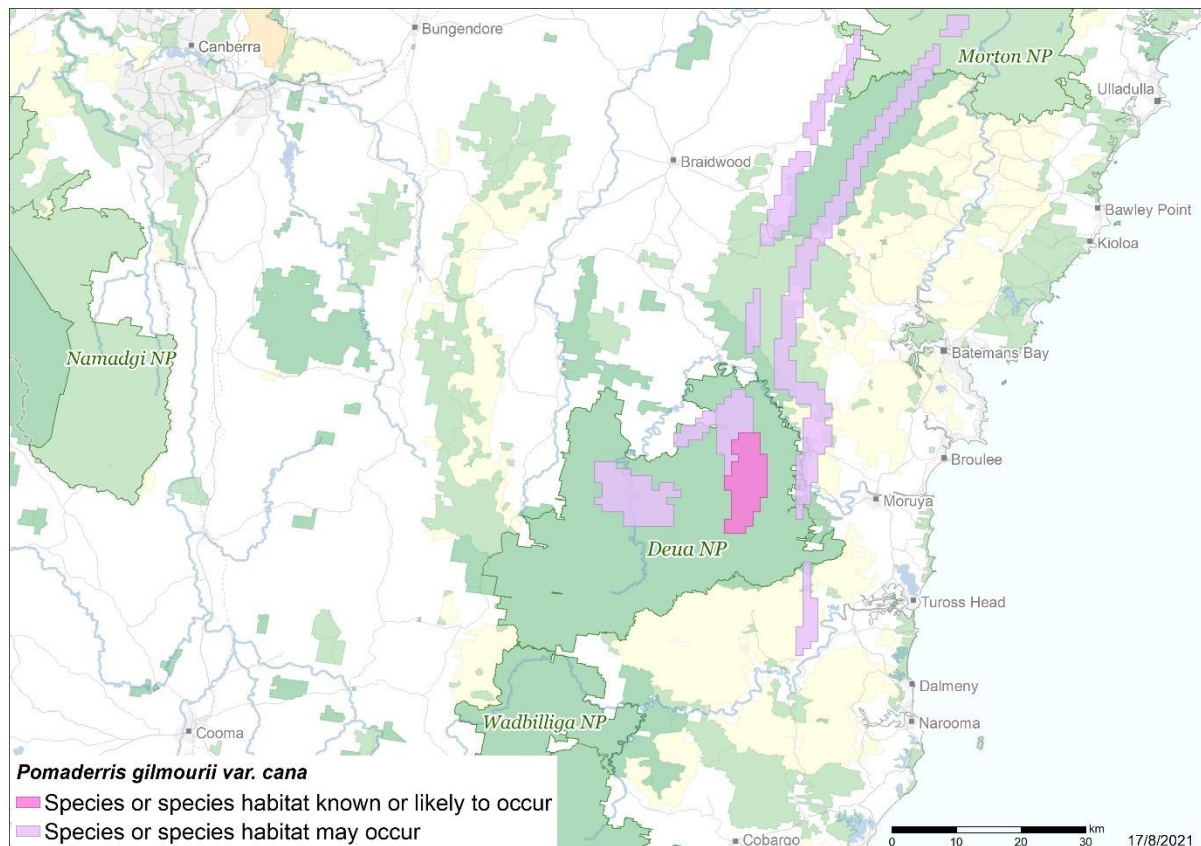
The grey deua pomaderris differs from the more widespread variety, *P. gilmourii* var. *gilmourii* in having leaves that are dull grey (rather than shining beneath) due to the absence of a layer of fine silky woolly hairs on the lower surface of the leaves, leaf stalks, and branchlets that is found in *P. gilmourii* var. *gilmourii* (Wood 2019). The leaf margins are also not thickened which is particularly evident on the undersurface of the leaf. Thus, the leaf does not have the apparent border edges found in *P. gilmourii* var. *gilmourii*.

Distribution

The grey deua pomaderris is only known from a single population in the Deua National Park (DNP), approximately 16 km west-southwest from Moruya NSW, approximately 1.9 km north of Coondella Trig (Walsh 1989) (Map 1). Only two records of this taxon have been recorded (in 1985 and 1987, AVH 2021) and it is likely that both records were from the same locality (N Walsh 2021. pers comm 30 July).

The plant was noted as being 'occasional' in 1985 and two individual plants were recorded in 1987 (AVH 2021). The taxon has not been observed since 1987, despite ongoing surveys from 2007 to 2021 (Table 1). *Pomaderris* is a notoriously difficult genus to identify taxonomically. The more common variety, *P. gilmourii* var. *gilmourii*, is locally abundant within the area and closely resembles the grey deua pomaderris (K McDougall 2021. pers comm 5 August). However, all surveys have been carried out by experienced botanists familiar with the distinction between varieties (Table 1). The area within the vicinity of the recorded locality has been observed to contain 'plenty of other rhyolite outcrops', however they are inaccessible because of steep terrain (J Miles 2021. pers comm 3 August). Therefore, it is possible for the variety to be located on unsurveyed terrain within the same region. The variety is found within the Interim Biogeographic Regionalisation of Australia (IBRA) region of the South East Coastal Ranges (OEH 2019).

Map 1 Modelled distribution of grey deua pomaderris



Source: Base map Geoscience Australia; species distribution data [Species of National Environmental Significance](#) database.

Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything containing herein.

Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the specific habitat type or geographic feature that represents recent observed locations of the species (known to occur) or preferred habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Table 1 Timeline of surveys actively searching for grey deua pomaderris

Date	Field Botanist/s	Notes	Reference
1985 (November)	Phil Gilmour	First record of taxon and described as being seen 'occasionally'. The taxon was in flower.	AVH 2021
1987 (December)	Neville Walsh	Second record of taxon. Only two individual plants recorded. Buds and flowers noted.	AVH 2021
2007 (January)	Keith McDougall plus two other botanists and one park ranger	No sighting of grey deua Pomaderris.	K McDougall 2021. pers comm 5 August
2012 (April)	Keith McDougall, Jackie Miles and several other helpers	The rocky outcrops where the grey deua pomaderris and <i>P. gilmourii</i> var. <i>gilmourii</i> occurs were searched. No collections of grey deua pomaderris. Large numbers of <i>P. gilmourii</i> var. <i>gilmourii</i> were noted to be in flower.	K McDougall 2021. pers comm 5 August
2015 (October)	Keith McDougall, Neville Walsh and Dave Albrecht	Dedicated search efforts to locate grey deua pomaderris in the vicinity of the type locality did not result in locating the taxon. Botanists not 100% confident that the specific site where the grey deua pomaderris was first collected was searched.	N Walsh 2021. pers comm 23 July; K McDougall 2021. 5 August
2021 (June)	Gavin Phillips	First survey to be completed of the habitat after fire when seedlings are expected to be emerging. Survey was undertaken ~500 m from the grey deua pomaderris population. No sighting of grey deua pomaderris. The extent of the 2019–20 bushfire did not overlap with the <i>P. gilmourii</i> var. <i>gilmourii</i> subpopulation. Speculation that the northern site (where grey deua pomaderris is located) did not appear substantially burnt either (estimated from ~500 m away).	G Phillips 2021. pers comm 23 July
2021 Spring	Gavin Phillips	Visits to the site to collect grey deua pomaderris seed are planned for Spring 2021 though will be contingent on COVID-19 movement restrictions.	G Phillips 2021. pers comm 23 July

Cultural and community significance

This section describes some published examples of this significance but is not intended to be comprehensive, applicable to, or speak for, all Indigenous people. Such knowledge may be only held by Indigenous groups and individuals who are the custodians of this knowledge.

The cultural significance of grey deua pomaderris is not well understood. However, Indigenous people have had a long and continuous association with country including DNP and the south coast more broadly (DECC 2009). Areas where the taxon has been recorded are located within the region of the Yuin people, according to the Map of Indigenous Australia (AIATSIS 1996). Further work should determine whether the grey deua pomaderris is of significance to the Indigenous community and seek opportunities for awareness of this taxon.

Relevant biology and ecology

Habitat

There is very limited information about the ecology of the grey deua pomaderris. The population is located on skeletal soils derived from rhyolite which was formed as part of the Comerang Volcanic Series (DECC 2008). The population is located at a single site approximately 480 m above sea level on a prominent rocky rhyolite outcrop. The site slopes steeply east to south-east and occurs in a shrubland environment with associated species (DECC 2008 AVH 2021) including *Eucalyptus stenostoma* (jillaga ash), *Hakea dactyloides* (finger hakea), *Acacia subtilinervis* (net-veined wattle), *H. macreana* (willow needlewood or Macrae's hakea), *Kunzea ambigua* (white kunzea), *Leptospermum deuaense* (tea tree species), *Philotheca trachyphyla* (rock wax flower), *Platysace lanceolata* (shrubby platysace), *P. gilmourii* var. *gilmourii*, *Prostanthera porcata* (mintbush species), *Westringia saxicola* (mountain bluebell), and *Melaleuca hypericifolia* (hillock bush).

Reproductive Ecology

There is very limited information about the reproductive strategies, seedling recruitment, soil seedbank dynamics, longevity, fecundity, and seed germination requirements of grey deua pomaderris. However, other species in the *Pomaderris* genus are known to produce elaiosomes, which are oil-rich structures thought to be an adaptation to dispersal by ants (Berg 1975; Lengyel et al. 2010; Patykowski et al. 2014), suggestive of short-distance seed dispersal (Patykowski et al. 2014). The pollinators of grey deua pomaderris are unknown, although insects may be the primary pollinators of *Pomaderris* generally (Patykowski et al. 2014). Seed set is highly variable in *Pomaderris*, with asexual reproduction common, potentially a result of low mate availability, pollinator limitation or stress-induced seed abortion in situ (Chen et al. 2019). Flowers of the grey deua pomaderris have been recorded in November and December (Walsh, 1989; Harden, 2000). Dense shade is known to reduce flowering and growth in other *Pomaderris* species (Patykowski et al. 2014).

The generation length and time to reproductive maturity for the grey deua pomaderris is unknown. However, the generation length of other *Pomaderris* species is estimated to range from 8–30 years: 10–30 years (*P. cotoneaster* (cotoneaster pomaderris) and *P. brunnea* (rufous pomaderris), DELWP 2020a,b), and 8–20 years (*P. sericea* (bent pomaderris), DELWP 2020c). Time to reproductive maturity is estimated at 2–6 years for other *Pomaderris* (Maryott-Brown & Wilks 1993; Patykowski et al. 2014). The longevity of *Pomaderris* species ranges between 20–50 years (DELWP 2021a,c). However, the lifespan of *P. vacciniifolia* (round-leaf pomaderris) is known to be longer at higher elevations (>300 m) which is considered to provide optimum growing conditions (Patykowski et al. 2014). Thus, the grey deua pomaderris could exceed the average species longevity as it is found at elevations of approximately 480 m.

Population Genetics

Although limited information on population genetics exists for the grey deua pomaderris, asexual seed production (apomixis) is common within the genus (Chen et al. 2019). This indicates that many individuals in a population may be genetically identical and incapable of adaptive change. However, many apomictic species still possess a normal sexual reproductive pathway which provides opportunity for genetic diversification (Hand & Koltunow 2014). Apomixis may also facilitate the persistence of *Pomaderris* populations at small numbers (Chen

et al. 2019). Further, the grey deua pomaderris appears to be most closely related, biogeographically, to *P. virgata* (upright pomaderris) within the *Pomaderris* genus (Nge et al. 2021). Therefore, the grey deua pomaderris could also share similar traits of polyploidy with that species, which may explain its apparent reproductive isolation from *P. gilmourii* var. *gilmourii* with which it grows.

Fire Ecology

The longevity of the soil seed bank for the grey deua pomaderris is unknown, however seeds of *Pomaderris vacciniifolia* (round-leaf pomaderris) is estimated to survive for at least 20 years in the soil (Patykowski et al. 2014). Seeds of other *Pomaderris* species are physically dormant and germination is cued by heat shock (Le Breton 2020). Post-fire responses of *P. adnata* (sublime point pomaderris) and *P. walshii* (Carrington falls pomaderris) show that both species require high temperatures to break seed dormancy, indicating that higher severity fires would produce the greatest germination response (Natale 2016). Dormant seeds in the soil were also shown to be exhausted following rainfall after a single fire event (Natale 2016).

Although most *Pomaderris* species are thought to be obligate seeders (Patykowski et al. 2016), the sublime point pomaderris was found to resprout after fire, although the presence of resprouting was positively correlated with trunk diameter at breast height and only occurred in 34 percent of mature individuals (Natale 2016). This could indicate a low (but not negligible) level of resilience to low severity fire among adult plants. Limited fire resistance of the sublime point pomaderris to low-severity fires has been shown elsewhere (Le Breton et al. 2020).

Habitat critical to the survival

The grey deua pomaderris grows on skeletal soils on rhyolite outcrop in DNP. Given the single known subpopulation and the very restricted distribution of the taxon, habitat critical to the survival includes the area of occupancy of the subpopulation, areas of similar habitat (i.e. rhyolite outcrops, scree, knolls and steep cliffs) in the vicinity of the subpopulation (as these areas provide potential habitat for pollinators or biota essential to the continued existence of the taxon and enable the movement of pollinators), areas of similar habitat that may contain additional subpopulations of the taxon or be suitable sites for future conservation translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the taxon.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

Important populations

In this section, the word population is used to refer to subpopulation, in keeping with the terminology used in the EPBC Act and state/territory environmental legislation.

Considering only one population of this taxon is known, there is sufficient evidence through the taxons eligibility for listing, to declare all populations/the national population as important populations of this taxon under particular pressure of survival and which therefore require protection to support the recovery of the taxon.

Threats

The main identified threats to grey deua pomaderris are fire, herbivory and stochastic events (Table 2, DECC 2008). Grey deua pomaderris is restricted to a single small subpopulation, placing the population at risk of local extinction from a single threatening event, despite its reservation within a national park.

Table 2 Threats impacting grey deua pomaderris

Threat	Status and severity ^a	Evidence
Habitat loss, disturbance and modification (including fire)		
Inappropriate fire regimes	<ul style="list-style-type: none"> • Timing: future • Confidence: suspected • Consequence: major • Trend: unknown • Extent: across all of its range 	<p>The sensitivity of the grey deua pomaderris to fire is unknown but may be inferred from other species in the genus. Most species within the genus are obligate seeders (Patykowski et al. 2016), although one species was observed to resprout after fire (sublime point pomaderris; Natale 2016). Post-fire recruitment is likely important for many <i>Pomaderris</i> species with high severity fires resulting in a greater recruitment response in some species immediately following fire (Natale 2016).</p> <p>Deua National Park is incorporated in a fire management strategy that uses prescribed burns to reduce fuel loads and minimise the impact of bushfire (DPIE 2011).</p> <p>There have potentially been up to seven fires that have occurred in the region where the taxon occurs, including four wildfires (1968-69, 1980-81, 2001-02 and 2019-2020) and three prescribed burns (1977-78, 1985-86 and 1993-94) (DPIE 2010). However, it is unknown if the exact location where the species has been found was burnt during any of these fire events.</p> <p>The 2019-2020 bushfires burnt through much of the habitat of the grey deua pomaderris at high severity (Gallagher et al. 2021). However, recent surveys of the areas adjacent to the subpopulation (~500 m away) suggest that the grey deua pomaderris may be less impacted by the 2019-20 fire than initial assessment suggests (Table 1). This is based on observations of what appeared to be largely unburnt habitat on the rocky outcrop where the taxon is believed to occur (G Phillips 2021. pers comm 23 July). Bushfire has historically been observed to burn in patches throughout the mountains of the moon landscape where the taxon is found because of the limited vegetation on the exposed rocky outcrops and steep cliffs (C Howard 2021. pers comm 18 August). Therefore, the exact location (rocky outcrop where the taxon is found) may burn very rarely because of the time required to build up sufficient vegetation to fuel a fire in the bare, steep landscape. Subsequently, it is not clear if the grey deua pomaderris is as reliant on fire-stimulated recruitment as other <i>Pomaderris</i> species.</p> <p>It is possible that given the frequent fire history in the area, all soil-stored seed could have already been utilised. However, it is equally possible that the taxon has evaded previous burns and soil-stored seed remains intact and viable. In this case, future frequent fires in rapid succession could exhaust soil-stored seed reserves (Natale 2016) and prevent plants from reaching maturity (DECC 2008). The risks of such events may be exacerbated by prescribed burning, particularly if prescribed burns add to an increasing frequency of bushfire due to climate change (Clarke 2015; Dowdy et al. 2019; BOM & CSIRO 2020). Therefore, high fire frequency</p>

Threat	Status and severity ^a	Evidence
		could cause further decline to the taxon in the future (DECC 2008). In contrast, a lack of frequent fire could also be a threat. Other potential fire-related threats include fire-drought, fire-herbivore and possibly fire-disease interactions (see below).
Climate Change		
Increased frequency and severity of drought	<ul style="list-style-type: none"> • Timing: current/future • Confidence: observed • Consequence: catastrophic • Trend: increasing • Extent: across the entire range 	<p>Future climate change predictions for southeast Australia in the temperate forested region, where the grey deua pomaderris occurs, include an increase in the number of days of elevated temperatures and an increase in the Forest Fire Danger Indices (FFDI), which are useful indicators of drought.</p> <p>Conditions which contribute to successful germination and seedling establishment post-fire, such as sufficient rainfall (Vickers et al. 2021), may be negatively affected by increased post-fire droughts due to climate change (Clark 2015; Dowdy et al. 2019). Pre-fire droughts, as occurred in 2019, could also limit population persistence by reducing health and reproductive output of standing plants.</p>
Limited long-term adaptive ability due to allee effects and low genetic diversity	<ul style="list-style-type: none"> • Timing: future • Confidence: inferred • Consequence: major • Trend: unknown • Extent: across the entire range 	<p>Many small, isolated subpopulations are subject to the effects of low genetic diversity (Frankham et al. 2014). A predominance of asexual reproduction is also likely to limit the long-term adaptive ability of the taxon and may also limit translocation success (Chen et al. 2019). There is only one known subpopulation of grey deua pomaderris with likely few individuals and asexual seed production is likely utilised by the taxon (Chen et al. 2019). Therefore, despite species with restricted distributions and specific habitat requirements persisting for long periods, their ability to adapt to future changing conditions associated with climate change, is limited by low genetic exchange and recombination.</p> <p>Therefore, the single subpopulation of the grey deua pomaderris is likely to be at risk of the negative consequences associated with low genetic diversity in a future changing climate.</p>
Herbivory and disturbance from feral herbivores		
Browsing by feral herbivores	<ul style="list-style-type: none"> • Timing: current/future • Confidence: suspected • Consequence: moderate • Trend: unknown • Extent: across part of its range 	<p>Browsing by feral herbivores is a potential threat to the grey deua pomaderris.</p> <p>Browsing by goats and deer is identified as a threat to other <i>Pomaderris</i> species (DPIE 2020) and can lead to considerable impacts to <i>Pomaderris</i> in some areas. For example, <i>Pomaderris</i> species are preferentially browsed by <i>Rusa unicorn</i> (Sambar Deer) in Victoria, often to the extent that seed production is completely prevented (N Walsh 2021. pers comm 13 August). Despite this, browsing activity from herbivores does not have a consistent impact across the landscape where other <i>Pomaderris</i> species occur. For example, in some areas where more palatable species co-occur, <i>Pomaderris</i> species are not heavily browsed (N Walsh 2021. pers comm 13 August).</p> <p>Populations of feral goats are known occur in other reserves connected to DNP (DPIE 2019) and anecdotal sightings exist within DNP (C Howard 2021. pers comm 18 August). Deer numbers are increasing yearly in</p>

Threat	Status and severity ^a	Evidence
		<p>some areas within DNP (C Howard 2021. pers comm 18 August).</p> <p>The impacts of goats in the Parks are considered substantial because of direct impacts to native plants from grazing and trampling, as well as contributing to erosion and spreading of weeds (DPIE 2019). Goats are considered a greater threat to the taxon than deer, as goats are capable of accessing the steep terrain where the taxon occurs. The impacts of feral goats have been listed as a Key Threatening Process under the EPBC Act (DEWHA 2008). Deer have also been listed as an emerging threat in the Far South Coast Escarpment Parks Plan of Management which includes DNP (ECCW 2019).</p> <p>Although there is a lack of obvious browsing impacts in the area north of Coondella Trig where the taxon occurs (N Walsh & J Miles 2021 pers comm 13 August), browsing is likely to increase if populations of herbivores increase.</p>
Habitat damage by feral pigs	<ul style="list-style-type: none"> • Timing: future • Confidence: suspected • Consequence: minor • Trend: unknown • Extent: across part of its range 	<p>Populations of feral pigs are known to occur in reserves adjacent to, and within DNP (DPIE 2019; ECCW 2019). Pigs cause damage by rooting for food which causes erosion and introduces weeds, and selective feeding on native plants (DEE 2017). Feral pigs are listed as a key threatening process (KTP) under the EPBC Act (DEE 2017).</p> <p>Although pigs are more commonly seen associated with wetter areas within DNP, such as bogs, rivers, creeks and swamps (ECCW 2019), they have been observed to cause damage to habitat in rocky outcrops in DNP (G Phillips 2021. pers comm 14 August).</p> <p>Although direct damage to the taxon from feral pigs has not been observed (G Phillips 2021. pers comm 14 August; C Howard 2021. pers comm 18 August), pigs could potentially be a threat to the taxon in the future.</p>
Disease		
Dieback caused by <i>Phytophthora cinnamomi</i>	<ul style="list-style-type: none"> • Timing: current/future • Confidence: suspected • Consequence: unknown • Trend: unknown • Extent: across part of its range 	<p>The grey deua pomaderris may be susceptible to the invasive soil-borne water mould, <i>Phytophthora cinnamomi</i>. <i>Phytophthora cinnamomi</i> spreads through water runoff, transportation of infected soil by humans and animals and root-to-root contact spreading both uphill and downhill (Shearer & Tippet 1989). <i>Phytophthora cinnamomi</i> is now widespread in coastal forests in NSW including at higher elevations (DPIE 2019).</p> <p>There have been limited studies on the impact of <i>P. cinnamomi</i> in <i>Pomaderris</i> species. <i>P. halmaturina</i> subsp. <i>halmaturina</i> (Kangaroo Island Pomaderris) has shown moderate susceptibility to the pathogen with 40% of plants surviving ex situ inoculation trials (Kueh et al. 2012). The grey deua pomaderris is not considered to be at risk to the <i>P. cinnamomi</i> infestation according to NSW Government (DPIE 2019). However, observations of dead <i>Xanthorrhoea australis</i> (Grass Tree) during site visits to the area in 2012 (J Miles 2021. pers comm 5 August) suggest that <i>P. cinnamomi</i> may have infected the locality of the single subpopulation of the grey deua pomaderris, although the presence of the pathogen is yet to be confirmed.</p>

Timing—identify the temporal nature of the threat;

Confidence—identify the extent to which we have confidence about the impact of the threat on the species;

Consequence—identify the severity of the threat;

Trend—identify the extent to which it will continue to operate on the species;

Extent—identify its spatial content in terms of the range of the species.

Each threat has been described in Table 2 in terms of the extent that it is operating on the taxon. The risk matrix (Table 3) provides a visual depiction of the level of risk being imposed by a threat and supports the prioritisation of subsequent management and conservation actions. In preparing a risk matrix, several factors have been taken into consideration, they are: the life stage they affect; the duration of the impact; and the efficacy of current management regimes, assuming that management will continue to be applied appropriately. The risk matrix and ranking of threats has been developed in consultation with in-house expertise using available literature. Threats with unknown consequences (dieback caused by *P. cinnamomi*) have not been included in Table 3, although if confirmed that the taxon is susceptible to this pathogen, it would likely represent major threat to the species (i.e. very high risk).

Table 3 Grey deua pomaderris risk matrix

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain	Low risk	Moderate risk	Very high risk	Very high risk	Very high risk Increased frequency and intensity of bushfires
Likely	Low risk	Moderate risk	High risk	Very high risk Inappropriate fire regimes from planned burns Low genetic diversity	Very high risk
Possible	Low risk	Moderate risk Habitat damage by feral pigs	High risk Browsing and disturbance from feral herbivores	Very high risk	Very high risk
Unlikely	Low risk	Low risk	Moderate risk	High risk	Very high risk
Unknown	Low risk	Low risk	Moderate risk	High risk	Very high risk

Categories for likelihood are defined as follows:

Almost certain – expected to occur every year

Likely – expected to occur at least once every five years

Possible – might occur at some time

Unlikely – such events are known to have occurred on a worldwide bases but only a few ties

Unknown – currently unknown how often the incident will occur

Categories for consequences are defined as follows:

Not significant – no long-term effect on individuals or populations

Minor – individuals are adversely affected but no effect at population level

Moderate – population recovery stalls or reduces

Major – population decreases

Catastrophic – population extirpation/extinction

Priority actions have then been developed to manage the threat particularly where the risk was deemed to be 'very high' or 'high'. For those threats with an unknown or low risk outcome it may be more appropriate to identify further research or maintain a watching brief.

Conservation and recovery actions

Primary conservation outcome

By 2030, the grey deua pomaderris presence of a wild population of the species has been confirmed, and populations have increased in abundance and a viable ex-situ collection of the grey deua pomaderris is maintained to allow for conservation translocation in the event of future threatening events.

Conservation and management priorities

Habitat loss, disturbance and modification (including fire)

- Develop and implement a fire management strategy that optimises the survival of the grey deua pomaderris.
 - Avoid planned burns in all habitat until the fire-response of the grey deua pomaderris is better understood.
 - Protect unburnt habitat from planned burns and determine if and how the burnt subpopulation can be protected from future bushfire events.
 - Take the likelihood of increasingly frequent bushfires into account when developing planned burning programs, to avoid excessive, frequent burning of any subpopulations.
 - Provide maps of known occurrences to local and State Rural Fire Services and consult with them when prescribed burn planning is being undertaken
 - Avoid application of fire retardants in the vicinity of the subpopulation during fire suppression operations

Climate Change and Fire

- Identify current and future habitat likely to remain or become suitable habitat due to climate change and ensure impacts of other threats to this habitat are minimised.
- Spread the risk to the species associated with climate change and fire by establishing multiple translocated subpopulations in suitable habitat.

Herbivory

- If the taxon is located in the wild and there is evidence of browsing by feral herbivores (e.g., goats, deer and pigs), reduce the impacts of feral herbivory through well-maintained fencing (e.g., Mackenzie & Keith 2009), where suitable, and/or through ongoing control programs.

Disease

- Minimise the spread and mitigate the impact of *P. cinnamomi*, to the grey deua pomaderris by following the guidance described in the *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi* (DEE 2018).
- If there is evidence that *P. cinnamomi* is impacting the grey deua pomaderris, implement mitigation measures including, but not limited to, the application of a biodegradable, systemic fungicide such as phosphite (or other alternatives); noting the potential deleterious effects as a fertiliser with prolonged usage.

Ex situ recovery actions

- If the taxon is located in the wild:
 - Manage the risk of losing genetic diversity, undertake appropriate seed collection and storage in long term custodial collections until no longer needed and determine viability of stored seed. Best practice seed storage guidelines and procedures should be adhered to, to maximise seed viability and germinability. Seeds from all plants to be collected and stored, where possible.
 - Establish plants in cultivation or collect and maintain plant cuttings in appropriate institutions such as Botanic Gardens. Cuttings may be a particularly important ex situ resource given the suspected small number of individuals and the effect of any seed collection on population viability.
 - Mitigate the threat of high fire frequency by undertaking conservation translocations of propagated individuals in suitable habitat with secure land tenure, to increase the number of subpopulations of grey deua pomaderris, in accordance with the *Guidelines for the Translocation of Threatened Plants in Australia* (Commander et al. 2018).

Stakeholder engagement/community engagement

- Engage with the Indigenous community to identify Indigenous management responsibilities and cultural connections to the grey deua pomaderris. Identify and encourage collaboration opportunities and awareness of this taxon.
- Raise awareness of the threat of *P. cinnamomi* with the Rural Fire Service, other fire and land management agencies, and the general public, to minimise the risk of spread.
- Engage with researchers prior to conducting surveys and developing a monitoring program to obtain the most up-to-date advice on the taxon.

Survey and monitoring priorities

- Conduct surveys to locate the grey deua pomaderris and map areas of suitable habitat. Consider the use of helicopters to access areas difficult to access by foot. Additional survey effort by trained botanists is critical to the future conservation of the grey deua pomaderris.
- If the grey deua pomaderris is located in the wild, establish and maintain a monitoring program to:
 - determine population size and trends,
 - identify threats and their impacts, and
 - monitor the effectiveness of management actions and the need to adapt them, if necessary.
- Monitor the incidence and impacts of *P. cinnamomi*.
- Monitor the activity and impact of feral herbivores (goats, deer and pigs) in grey deua pomaderris habitat.

Information and research priorities

- Undertake genetic research to determine the phylogenetic relationships within the *Pomaderris gilmouri* group and to create a resource for understanding the genetic ability for adaptive change.

- Undertake research into the taxa's fire ecology, including seedling survival post-fire and the fire interval required to allow plants to reach reproductive maturity and establish a soil seed bank.
- Investigate the taxon's susceptibility to *Phytophthora cinnamomi*.
- Undertake research into the taxon's reproductive ecology including reproductive strategies, seedling recruitment, soil seedbank dynamics, longevity, fecundity, and seed germination requirements. Improve understanding of the impacts of climate change on population viability, including the impacts of increased bushfire frequency and change in rainfall.

Recovery plan decision

No recovery plan is in place for the grey deua pomaderris. This consultation document will elicit the additional information needed to inform the requirement of a Recovery Plan for the species.

Links to relevant implementation documents

[DEE \(Department of the Environment and Energy\) \(2018\) *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi*. Commonwealth of Australia.](#)

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Howard C (2021) Personal communication by email, 18 August 2021, Ranger in Department of Planning, Industry and Environment, NSW.

Attachment A: Listing Assessment for *Pomaderris gilmourii* var. *cana*

Reason for assessment

This assessment follows prioritisation of a nomination from the TSSC.

Assessment of eligibility for listing

This assessment uses the criteria set out in the [EPBC Regulations](#). The thresholds used correspond with those in the [IUCN Red List criteria](#) except where noted in criterion 4, sub-criterion D2. The IUCN criteria are used by Australian jurisdictions to achieve consistent listing assessments through the Common Assessment Method (CAM).

Key assessment parameters

Table 4 includes the key assessment parameters used in the assessment of eligibility for listing against the criteria.

Table 4 Key assessment parameters

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Number of mature individuals	0–50	0	~few hundred	The only information of population size for the taxon are notes that it was “occasional” in 1985 and two plants were seen in 1987 (AVH 2021). No plants have been observed since 1987, putting the minimum plausible value at zero. However, suitable habitat for this taxon occurs at the known locality, including inaccessible steep slopes below the rocky outcrop where the taxon was found, as well as adjacent rocky outcrops in the vicinity only accessible by helicopter. A tentative maximum estimate for the taxon could be in the order of low hundreds of individuals, but it is unlikely to be substantially more abundant as suitable habitat is limited. However, in the absence of additional confirmed subpopulations, the single known subpopulation size is likely to be very small (0–50 plants).

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Trend	Contracting			The single known grey deua pomaderris subpopulation has declined from 2 in 1987 to zero plants currently. There have been at least four attempts to locate the grey deua pomaderris from 2007–2015 (Table 1). These visits included the original rocky outcrop found to contain the taxon as well as adjacent rocky outcrops to the north of the Coondella Trig. Further, there have been potentially up to seven fire events in the region where the taxon occurs which may have killed mature plants and depleted soil-stored seed. Therefore, it appears that the number of mature individuals in the population has declined, although it is possible that individuals persist in other remote cliffs
Generation time (years)	8–30	8	30	The generation length for the grey deua pomaderris is unknown. However, the generation length of other Pomaderris species is estimated at 10–30 years (Cotoneaster Pomaderris and Rufous Pomaderris (DELWP 2020ab)), and 8–20 years (Bent Pomaderris (DELWP 2020c)). It is likely that a similar generation length is estimated for the grey deua pomaderris. The minimum and maximum values reported here represent the known generation range for other Pomaderris species.
Extent of occurrence	4	0	>4	The estimate used in this assessment has been calculated using records of the only known single subpopulation recorded from 1985 and 1987. As only one subpopulation is known, the EOO is equal to the AOO, as outlined in the Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2019). The maximum value for this taxon could be slightly more than 4 km ² if additional subpopulations exist. Alternatively, the minimum value could be 0 km ² if the only known subpopulation is extinct.
Trend	Unknown			It is suspected that the known subpopulation is still extant due to the inaccessibility of its habitat. However, the species has not been seen for 34 years and any soil-stored seed at the known location may have been depleted by previous fires (i.e., up to seven fires have been recorded in the area).

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Area of Occupancy	4	0	>4	<p>The most plausible value has been calculated using records from 1985 and 1987 for the only known subpopulation and applying 2 x 2 km grid cell, as outlined in the Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2019).</p> <p>The maximum value for this taxon could be slightly more than 4 km² if additional subpopulations exist. Alternatively, the minimum value could be 0 km² if the only known subpopulation is extinct.</p>
Trend	Unknown			<p>It is suspected that the known subpopulation is still extant due to the inaccessibility of its habitat. However, the species has not been seen for 34 years and any soil-stored seed at the known location may have been depleted by previous fires (i.e., up to seven fires have been recorded in the area).</p>
Number of subpopulations	1	0	>1	<p>The taxon is only known from a single subpopulation found at 480 m above sea level on a rocky outcrop near Coondella Trig in DNP. However, there are areas of seemingly similar habitat on adjacent outcrops in the area that are inaccessible unless by helicopter. Therefore, other subpopulations may occur. The taxon has not been located since 1987, despite considerable survey efforts in the area (Table 1). Until further surveys can reveal other subpopulations, one subpopulation is considered most plausible. As this subpopulation has not been recorded since 1987, the minimum plausible number of subpopulations is zero. However, it is likely the taxon persists in inaccessible areas or in the soil seed bank. Therefore, the subpopulation is considered to be extant for the purposes of this assessment.</p>
Trend	Unknown			<p>It is suspected that the known subpopulation is still extant due to the inaccessibility of its habitat. However, the species has not been seen for 34 years and any soil-stored seed at the known location may have been depleted by previous fires (i.e., up to seven fires have been recorded in the area).</p>
Basis of assessment of subpopulation number	<p>The taxon is only known from a single subpopulation found on a rocky outcrop in DNP. The taxon has not been found in surveys since it was first described despite numerous surveys by field botanists, trained in taxonomically identifying the taxon. However, as the taxon may persist in inaccessible parts of the known locality or could be present as soil-stored seed if the locality evaded previous burns, this population is considered to be extant for the purposes of this assessment</p>			

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
No. locations	1	1	1	The grey deua pomaderris is found in a very restricted habitat on a single rocky outcrop inside a National Park. The most plausible threat to the taxon is from an increased risk to frequent and intense bushfires as a consequence of climate change. A single bushfire event could impact the entire population which occupies less than 4 km ² . While the taxon is thought to have seed that will survive and germinate after fire, multiple fires in rapid succession, not allowing time for germinated plants to reach reproductive maturity, could cause further decline or extinction (DECC 2008). Future projections for this region include an increased risk of more frequent and intense fires (Clarke 2015; Dowdy et al. 2019). This presents a considerable risk to this taxon due to its possible long life span (which may be 50+ years) and likely time to reproductive maturity of two to six years (Maryott-Brown & Wilks 1993; Patykowski et al. 2014; DELWP 2020a,b,c). Other threats including herbivory from feral goats and deer, habitat damage from feral pigs and <i>Phytophthora cinnamomi</i> infection, also contribute to the taxon being considered to have a single location.
Trend	Unknown			Future projections for this region include an increased risk of bushfire weather, which is an elevated FFDI and an increase in temperature (Clarke 2015; Dowdy et al. 2019). Accordingly, the location could be reduced to zero if all soil-stored seed has been utilised.
Basis of assessment of location number	The grey deua pomaderris occurs in a single, restricted location within a National Park and occupies less than 4 km ² . Climate change predictions include an increased risk of frequent and intense bushfires in the future. A single bushfire event could impact the entire population. Repeated fires in close succession can prevent the plant from reaching maturity and replenishing the soil seed bank, and result in the extinction of the taxon.			
Fragmentation	Not fragmented. There is only one known subpopulation.			
Fluctuations	There are no known extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals.			

Criterion 1 Population size reduction

Reduction in total numbers (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
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> <ul style="list-style-type: none"> (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 			

Criterion 1 evidence

Insufficient data to determine eligibility

Generation length

The generation length for the grey deua pomaderris is inferred to be 8–30 years, based on estimates for other *Pomaderris* species of 10–30 years (*Cotoneaster Pomaderris* and *Rufous Pomaderris* (DELWP 2020ab)), and 8–20 years (*Bent Pomaderris* (DELWP 2020c)). Therefore, a three-generation period of 32–90 years has been used.

Population trajectory

The population size of the grey deua pomaderris appears to be in decline based on being “occasionally seen” in 1985, two plants recorded in 1987 and not recorded since, and up to seven previous fires in the area, despite surveys being undertaken in 2007, 2012 and 2015 (Table 1). However, the magnitude of the decline cannot be adequately quantified because of the likelihood that surveys have been affected by the inaccessibility of the locality. Suitable habitat exists within the known locality for this taxon, but is difficult to access by foot. Botanists have observed individuals of what are likely to be one or both varieties of *P. gilmourii* in these inaccessible areas (steep slopes below the current subpopulation and adjacent rocky outcrops north of the Coondella Trig locality), but have not been able to access them to confirm their identity. Therefore, it is highly possible that unsurveyed individuals are present within the known locality, making predictions about the magnitude of population decline highly uncertain.

There are insufficient data to demonstrate if the taxon is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the taxon's status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 2 Geographic distribution as indicators for either extent of occurrence AND/OR 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			

Criterion 2 evidence

Eligible under Criterion 2 B1ab(iii,v)+2ab(iii,v) for listing as Critically Endangered

Extent of occurrence (EOO) and area of occupancy (AOO)

The most plausible extent of occurrence (EOO) and area of occupancy (AOO) of the grey deua pomaderris are estimated at 4 km². The AOO was calculated using a 2 x 2 km grid cell method over each spatial data point (total of five points). The EOO is equal to the AOO as it cannot be smaller than the AOO under the IUCN assessment guidelines (IUCN 2019). The taxon estimates meet the requirements for listing as Critically Endangered under B1 for EOO (EOO < 100 km²) and under B2 for AOO (AOO < 10 km²).

All available records (i.e. 1985–1987) were used for the AOO and EOO estimates, due to the possibility the taxon persists at its only recorded subpopulation. Although surveys by experienced botanists from 2007–2021 failed to find the taxon (Table 1), it is possible that it persists at the known locality, particularly on steep inaccessible rocky outcrops. The remote habitat and similarity to *P. gilmourii* var. *gilmourii*, suggests that it could remain undetected inside DNP, particularly because it is difficult to identify without sufficient taxonomic training (J Miles 2021. pers comm 3 August). In spite of this, new subpopulations of the taxon are unlikely to substantially increase the AOO and EOO estimates. This is because the range of the typical variety, *P. gilmourii* var. *gilmourii*, which co-occurs with the grey deua pomaderris, but is more widespread, also has a limited distribution of approximately 70 km² within DNP. Accordingly,

until targeted surveys detect additional subpopulations, the current AOO and EOO are considered the most plausible estimate of habitat known to contain the taxon.

Number of locations

Catastrophic bushfires affected an estimated 100 percent of the taxons' modelled habitat, with an estimated 45 percent burnt at very high severity (Gallagher 2020). While the actual impacts of the bushfire on the rocky outcrop supporting the subpopulation may have been patchy (G Phillips 2021. pers comm 23 July), this may not have been the case in past and future fire events. Further, the combination of fire and drought could lead to a precipitous decline in the population, including depletion of the soil seedbank. Future long-range climate change predictions (2060–2079) for the south-east region of NSW include an increase in fire weather resulting from an increasing FFDI in Spring and Summer (OEH 2014). Considering the taxons' limited distribution, very limited number of known individuals, and its fire sensitive reproductive strategies (likely an obligate seeder where all mature individuals could be killed during fire), an intense bushfire is capable of impacting the entire population. Further, if future fire events are followed by drought (Auld et al. 2020) or herbivory (Regan et al. 2003) that impact seedling recruitment, then the population could be at risk of extinction. Therefore, the taxon's number of locations appears to be one, meeting the threshold for Critically Endangered under subcriterion (a).

Severe fragmentation

The taxon is not considered severely fragmented as it is known from a single subpopulation from one location.

Continuing decline

Only a handful of individual plants have been recorded from the one known subpopulation (Table 1). Numerous attempts have been made to find the subpopulation and determine its abundance and extent, however botanists have failed to locate the known subpopulation (Table 1). Although the taxon may still occur in inaccessible parts of the locality, it appears likely that the number of mature individuals has declined, particularly as no individuals have been observed despite previous fires in the area that might have been expected to stimulate recruitment of soil-stored seed. For example, *P. gilmourii* var. *gilmourii* was observed to be regenerating after the 2001-02 fires, (K McDougall pers comm 2021, 5 August). Continuing decline of habitat quality and extent is inferred due to increased risk of future climate change impacts (too frequent fires), increased risk of impacts relating to dieback caused by *Phytophthora cinnamomi*, habitat damage by feral pigs, and increased risk of herbivory by feral herbivores (goats and deer).

The taxon appears to meet the continuing decline requirements for listing as Critically Endangered under subcriterion (b).

Extreme fluctuations

There are no known extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals.

Conclusion

The Committee considers that the taxons Extent Of Occurrence (EOO) and Area Of Occupancy (AOO) are very restricted, and the number of locations is very restricted, and continuing decline is estimated in the number of mature individuals and quality of habitat due to threats posed by increased fire frequency, herbivory and disease.

Therefore, the taxon has met the relevant elements of Criterion 2 to make it eligible for listing as Critically Endangered.

Criterion 3 Population size and decline

	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

Criterion 3 evidence

Eligible under Criterion 3 C2a(i,ii) for listing as Critically Endangered

The population size of the grey deua pomaderris is likely to be very small: only a handful of individuals have ever been recorded at one time in the only known locality (e.g. it was “occasional” in 1985 and only two plants were recorded in 1987), despite three visits to the area from 2007 to 2015. However, at that time the species was observed to be in flower and bud and is therefore likely to have added to the seed bank. In addition, suitable habitat exists within the known locality for this taxon (e.g. on the steep cliffs below the current locality) and in adjacent rocky outcrops north of the Coondella Trig locality, but is inaccessible by foot. Therefore, the population size is potentially larger than currently recorded. Experts support the belief that

other individuals are likely to occur in these inaccessible, unsurveyed areas (N Walsh 2021. pers comm 13 August). However, there are unlikely to be a “huge amount more” (G Phillips 2021. pers comm 23 July). If there are undiscovered subpopulations, there could be >50 individuals, but based on current knowledge, the total population is likely to be <50 mature individuals. In the absence of evidence of occurrence beyond the Type locality, the number of mature individuals is therefore likely to be <50 in the current known population.

Population size data is insufficient to estimate percentage decline due to a lack of data. Therefore, evidence for Criterion C1 is insufficient. However, continuing decline is inferred due to the loss of previously recorded individuals (without any recruitment being observed following previous fires in 1968-69, 1977-78, 1980-81, 1985-86, 1993-94, 2001-02 and 2019-20), and because of the increased risk of more frequent bushfires in the future (Clarke 2015; Dowdy et al. 2019). Repeated fires in close succession can prevent the plant from reaching maturity and replenishing the soil seed bank, and increase the risk of extinction of the taxon (Gallagher 2020). There is also increasing threat of dieback caused by *Phytophthora cinnamomi* and herbivory from feral goats, deer and pigs, which could be considerable given the very small and restricted population size.

The Committee considers that the estimated total number of mature individuals of this taxon is estimated to be very low, with an inferred continuing decline AND the geographic distribution is precarious for the survival of the taxon because the number of mature individuals in each subpopulation is estimated at <50, and the percentage of mature individuals in one subpopulation is 100 percent. Therefore, the taxon has met the relevant elements of Criterion 3 to make it eligible for listing as Critically Endangered.

Criterion 4 Number of mature individuals

	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
D. Number of mature individuals	< 50	< 250	< 1,000
D2.¹ Only applies to the Vulnerable category Restricted area of occupancy or number of locations with a plausible future threat that could drive the sub to critically endangered or Extinct in a very short time			D2. Typically: area of occupancy < 20 km ² or number of locations ≤ 5

¹ The IUCN Red List Criterion D allows for species to be listed as Vulnerable under Criterion D2. The corresponding Criterion 4 in the EPBC Regulations does not currently include the provision for listing a species under D2. As such, a species cannot currently be listed under the EPBC Act under Criterion D2 only. However, assessments may include information relevant to D2. This information will not be considered by the Committee in making its recommendation of the species' eligibility for listing under the EPBC Act, but may assist other jurisdictions to adopt the assessment outcome under the [common assessment method](#).

Criterion 4 evidence

Eligible under Criterion 4 for listing as D Critically Endangered

The population size of the grey deua pomaderris is likely to be extremely low; only a handful of individuals have ever been recorded at one locality. The only information of population size for the taxon are notes that it was “occasional” in 1985 and two plants were seen in 1987 (AVH 2021). No plants have been observed since 1987. However, suitable habitat for this taxon occurs at the known locality, including in other inaccessible areas. Although other rock outcrops occur in the vicinity of the known locality, in the absence of additional confirmed subpopulations, the population size of the taxon is considered to be that of the known subpopulation, which is tentatively estimated at 0–50 plants.

The Committee considers the total number of mature individuals to be <50 which is considered very low. Therefore, the taxon has met the relevant elements of Criterion 4 to make it eligible for listing as D Critically Endangered

Criterion 5 Quantitative analysis

	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

Criterion 5 evidence

Insufficient data to determine eligibility

Population viability analysis has not been undertaken. Therefore, there is insufficient information to determine the eligibility of the taxon for listing in any category under this criterion.

Adequacy of survey

Targeted and non-targeted surveys have been conducted from 1987 to 2021 by staff from the Department of Planning, Industry and Environment, Royal Botanic Gardens and Domain Trust, Australian National Botanic Gardens and Royal Botanic Gardens Victoria, including Neville Walsh, Phil Gilmour, Gavin Phillips, Keith McDougall, Graeme Errington, Richard Johnstone, Jackie Miles and Dave Albrecht (Table 1). The search area includes the site of the original locality and accessible rocky outcrops and habitat in the vicinity of the original site within the Coondella Trig area within DNP. There are eleven occurrence records on AVH which appear to be duplicates of two site visits, in 1985 and 1987 from one location (N Walsh 2021. pers comm 30 July). Consequently, survey effort has been considered adequate and there is sufficient scientific evidence to support the assessment. Future post-fire surveys to the site are planned in spring 2021. However, they are unlikely to affect the outcome of this assessment (likely to be eligible as Critically Endangered under at least Criterion 2 regardless).

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