



## Consultation on Species Listing Eligibility and Conservation Actions

### *Correa lawrenceana* var. *genoensis* (Genoa River correa)

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

- 1) the eligibility of *Correa lawrenceana* var. *genoensis* (Genoa River correa) for inclusion on the EPBC Act threatened species list in the 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@environment.gov.au](mailto:species.consultation@environment.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 24 March 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>.

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: <http://www.awe.gov.au/system/files/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 *Correa lawrenceana* var. *genoensis*** **(Genoa River correa)**

### **SECTION A - GENERAL**

1. Is the information used to assess the nationally threatened status of the species/subspecies robust? Have all the underlying assumptions been made explicit? Please provide justification for your response.
2. Can you provide additional data or information relevant to this assessment?
3. Have you been involved in previous state, territory or national assessments of this species/subspecies? 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/SUBSPECIES? (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/subspecies not in the current advice?

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

**Population size**

6. Has the survey effort for this taxon 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? Did the estimates measure relative or absolute abundance? Do you accept the estimate of the total population size of the species/subspecies? 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 species/subspecies (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/subspecies 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:

- 1–50  51–250  251–1000  >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

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

9. 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**

10. Are you able to provide an estimate of the total population size during the early 1800s (*at or soon after the start of the most recent three generations*)? 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/subspecies 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:

- 1–50  51–250  251–1000  >1000  >10 000

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

11. Are you able to comment on the extent of decline in the species/subspecies' total population size over the last approximately 210 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

12. 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/SUBSPECIES? (If no, skip to section F)**

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

13. Does the assessment consider the entire geographic extent and national extent of the species/subspecies? If not, please provide justification for your response.

14. Has the survey effort for this species/subspecies been adequate to determine its national distribution? If not, please provide justification for your response.

15. Is the distribution described in the assessment accurate? If not, please provide justification for your response and provide alternate information.

16. 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.

17. 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 km<sup>2</sup>  100 – 5 000 km<sup>2</sup>  5 001 – 20 000 km<sup>2</sup>  >20 000 km<sup>2</sup>

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 km<sup>2</sup>  11 – 500 km<sup>2</sup>  501 – 2000 km<sup>2</sup>  >2000 km<sup>2</sup>

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/SUBSPECIES? (If no, skip to section G)**

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

18. Do you consider that the way the historic distribution has been estimated is appropriate? Please provide justification for your response.
19. 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 km<sup>2</sup>  100 – 5 000 km<sup>2</sup>  5 001 – 20 000 km<sup>2</sup>  >20 000 km<sup>2</sup>

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 km<sup>2</sup>  11 – 500 km<sup>2</sup>  501 – 2000 km<sup>2</sup>  >2000 km<sup>2</sup>

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/SUBSPECIES? (If no, skip to section H)**

20. Do you consider that all major threats have been identified and described adequately?
21. To what degree are the identified threats likely to impact on the species/subspecies in the future?
22. Are the threats impacting on different populations equally, or do the threats vary across different populations?
23. Can you provide additional or alternative information on past, current or potential threats that may adversely affect the species/subspecies 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/SUBSPECIES? (If no, skip to section I)**

25. What planning, management and recovery actions are currently in place supporting protection and recovery of the species/subspecies? 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 species/subspecies?
27. Would you recommend translocation (outside of the species' historic range) as a viable option as a conservation actions for this species/subspecies?

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

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 species/subspecies has?
30. What individuals or organisations are currently, or potentially could be, involved in management and recovery of the species/subspecies?
31. How aware of this species/subspecies are land managers where the species/subspecies is found?
32. What level of awareness is there with individuals or organisations around the issues affecting the species/subspecies?

- 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 this species/subspecies?

DRAFT

## Conservation Advice for *Correa lawrenceana* var. *genoensis* (Genoa River correa)

**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 eligibility of the species for listing and inform conservation actions, further planning and the potential need for a 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 species. It provides a foundation for conservation actions and further planning.



*Correa lawrenceana* var. *genoensis* © Copyright, Dave Albrecht

## Conservation status

*Correa lawrenceana* var. *genoensis* (Genoa River correa) is proposed to remain in the Endangered category of the threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The taxon was eligible for listing under the EPBC Act as on 16 July 2000 it was listed as Vulnerable under Schedule 1 of the preceding Act, the Endangered Species Protection Act 1992 (Cwth).

*Correa lawrenceana* var. *genoensis* was assessed by the Threatened Species Scientific Committee to be eligible for listing as Endangered under Criteria 2 and 3. The Committee's assessment is at Attachment A. The Committee's assessment of the taxon's eligibility against each of the listing criteria is:

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

The main factors that make the species eligible for listing in the Endangered category are a restricted distribution in both extent of occurrence (EEO) and area of occupancy (AOO), a severe reduction in EEO over the past three generations, and a 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 species under relevant state or territory legislation, see the [Species Profile and Threat Database](#).

## Species information

### Taxonomy

Conventionally accepted as *Correa lawrenceana* var. *genoensis* Wilson (1961), Family: *Rutaceae*.

### Description

The Genoa River correa is an erect to spreading shrub growing to 2 m tall. It has ovate leaves that grow to 70 x 40 mm, the margins smooth, the upper surface dark green, glossy and hairless, while the lower surface is pale grey-green and densely covered with stellate hairs. The solitary, yellow-green flowers that may redden slightly with age, are about 25 mm long, drooping, tubular, hairy outside and have four curved, triangular lobes at the end of the tube. The calyx is hemispherical, to 5 mm long, more or less hairless and has four teeth. The stamens protrude from the flower (Walsh & Entwisle 1999; OEH 2020).

The Genoa River correa differs from the type variety of *C. lawrenceana* in its prominently gland-dotted, green and hairless calyx with long lobes, each of which tapers to a point (Wilson 1961; Walsh & Entwisle 1999).

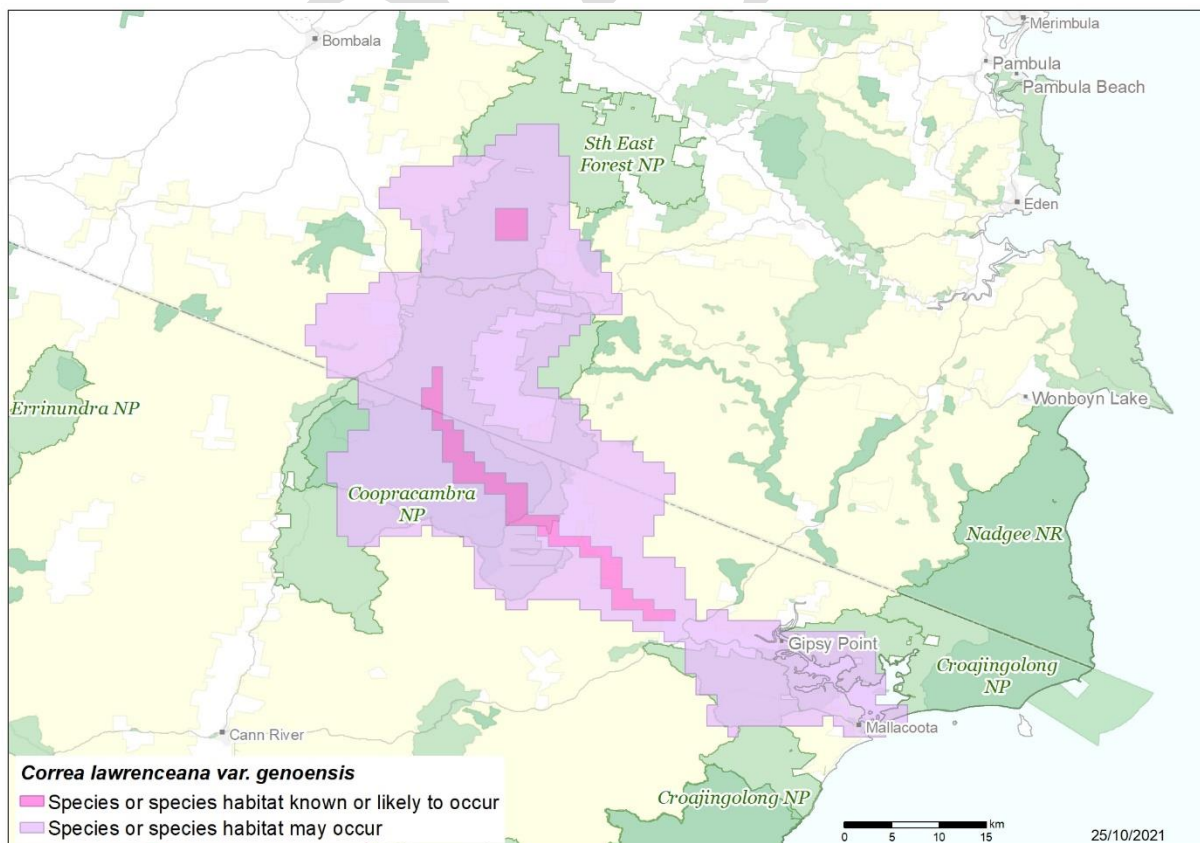
## Distribution

The Genoa River correa is primarily known from a few very small subpopulations along the Genoa River in far eastern Victoria, and one larger subpopulation along Redstone Creek in south-eastern New South Wales (NSW) (Carter & Walsh 2010; OEH 2020) (Map 1). A subpopulation once occurred on the lower Wallagaraugh River around Lake Mallacoota in Victoria (in what is now Croajingolong National Park), but no individuals have been recorded in this area since 1966 despite numerous targeted surveys (Carter & Walsh 2010). All known subpopulations are on public land managed for nature conservation (Carter & Walsh 2010).

The total population size in Victoria has been estimated at between 100 and 170 mature individuals, distributed across a number of sites along the Genoa River (DELWP 2021). Two of these sites are within Coopracambra National Park and one or more others are in reserves near Wangarabell. However, individuals tend to be scattered along the river, which is difficult to search. Thus, it is both difficult to delineate distinct sites/subpopulations and possible that there are undiscovered subpopulations along the Genoa River (A Tolsma 2021. pers comm 26 October).

The largest subpopulation of the taxon is at Redstone Creek within South East Forest National Park in NSW and is estimated to contain around 200 individuals (NSWSC 2002). In 2017, an additional subpopulation was rediscovered on the Nalbaugh Plateau (also within South East Forest National Park), over 150 years after it was first described there by Baron von Mueller (Connery 2017). This subpopulation likely contributes little to the total population size, as according to Dr. Keith McDougall, 'there was not very much of it there' (Connery 2017).

**Map 1 Modelled distribution of Genoa River correa**





**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 habitat or geographic feature that represents to recent observed locations of the species (known to occur) or 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.

## Cultural and community significance

This statement of significance is not intended to be comprehensive, applicable to, or speak for, all Indigenous Australians and it is acknowledged that Indigenous groups and individuals are the custodians of this knowledge.

In NSW, the Genoa River correa occurs on land of the Eden Aboriginal Land Council (New South Wales Aboriginal Land Council n.d). In the areas where the taxon occurs in Victoria, Traditional Owners have not been formally recognised (First Peoples – State Relations n.d). Most, if not all, of the land where the Genoa River correa can be found on both sides of the NSW-Victoria border traditionally belongs to the Bidwell/Bidhawal people (AIATSIS n.d). However, the cultural significance of the Genoa River correa is unknown.

## Relevant biology and ecology

### Habitat

The Genoa River correa generally occurs at an altitudinal range of 60–380 m above sea level, along the upper flood level of the Genoa River (Victoria) and Redstone Creek (NSW). The Nalbaugh plateau site subpopulation occurs at an altitudinal range of more than 1000 m above sea level on granitoid substrate with sandy loams.

In Victoria the Genoa River correa occurs in riparian forest or riparian scrub, and ecotonal vegetation between these two community types. Associated species may include *Acacia floribunda* (white sally wattle), *Acacia mearnsii* (black wattle), *Dodonaea viscosa* (sticky hop bush), *Leptospermum brevipes* (slender tea-tree), *Lomandra longifolia* (spiny-head mat-rush), *Pomaderris aspera* (hazel pomaderris), *Tristaniopsis laurina* (water gum) and *Westringia eremicola* (slender westringia) (Walsh & Entwisle 1999; Carter & Walsh 2010; OEH 2020).

At the Redstone Creek site, the Genoa River correa occurs in riparian forest on a narrow alluvial terrace in sandy soil derived from sandstone. Associated species at that site include *Eucalyptus elata* (river peppermint), *E. obliqua* (messmate), *E. radiata* (narrow-leaved peppermint), *E. cypellocarpa* (monkey gum), *P. aspera* (hazel pomaderris) and *Bedfordia arborescens* (blanket leaf).

### Reproductive Ecology

There have been no specific ecological studies of Genoa River correa. Flowers appear primarily in spring. It is likely that birds or bees pollinate the tubular flowers of this taxon, as was observed for *Correa* species in Tasmania (Auld 2001; Hingston & McQuillan 2000; Ford et al., 1979).

### **Fire ecology**

The Genoa River correa appears to be an obligate seeder (A Tolsma 2021. pers comm 26 October), has been described as “sensitive to fire” (DELWP 2021), and is likely to have a physiologically dormant, persistent soil seedbank, as do species of *Boronia* which are also in the family Rutaceae (Mackenzie et al. 2016; 2021).

The 2019–20 bushfires overlapped with 96 percent of the modelled range of the Genoa River correa (Gallagher 2020) and killed most, if not all, mature individuals (D. McCreery 2021. pers comm 5 October; A Tolsma 2021. pers comm 26 October). While surveys largely failed to detect any seedlings within the first 12 months after the fires, healthy seedlings have been found at all four subpopulations that have been surveyed more than 12 months after the fires (with two subpopulations still unsurveyed) (D. McCreery 2021. pers comm 5 October; A Tolsma 2021. pers comm 26 October). Seedling survival rates following fire are unknown.

### **Habitat critical to the survival**

The habitat critical to the survival of the Genoa River correa includes the area of occupancy of extant subpopulations; areas of similar habitat surrounding these subpopulations that provide potential habitat for natural range extension and are necessary to provide habitat for pollinators; and additional occurrences of similar habitat in the known distribution of the taxon that may contain the taxon or be suitable sites for future translocations.

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 a subpopulation, in keeping with the terminology used in the EPBC Act and state/territory environmental legislation.

All populations are important for the conservation of the taxon, due to its restricted geographic range and the presence of ongoing threats.

### **Threats**

Key threats to the Genoa River correa are inappropriate fire regimes, storms and flood events, increased frequency and severity of drought, competition from invasive weeds, and human disturbance, many of which are likely to be primarily driven or exacerbated by climate change.

#### **Table 1 Threats**

Threats in Table 1 are noted in approximate order of highest to lowest impact, based on available evidence.



Threat	Status <sup>a</sup>	Evidence
Fire		
Inappropriate fire regimes	<ul style="list-style-type: none"> <li>• Timing: current</li> <li>• Confidence: observed</li> <li>• Likelihood: likely</li> <li>• Consequence: catastrophic</li> <li>• Trend: increasing</li> <li>• Extent: across the entire range</li> </ul>	<p>Inappropriate fire regimes are likely to be a key threat to the Genoa River correa, although it is unclear what fire regimes may be inappropriate.</p> <p>Following the severe 2019-20 bushfires, the Genoa River correa was identified as a high priority taxon requiring urgent investigation (DAWE 2020). While adult plants were killed, healthy seedlings have been observed more than 12 months after the fires (see Fire Ecology section). However, seedling survival rates and the ultimate impact of the fires on the population remains unknown, and increased herbivory on post-fire growth may reduce seedling recruitment.</p> <p>High fire frequency is likely to be a threat to the species, by impacting the ability of Genoa River correa to re-establish its soil seed bank and reducing habitat quality for seedling establishment (DAWE 2021).</p> <p>Climate change projections show that southern Australia is likely to experience increased intensity and frequencies of fire (CSIRO &amp; Bureau of Meteorology 2015), with events such as the 2019–20 bushfires likely to reoccur as a result of climate change. If subpopulations of the Genoa River correa are subjected to another fire before seedlings reach maturity and replenish the soil seedbank, then local or even range-wide extinction could result.</p>

Threat	Status <sup>a</sup>	Evidence
Climate change and severe weather		
Storms and flooding	<ul style="list-style-type: none"> <li>• Timing: future</li> <li>• Confidence: projected</li> <li>• Likelihood: possible</li> <li>• Consequence: major</li> <li>• Trend: increasing</li> <li>• Extent: across the entire range</li> </ul>	<p>The CSIRO &amp; Bureau of Meteorology (2015) predict that the eastern coast of Australia will be exposed to increased average temperatures and increased frequency of droughts due to climate change.</p> <p>The Genoa River correa occurs in the riparian zone, and severe flooding or modification to hydrological processes may damage plants and their habitat (Carter &amp; Walsh 2010).</p> <p>Climatic modelling suggests that increased frequency and duration of flood events is likely to occur as a result of climate change (Panagoulia &amp; Dimou 1997). Flash flooding events can result in massive transformation of riparian habitats, rendering them unsuitable for persistence or re-establishment of some plant species. For example, in February 2007 a flash flood on the Wellington River near Licola in Victoria resulted in the complete scouring and loss of the riparian environment down to bedrock. A flash flood in the Grampians in January 2011 similarly resulted in the removal of all riparian vegetation and scouring down to bedrock over many kilometres. Such an event on the Genoa River could potentially eliminate multiple subpopulations of the Genoa River correa (DELWP 2021).</p>

Threat	Status <sup>a</sup>	Evidence
Increased frequency and severity of drought	<ul style="list-style-type: none"> <li>• Timing: current/future</li> <li>• Confidence: suspected</li> <li>• Likelihood: possible</li> <li>• Consequence: moderate</li> <li>• Trend: increasing</li> <li>• Extent: across the entire range</li> </ul>	<p>The CSIRO predicts an increased frequency of droughts due to climate change (CSIRO &amp; Bureau of Meteorology 2015). These climatic changes have been evidenced by the severe drought conditions in eastern Australia from early 2017 to late 2019 (BOM 2021). Changes in climate are likely to cause forest decline, with drought stress leading to plant mortality, particularly if bushfire has preceded drought (Choat et al. 2012).</p> <p>As the Genoa River correa occurs within the riparian zone, it is expected that soil moisture is important for the species' survival. It is likely that reductions in precipitation and drought events will impact subpopulations growing alongside creeks. Further, droughts are also likely to interact with the threat of fire, increasing the severity and frequency of fire events (CSIRO &amp; Bureau of Meteorology 2015).</p>
Exotic invasive species		
Competition with invasive weeds	<ul style="list-style-type: none"> <li>• Timing: current</li> <li>• Confidence: observed</li> <li>• Likelihood: almost certain</li> <li>• Consequence: moderate</li> <li>• Trend: unknown</li> <li>• Extent: across the entire range</li> </ul>	<p>Weed invasions of natural ecosystems are among the greatest environmental threats now facing temperate Australia (ANBG n.d). Invasive weeds, such as blackberry (<i>Rubus fruticosus</i>), have the capacity to alter ecosystems and therefore habitat suitability for native species, as well as directly outcompete native plants (Carter &amp; Walsh 2010).</p>
Habitat loss, disturbance and modifications		
Land clearing or other disturbance	<ul style="list-style-type: none"> <li>• Timing: current</li> <li>• Confidence: known</li> <li>• Likelihood: possible</li> <li>• Consequence: moderate</li> <li>• Trend: unknown</li> <li>• Extent: across the entire range</li> </ul>	<p>The current distribution of the Genoa River correa is fragmented due to historical land clearing and there has been extensive clearing of habitat surrounding reserves where the taxon currently persists (Carter &amp; Walsh 2010). Land clearing may continue to be a threat to undiscovered subpopulations of Genoa River correa on private land.</p> <p>While subpopulations in NSW are in protected areas and quite remote and inaccessible, subpopulations in Victoria may be vulnerable to disturbance by road or track works (DSE 2008).</p>

<sup>a</sup>Timing—identifies the temporal nature of the threat

Confidence—identifies the nature of the evidence about the impact of the threat on the species

Likelihood—identifies the likelihood of the threat impacting on the whole population or extent of the species

Consequence—identifies the severity of the threat

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

Extent—identifies its spatial context in terms of the range of the species

**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 –known to have occurred only a few times

Unknown – currently unknown how often the threat 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 stable or declining

Major – population decline is ongoing

Catastrophic – population trajectory close to extinction

Each threat has been described in Table 1 in terms of the extent that it is operating on the species. The risk matrix (Table 2) 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; the spatial extent, 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 experts and using available literature.

**Table 2 Risk Matrix**

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain			Competition with invasive weeds		
Likely					Inappropriate fire regimes
Possible			Land clearing or other disturbance Increased frequency and severity of drought	Storms and flooding	
Unlikely					
Unknown					

Risk Matrix legend/Risk rating:

Low Risk	Moderate Risk	High Risk	Very High Risk
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Priority actions have then been developed to manage the threats, particularly where the risk was deemed to be ‘very high’ (red shading) or ‘high’ (orange shading). For those threats with an unknown or low risk (blue and green shading respectively) research and monitoring actions have been developed to understand and evaluate the impact of the threats, where appropriate.

## Conservation and recovery actions

### Primary conservation objective

By 2030, the population of the Genoa River correa will be secured and sustained within the range of natural variability in suitable habitats and across all subpopulations by managing key threats effectively.

### Conservation and management priorities

#### Fire impacts

- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigation measures in bushfire risk management plan/s, risk register and/or operation maps. Conduct training for personnel undertaking fire management and hazard reduction burns, to enable them to identify the Genoa River correa and its habitat.
- Advise the appropriate Bush Fire Management Committee on appropriate fire regimes for the taxon, including the need to avoid too frequent fires.
- Develop and implement a fire management strategy that optimises the survival of Genoa River correa during planned burns and bushfires, including:
  - Fires must be managed to ensure that prevailing fire regimes do not disrupt the life cycle of the taxon, that they support rather than degrade the habitat, and that they do not promote invasion of weeds.
  - Physical damage to the habitat and individual plants must be avoided during and after fire operations.
  - Avoid the use of fire retardants and firefighting foams during fire operations.

#### Climate change and severe weather impacts

- Identify and protect habitat likely to remain or become suitable habitat for the taxon under future climate change scenarios.
- Identify climate refuges suitable for translocations, ensuring that some are geographically distant enough to increase the number of locations of the taxon (see “Ex situ recovery actions” below).

#### Exotic invasive species impacts

- Identify and control problem weeds where required, using appropriate methods. Consider the possible disturbance and off-target spraying threats associated with the control method.
- Manage any weed invasions found during population monitoring. Weeds of concern are those that have the potential to adversely affect recruitment or provide strong competition, such as blackberry.
- Implement suitable weed hygiene protocols when undertaking survey, monitoring and management activities. Refer to the *Arrive Clean, Leave Clean Guidelines to help prevent the spread of invasive plant diseases and weeds threatening our native plants, animals and ecosystems* (DotE 2015).

### **Habitat loss, disturbance and modifications impacts**

- Ensure land managers, local governments, relevant state agencies and utility service providers have access to adequate information regarding the location of Genoa River correa (e.g. up-to-date databases of known subpopulations) and are aware of its occurrence.
- Install signage and provide physical protection measures against accidental destruction where necessary (e.g. bollards demarcating the extent of a subpopulation).
- Liaise with landowners to encourage entering into voluntary management agreements to maintain or enhance the taxon and its habitat wherever it is found to occur on unsecured private land.
- Ensure local governments have management plans with protocols for undertaking surveys of Genoa River correa for development applications within its range.

### **Ex situ recovery actions**

- To manage risk of losing genetic diversity, seeds from a representative sample of wild plants across the majority of subpopulations should be collected and stored in accordance with plant germplasm conservation guidelines (Martyn Yenson et al. 2021).
- If deemed appropriate, undertake ex situ propagation and conservation translocations in suitable habitat with secure land tenure, to increase the number of subpopulations of Genoa River correa, in accordance with the *Guidelines for the Translocation of Threatened Plants in Australia* (Commander et al. 2018).

### **Stakeholder engagement/community engagement**

- Conduct a publicity campaign using physical and electronic media to increase local community awareness of the taxon's conservation.
- Identify and implement opportunities for community involvement in the conservation of the taxon.
- Liaise with relevant land managers and landowners to ensure that subpopulations are not accidentally damaged or destroyed. The approval and assistance of land managers should also be sought to implement recovery actions.
- Engage and involve Traditional Owners in conservation actions, including the implementation of Indigenous fire management and other survey, monitoring and management actions.

### **Survey and monitoring priorities**

- Establish and maintain a monitoring program to:
  - monitor recruitment and plant health after fire events (including the 2019–20 bushfires),
  - determine trends in population size,
  - document population trends over time at sites with different fire regimes,
  - better identify and monitor threats and their relative impacts, especially weeds, and
  - monitor the effectiveness of management actions and the need to adapt them if necessary.

- Survey suitable habitat for new subpopulations and to locate suitable sites for translocations.
- Monitor all translocated individuals to maturity, seed set and recruitment to ensure they are viable and are contributing to a reduction in the extinction risk for the species.

### Information and research priorities

- Undertake genetic research to determine levels of genetic diversity and population genetic structure within the taxon and to inform ex situ conservation efforts.
- Undertake research into the taxon's life history processes, including timing of reproduction, survival and recruitment responses to fires and floods, seedling recruitment, longevity of standing plants and seed banks, fecundity, seed dormancy and germination requirements, pollination ecology and seed dispersal.
- Analyse the ecological and bioclimatic requirements of the Genoa River correa, particularly drought tolerance, mortality responses to heat waves and germination sensitivities to temperature, and use the results to identify potential habitat that may be suitable for the taxon under both current and projected climate conditions.
- Improve knowledge of the relative impact of various threats to the taxon and the efficacy of conservation and management actions. These threats may include (but not necessarily be limited to): fire, drought, flooding, competition from exotic plants, and land clearing.
- Ascertain the cultural significance of the Genoa River correa to improve engagement with Traditional Owners around management actions and increase understanding of the value of conserving the taxon.

### Links to relevant implementation documents

[NSW Government. Genoa River correa \(\*Correa lawrenceana\* var. \*genoensis\*\) Saving Our Species Strategy](#)

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The Threatened Species Scientific Committee finalised this assessment on DD Month Year.

## Attachment A: Listing Assessment for *Correa lawrenceana* *var. genoensis*

### Reason for assessment

The Genoa River correa was listed as Endangered under the *Endangered Species Protection Act 1992* and transferred to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) when it commenced in July 2000.

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 3 includes the key assessment parameters used in the assessment of eligibility for listing against the criteria. The definition of each of the parameters follows the [Guidelines for Using the IUCN Red List Categories and Criteria](#).

**Table 3 Key assessment parameters**

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
<b>Number of mature individuals</b>	~335	unknown	500	<p>Before the 2019–20 bushfires, DELWP (2021) estimated that there were 100 to 170 mature individuals in Victoria. The largest subpopulation at Redstone Creek in NSW was estimated to contain around 200 individuals (NSWSC 2002). The second NSW subpopulation on the Nalbaugh Plateau is small.</p> <p>The 2019–20 bushfires overlapped with 96% of the modelled range of the Genoa River correa (Gallagher 2020) and killed most, if not all, mature individuals. However, the taxon is an obligate seeder and recruits from soil-stored seed.</p> <p>Seedling survival rates following fire are unknown. Therefore, post-fire population size must be estimated using historical subpopulation sizes combined with presence/absence data of post-fire recruitment to determine if these subpopulations are still extant. Post-fire surveys have been hampered by dense regrowth and competition among a range of species, which can make it difficult to detect Genoa River correa seedlings. Most surveys failed to detect any seedlings within the first 12 months after the fires. However, at least some healthy seedlings have been observed at all four subpopulations that have been surveyed more than 12 months after the fires (with two subpopulations still unsurveyed) (D. McCreery 2021. pers comm 5 October; A Tolsma 2021. pers comm 26 October). Thus, in the absence of data on the taxon’s general responses to fire and on seedling mortality in particular, the pre-fire estimate of subpopulation size has been used.</p>
<b>Trend</b>	Declining			<p>The subpopulation around the lower Wallagaraugh River/Lake Mallacoota has not been observed since 1966 and is likely extinct. Further ongoing decline is likely given an array of current threats including altered fire regimes, habitat fragmentation, competition with invasive weeds, altered hydrological regimes, and climate change.</p>

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Generation time (years)	70	60	80	The generation length of the Genoa River correa is unknown. A range of plausible generation lengths has been estimated based on other <i>Correa</i> species and other varieties of <i>C. lawrenceana</i> and plants observed both in the wild and in botanic gardens (DELWP 2021).
Extent of occurrence	247 km <sup>2</sup>	62 km <sup>2</sup>	510 km <sup>2</sup>	The extent of occurrence (EOO) is estimated as 247 km <sup>2</sup> . This figure is based on the mapping of point records from 2000–2021 obtained from state governments, museums and the CSIRO. The EOO was then calculated using a minimum convex hull, as outlined in the IUCN Guidelines (IUCN 2019). The maximum plausible estimate of EOO is 510 km <sup>2</sup> and is based on including locations recorded around Lake Mallacoota in 1966. The minimum plausible estimate of EOO is 62 km <sup>2</sup> and is based on excluding locations from the Nalbaugh Plateau which have not been resurveyed since the 2019–20 bushfires.
Trend	Contracting			The subpopulation(s) around the lower Wallagaraugh River/Lake Mallacoota have not been observed since 1966 and are believed to be extinct. The loss of these locations has reduced the taxon's EOO by 51%.
Area of Occupancy	40 km <sup>2</sup>	36 km <sup>2</sup>	48 km <sup>2</sup>	The area of occupancy (AOO) is estimated as 40 km <sup>2</sup> . This figure is based on the mapping of point records from 2000–2021 obtained from state governments, museums and the CSIRO. The AOO was then calculated using the 2x2 km grid cell method described in the IUCN Guidelines (IUCN 2019). The maximum plausible estimate of AOO is 48 km <sup>2</sup> and is based on including locations recorded around Lake Mallacoota in 1966. The minimum plausible estimate of EOO is 36 km <sup>2</sup> and is based on excluding locations from the Nalbaugh Plateau which has not been resurveyed since the 2019–20 bushfires
<p>AOO is a standardised spatial measure of the risk of extinction, that represents the area of suitable habitat known, inferred or projected to be currently occupied by the taxon. It is estimated using a 2 x 2 km grid to enable comparison with the criteria thresholds. The resolution (grid size) that maximizes the correlation between AOO and extinction risk is determined more by the spatial scale of threats than by the spatial scale at which AOO is estimated or shape of the taxon's distribution. It is not a fine-scale estimate of the actual area occupied. In some cases, AOO is the smallest area essential at any stage to the survival of existing populations of a taxon (e.g. breeding sites for migratory species).</p>				

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
<b>Trend</b>	Contracting			The subpopulation around the lower Wallagaraugh River/Lake Mallacoota has not been observed since 1966 and is believed to be extinct. The loss of these locations has reduced the taxon's AOO by 17%.
<b>Number of subpopulations</b>	6	3	>7	<p>Four extant subpopulations have been identified along the Genoa River in Victoria (DELWP 2021). In Victoria, individuals tend to be scattered along the Genoa river, making it difficult to delineate distinct sites/subpopulations in Victoria (A Tolsma 2021. pers comm 26 October). Combined with the fact that little is known about pollination, seed dispersal, or resulting population genetic structure for the taxon, this means that the number of subpopulations in Victoria is uncertain. Individuals along the Genoa River could potentially represent a single subpopulation if the species is able to disperse by water or more than four subpopulations.</p> <p>Two subpopulations are known from NSW, one along Redstone Creek and the other on the Nalbaugh Plateau. The two NSW subpopulations are separated by about 18 km and the Redstone Creek subpopulation is at least 6 km from the nearest Victorian subpopulation. Furthermore, it is possible that there are undiscovered subpopulations of the taxon (A Tolsma 2021. pers comm 26 October).</p>
<b>Trend</b>	Declining			The subpopulation around the lower Wallagaraugh River and Lake Mallacoota has not been observed since 1966 and is likely extinct. Given the small size of some subpopulations and the array of current threats (including altered fire regimes, habitat fragmentation, competition with invasive weeds, altered hydrological regimes, and climate change) continuing decline is likely.
<b>Basis of assessment of subpopulation number</b>	Assessment of subpopulation number is based on the geographical separation of areas where the taxon is known to occur with the maximum plausible value allowing for the possibility of undiscovered subpopulations.			

<b>Metric</b>	<b>Estimate used in the assessment</b>	<b>Minimum plausible value</b>	<b>Maximum plausible value</b>	<b>Justification</b>
<b>No. locations</b>	1	1	2	The number of locations is estimated at one. A single large bushfire event impacted all known subpopulations of the Genoa River correa in 2019–20, apparently killing all mature individuals. A future bushfire event could cause the rapid extinction of all remaining subpopulations of the taxon, particularly if it occurs while the entire population is comprised of immature seedlings.
<b>Trend</b>	Stable			The number of locations can only decline if the taxon goes extinct and increase only via translocation to a geographically distant location.
<b>Basis of assessment of location number</b>	The number of locations was based on the most plausible serious threat to the taxon – fire. The 2019–20 bushfires burnt all known subpopulations (with the possible exception of the recently discovered Nalbaugh Plateau subpopulation), and such fires may occur again in the future (Gallagher 2020; Auld et al. 2020).			
<b>Fragmentation</b>	The Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2019) state that: ‘A taxon can be considered to be severely fragmented if most (>50%) of its total area of occupancy is in habitat patches that are (1) smaller than would be required to support a viable population, and (2) separated from other habitat patches by a large distance.’ The largest subpopulation of Genoa River correa at Redstone Creek in NSW likely supports fewer than 200 mature individuals and other subpopulations are much smaller. Given that Frankham et al. (2014) have suggested that 1000 individuals are required as a minimum viable population size for resilience to genetic threats associated with small populations, the evidence suggests that the Genoa River correa should be considered severely fragmented.			
<b>Fluctuations</b>	It is unknown whether the Genoa River correa experiences extreme fluctuations. In order to experience extreme fluctuations under IUCN criteria, a variation in population size or distribution area must occur with a variation greater than one order of magnitude, and dormant life stages (e.g. stored seed) must be exhaustible by a single event or cannot persist without mature individuals. (IUCN 2019). There are no known extreme fluctuations in EOO, AOO, number of subpopulations, or locations for Genoa River correa.			

### 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
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>	≥ 80%	≥ 50%	≥ 30%
<p><b>A1</b> 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><b>A2</b> 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><b>A3</b> 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><b>A4</b> 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>		<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>

### Criterion 1 evidence

#### Insufficient data to determine eligibility

##### *Generation time*

The generation time of the Genoa River correa is estimated to be around 70 years (see Table 3). Therefore, three generations represent a period of approximately 210 years for the purposes of this criterion.

##### *Population reduction before the 2019–20 bushfires*

Before the 2019–20 bushfires, the total population size of the Genoa River correa was estimated to be between 300 and 370 mature individuals. This estimate included 100 to 170 mature individuals in Victoria (DELWP 2021) and around 200 individuals in NSW (NSWSC 2002).

Known subpopulations of the Genoa River correa have not been sufficiently monitored to estimate historic trends in population size. However, one entire subpopulation around the lower Wallagaraugh River/Lake Mallacoota has not been observed since 1966 and is believed to be extinct. The loss of these locations has reduced the taxon’s AOO by 17 percent and it can be reasonably inferred that this has reduced the population size by up to 17 percent. However, on its own, this level of decline is insufficient to make the taxon eligible for listing under this criterion.



*Population reduction resulting from the 2019–20 bushfires*

The 2019–20 bushfires overlapped with 96 percent of the modelled range of the Genoa River correa (Gallagher 2020) and killed most, if not all, mature individuals. However, the taxon is thought to be an obligate seeder and to recruit from soil-stored seed. Thus, the loss of mature individuals following the 2019–20 bushfires may be part of a natural fluctuation in response to fire rather than a pattern of ongoing population decline.

Post-fire surveys have been hampered by dense regrowth and competition among a range of plant species, making it difficult to detect Genoa River correa seedlings. Most surveys failed to detect any seedlings within the first 12 months after the fires. However, healthy seedlings have been found at all four subpopulations that have been surveyed more than 12 months after the fires (with two subpopulations still unsurveyed) (D. McCreery 2021. pers comm 5 October; A Tolsma 2021. pers comm 26 October). Seedling survival rates following fire are unknown. Therefore, post-fire population size can only be estimated using historical subpopulation sizes combined with presence/absence data of post-fire recruitment to determine if these subpopulations are still extant. Thus, in the absence of data on the taxon's general responses to fire and on seedling mortality in particular, no firm conclusions can be drawn regarding post-fire population reduction.

*Conclusion*

The loss of one subpopulation of the Genoa River correa supports a decline in population size of up to 17 percent (assuming an equivalent reduction in AOO). There is no evidence to support a decline greater than this, as there are insufficient data to allow estimation of historic population trends or possible declines resulting from the extraordinary 2019–20 bushfires. Therefore, the Committee considers that there is insufficient information to determine the eligibility of the taxon for listing in any category 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
<b>B1.</b> Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
<b>B2.</b> Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
<b>AND at least 2 of the following 3 conditions:</b>			
(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(i,ii)+2ab(i,ii) for listing as Endangered**

*EOO and AOO*

The Genoa River correa is estimated to have an EOO of 247 km<sup>2</sup> (plausible range of 62–510 km<sup>2</sup>), and an AOO of 40 km<sup>2</sup> (plausible range 36–48 km<sup>2</sup>) (see Table 3). These figures are based on the mapping of point records from 2000–2021 obtained from state governments, museums and the CSIRO. The EOO was calculated using a minimum convex hull, as outlined in the IUCN Guidelines (IUCN 2019). The AOO was calculated using the 2x2 km grid cell method as outlined in the IUCN Guidelines (IUCN 2019).

Given that the EOO is less than 5000 km<sup>2</sup> and the AOO less than 500 km<sup>2</sup>, the taxon meets the threshold for listing as Endangered under sub-criterion B1 and sub-criterion B2.

*Severely fragmented and number of locations*

To be considered severely fragmented, over 50 percent of a taxon’s AOO must be in small and isolated patches that cannot support a minimum viable population (IUCN 2019). The largest subpopulation of Genoa River correa at Redstone Creek in NSW likely supports fewer than 200 mature individuals and all other subpopulations are much smaller. Given that Frankham et al. (2014) have suggested that 1000 individuals are required as a minimum viable population size for resilience to genetic threats associated with small populations, the evidence suggests that the Genoa River correa should be considered severely fragmented.

The Genoa River correa occurs at just one location, based on the most plausible serious threat (fire). The 2019–20 bushfires burnt all known subpopulations (with the possible exception of the small Nalbaugh Plateau subpopulation, due to fire patchiness), and such fires may occur

again in the future (Gallagher 2020; Auld et al. 2020). Therefore, the taxon meets the threshold for listing as Endangered under sub-criterion (a).

#### *Continuing decline*

Between 1966 and 2021 (a span of less than one generation), the EOO of the Genoa River correa has declined from 510 km<sup>2</sup> to 247 km<sup>2</sup> and the AOO has declined from 48 km<sup>2</sup> to 40 km<sup>2</sup>. This decline, observed from surveys, is likely to continue into the future due to ongoing threats from fire and exacerbated by climate change. This continuing decline makes the taxon eligible for listing under sub-criterion (b)(i,ii).

#### *Fluctuations*

It is unknown whether the Genoa River correa experiences extreme fluctuations. In order to experience extreme fluctuations under IUCN criteria, a variation in population size or distribution area must occur with a variation greater than one order of magnitude (IUCN 2019). There are no known extreme fluctuations in EOO, AOO, number of subpopulations, or locations for Genoa River correa.

#### *Conclusion*

Based on the above evidence, the Committee considers that both the taxon's EOO and AOO are restricted, it is severely fragmented, its number of locations is restricted, and continuing decline is observed in EOO and AOO.

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

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 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			
<b>C1.</b> An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	<b>Very high rate</b> 25% in 3 years or 1 generation (whichever is longer)	<b>High rate</b> 20% in 5 years or 2 generation (whichever is longer)	<b>Substantial rate</b> 10% in 10 years or 3 generations (whichever is longer)
<b>C2.</b> 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:			
(a) (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) for listing as Endangered

The total number of mature individuals is around 335 which is low.

The apparent loss of the Wallagaraugh River/Lake Mallocoota subpopulation has occurred sometime after 1966, which is well within the past three generations. The loss of this subpopulation has reduced the taxon's AOO by 17 percent and, assuming a corresponding reduction in population size, this provides evidence of a continuing decline in the population of Genoa River correa. Furthermore, the number of mature individuals in each subpopulation is fewer than 250 (see Table 3), suggesting that its geographic distribution is precarious for its survival and that the taxon meets the threshold for listing as Endangered under sub-criterion C2a(i).

Therefore, the taxon has met the relevant elements of Criterion 3 to make it eligible for listing as Endangered.

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 4 Number of mature individuals

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

<sup>1</sup> 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 D for listing as Vulnerable

The Committee considers that the total number of mature individuals is less than 1000 which is low (see Table 3). Therefore, the taxon has met the relevant elements of Criterion 4 to make it eligible for listing as D Vulnerable.

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 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**

The survey effort has been considered adequate and there is sufficient scientific evidence to support the assessment.

### **Listing and Recovery Plan Recommendations**

A decision about whether there should be a Recovery Plan for this species has not yet been made. The purpose of this consultation document is to elicit additional information to help inform the decision.

DRAFT

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### Version history table

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