



Conservation Advice for *Pomaderris cotoneaster* (Cotoneaster Pomaderris)

In effect under the *Environment Protection and Biodiversity Conservation Act 1999* from 23 November 2021.

This document provides a foundation for conservation action and further planning.



Photo of *Pomaderris cotoneaster* (Cotoneaster Pomaderris) © Copyright, Murray Fagg (2019), [Australian National Botanic Gardens](#)

Conservation status

Pomaderris cotoneaster (Cotoneaster Pomaderris) is listed in the Endangered category of the threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act) effective from 16 July 2000. The species is eligible for listing because prior to the EPBC Act, it was listed as Endangered under the *Endangered Species Protection Act 1992* (Cwlth).

The main factors that make the species eligible for listing in the Endangered category are a restricted geographic range made up of small, fragmented subpopulations.

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 *Pomaderris cotoneaster* N.A.Wakef. (Wakefield 1951).

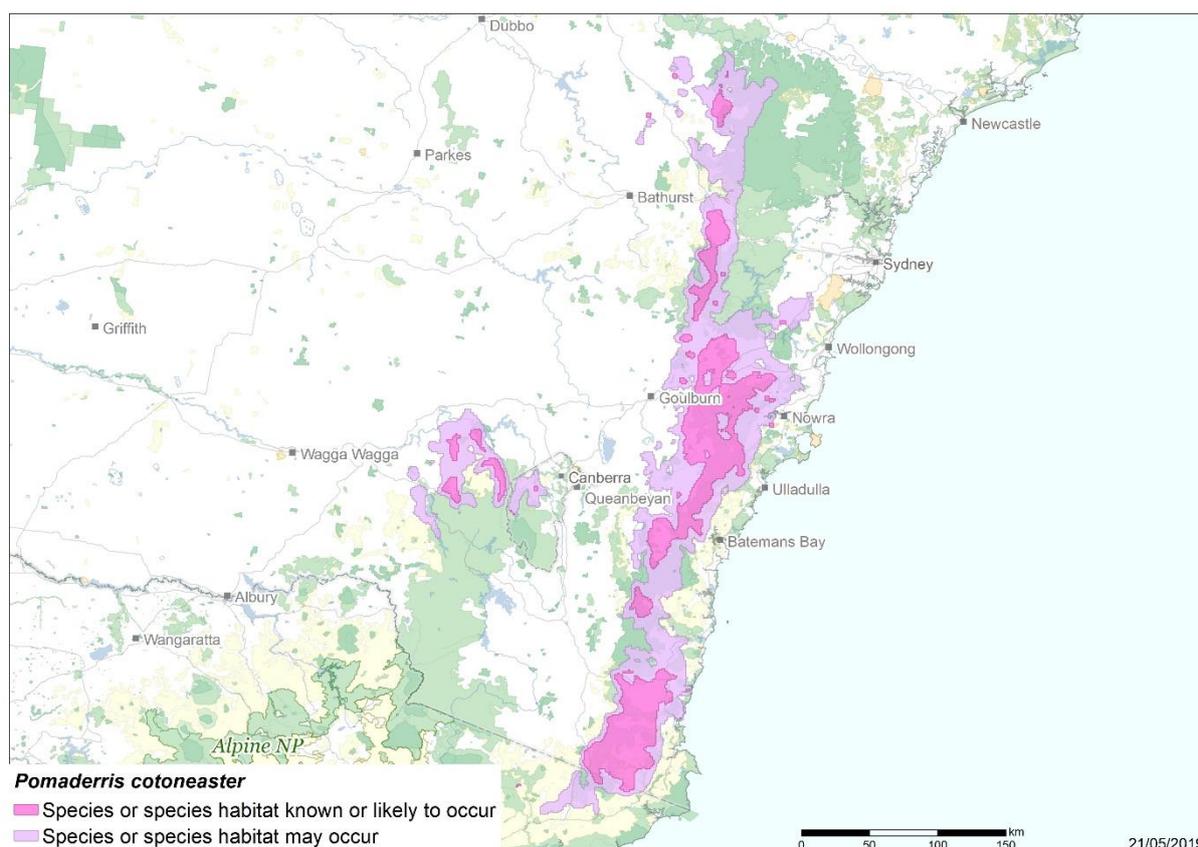
Description

Cotoneaster Pomaderris is an erect shrub to 4 m tall. Branchlets are densely stellate-pubescent (rarely with a few simple hairs). Leaves are broad-ovate to broad-obovate, 20–50 mm long, 15–30 mm wide, obtuse to emarginate, the margin plane, upper surface sparsely stellate and/or simple-pubescent with impressed secondary veins above, the lower surface densely whitish-stellate-pubescent, sometimes with sparse, rusty, stellate (and sometimes simple) hairs, mostly on veins. Stipules 4–5 mm long, deciduous. Panicles are more or less pyramidal, 3–10 cm long. Bracts are weakly persistent or deciduous. Flowers are cream, externally whitish with stellate and sparse simple hairs, pedicels are 1.5–2.5 mm long, hypanthium 0.5–1 mm long, sepals are 1.6–2 mm long, deciduous, petals and disc are absent, the ovary is virtually inferior with a villous summit and a style branched in the lower half (VicFlora 2020).

Distribution

Cotoneaster Pomaderris occurs in south-eastern Australia, from Lue, near Mudgee, northwest of Sydney, to far eastern Victoria (Map 1). In total, 19 subpopulations have been recorded, with 16 of these recorded in the last ~20 years. Three subpopulations are only known from historical records more than 30 years old and it is not known if these still persist. The total number of plants known to exist in the wild is at least 3200, although accurate population counts have not been made for all known subpopulations. The species has been recorded from private land, roadsides and conservation reserves (South East Forests National Park, Morton National Park, Kosciuszko National Park, Bungonia National Park, Bungonia State Conservation Area, Coopracambra National Park, Cambewarra Range Nature Reserve and Kanangra Boyd National Park). There appears to have been a decline in numbers of plants at three subpopulations (Table 1). However, the total number of known subpopulations and known plants has increased since the previous Recovery Plan (DECCW 2009) attributed to increased survey effort (e.g. resulting from the NSW Saving Our Species program). The large area of remote, apparently suitable habitat suggests that additional undiscovered subpopulations of Cotoneaster Pomaderris probably exist.

Map 1 Modelled distribution of Cotoneaster Pomaderris



Source: Species distribution data [Species of National Environmental Significance](#) database, base map Geoscience Australia.
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 to 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 Known subpopulations of Cotoneaster Pomaderris

Location	Land Tenure	Subpop. size (Year)	Source
1. Genoa River, VIC	National Park (Coopracambra)	1 (2002)	DECCW 2009
2. Neenah Gorge, NSW	National Park (South East Forests)	68 (1999)	DECCW 2009
3. Redstone Creek and junction of Nungatta Creek with Genoa River, NSW	National Park (South East Forests)	22 (1999) present (2017)	DECCW 2009; ALA 2020
4. Tantawangalo Creek, NSW *	National Park (South East Forests), Council land, freehold	c. 250 (1999) c. 100 (2016) 9 adults, 65 seedlings (Nov 2020)	DECCW 2009; ALA 2020; DPIE 2021
5. Goobarragandra River, NSW *	National Park (Kosciuszko)	c. 1000 (2004) c. 500 (2016)	DECCW 2009; ALA 2020

Location	Land Tenure	Subpop. size (Year)	Source
6. Bungonia (Balchams Gully), NSW	State Conservation Area (Bungonia)	105 (2007) 108 records (2017)	DECCW 2009; ALA 2020
7. Bungonia (Jerrara Lookout), NSW*	National Park (Bungonia)	150 (2007) 576 (2016)	DECCW 2009; ALA 2020
8. Badgerys Lookout, NSW *	National Park (Morton), Council land	c. 300 (2000) c. 130 (2017)	DECCW 2009; ALA 2020
9. Ettrema Gorge, NSW	National Park (Morton)	unknown (herbarium collection 1987)	DECCW 2009
10. Guula Ngurra National Park, Canyonleigh, NSW	National Park, private, road reserve, power easement	150 (2005) c. 1600 (2019)	DECCW 2009; ALA 2020; DPIE 2021
11. Black Range, Wingello, NSW	Unknown	unknown (herbarium collection 1939)	DECCW 2009
12. Yerranderie, NSW	Unknown	unknown (herbarium collection 1915)	DECCW 2009
13. Braidwood Rd at junction with Gretas Rd, Sassafrass	Unknown	present (2017)	ALA 2020
13. Braidwood Rd at HMAS Albatross	Unknown	10 (2017)	ALA 2020
14. Tallowa Dam Wall	National Park (Morton)	8 (2015)	ALA 2020
15. Caoura Rd, Tallong	Private	one record (1999)	ALA 2020
16. Bugong Gap Trail, Kangaroo Valley	Nature Reserve (Cambewarra Range)	c. 50 (2019)	ALA 2020
17. Dex Creek, Wollondilly	National Park (Kanangra Boyd)	four records (2001)	ALA 2020
18. north of Powels Rd, Lue	Private	one record (2012)	ALA 2020
19. Aarons Pass Rd, Carcalgong	Road Reserve	53 (2019)	ALA 2020

* NSW Saving Our Species priority management site (DPIE 2020).

Cultural and community significance

The cultural significance of *Cotoneaster Pomaderris* is not well understood, although riparian eucalypt forests, in which the habitat for the species can occur, have a long history of occupation and management by Indigenous Australians.

Relevant biology and ecology

The biology and ecology of the *Cotoneaster Pomaderris* is not well understood. Further studies are required to understand its ecological requirements, reproductive strategies, soil seedbank dynamics, longevity, fecundity, recruitment levels, and seed germination requirements. However, the available information on the habitat and reproductive biology of *Cotoneaster Pomaderris* is presented below.

Habitat Ecology

Cotoneaster Pomaderris occurs in a very broad mix of vegetation communities, from tall open eucalypt forest to dry open eucalypt woodland, sometimes (but not always) in sites physically protected from fire, such as along rivers, gorges or escarpments. Some subpopulations (Genoa River and its tributaries, Tantawangalo Creek and Bungonia (Balchams Gully)) are largely riparian. Plants there may occur in the stream zone (often amongst rock) or at the bases of often steep slopes. In Kosciuszko National Park, the population extends from the river flat to the upper slopes above the Goobragandra River in low dry sclerophyll forest. At Bungonia (above Jerrara Creek) and Badgerys Lookout, the populations are on steep slopes near the sandstone

escarpment, in dry forest. The Guula Ngurra National Park (Canyonleigh) population occurs on flat ridge top.

Reproductive Ecology

Cotoneaster Pomaderris flowers from October to November and surveys should be undertaken during its flowering period, as accurate identification requires flowering material (VicFlora 2020). Fruits mature in summer with seed being released predominantly in late January and early February (DECCW 2009). Time to reproductive maturity for other Pomaderris is estimated at 2–6 years (Maryott-Brown & Wilks 1993; Patykowski et al. 2014) and generation length of Cotoneaster Pomaderris is estimated at 10–30 years (DELWP 2020). The pollinators of Cotoneaster Pomaderris are unknown, although insects may be the primary pollinators of Pomaderris generally (Patykowski et al. 2014). Seed dispersal may be undertaken by ants across short distances (Patykowski et al. 2014). Under dense shade, flowering may not occur and growth may be poor (Patykowski et al. 2014). The longevity is plausibly 20–50 years (DELWP 2020).

Population Genetics

Chen et al. (2019) studied ploidy levels of Cotoneaster Pomaderris at Bugonia National Park, Goobarragandra River, Morton National Park, South East Forests National Park and Guula Ngurra National Park and found all studied subpopulations to be tetraploid and likely to be apomictic (produce seeds asexually). This suggests Cotoneaster Pomaderris subpopulations may have very low genetic diversity, but are nevertheless capable of recruitment from seed and able to persist with low numbers (van Dijk 2003).

Fire Ecology

Burnt Cotoneaster Pomaderris plants at the Tantawangalo Creek subpopulation were killed in the 2019-20 bushfire with no evidence of resprouting (DPIE 2021). However, the species was recruiting from seed, with many seedlings observed 10 months post-fire (DPIE 2021). The presence of juvenile Cotoneaster Pomaderris plants at subpopulations where fire had been absent for a long time indicates that Cotoneaster Pomaderris may not be totally reliant on fire to promote seed germination (DPIE 2009). The longevity of the soil seed bank is unknown for Cotoneaster Pomaderris, although seed from other Pomaderris (*P. vacciniifolia*) are likely to survive for at least 20 years in the soil (Patykowski et al. 2014). Many Pomaderris are reliant on fire to promote germination of soil-stored seed (e.g. Patykowski et al. 2016). Pomaderris seed at approximately 100°C (Ooi et al. 2014; Patykowski et al. 2016; Le Breton et al. 2019), suggesting that very cool burns may not stimulate germination of soil-stored seed. Some Pomaderris species take an estimated 4–6 years to reach maturity and produce seed (Maryott-Brown & Wilks 1993) and so the occurrence of fires at a higher frequency than once every 10 years may be detrimental to any extant subpopulations.

Habitat critical to the survival

Due to the species eligibility for listing (restricted range and/or severe fragmentation), all habitat is considered critical to the survival of the species.

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.

There is sufficient evidence through the species eligibility for listing, to declare all populations/the national population as important populations of this species under particular pressure of survival and which therefore require protection to support the recovery of the species.

Threats

The main threats to *Cotoneaster Pomaderris* are climate change, herbivory, invasive weeds, genetic threats arising from small subpopulation sizes. The species is threatened by several fire-related threats, including high frequency fire, fire-drought interactions and fire promoted weed invasion.

Table 2 Threats impacting *Cotoneaster Pomaderris*

Threat	Status and severity ^a	Evidence
Climate Change		
Increased frequency and severity of bushfires	<ul style="list-style-type: none"> • Timing: current • Confidence: inferred • Consequence: major • Trend: increasing • Extent: across the entire range 	<p>Climate projections for south-eastern Australia include reduced rainfall, increased average temperatures, and more frequent bushfires (CSIRO & Bureau of Meteorology 2015).</p> <p>Analysis by the Wildlife and Threatened Species Bushfire Recovery Expert Panel, based on intersecting the modelled distribution of the Rufous Pomaderris and the National Indicative Aggregated Fire Extent Dataset, indicates that approximately 46 % of the range of the species was within the extent of the 2019-20 bushfires (Gallagher 2020).</p> <p>The moist habitat of some sites (e.g. Morton National Park and Coopracamba National Park) may be sensitive to fire, as fires in these localities are likely to be infrequent (DPIE 2020). The fragmented distribution across large tracts of otherwise apparently suitable habitat indicates that <i>Cotoneaster Pomaderris</i> may have been fragmented by frequent fires in the past (DPIE 2020). <i>Cotoneaster Pomaderris</i> appears to be an obligate seeder, with adult plants killed by fire, but seedlings recruiting from soil-stored seed, at Tantawangalo Creek following the 2019-20 bushfire (DPIE 2021). Frequent fires that occur before plants have reached reproductive maturity are likely to be detrimental to <i>Cotoneaster Pomaderris</i> by exhausting soil-stored seed reserves (Natale 2016).</p>
Increased frequency and severity of drought	<ul style="list-style-type: none"> • Timing: current • Confidence: suspected • Consequence: moderate • Trend: increasing • Extent: across the entire range 	<p>Climate projections for south-eastern Australia include reduced rainfall, increased average temperatures, and more frequent droughts (CSIRO & Bureau of Meteorology 2015).</p> <p>Given its apparent preference for damp situations, climate change may pose a substantial threat to <i>Cotoneaster Pomaderris</i>,</p>

Pomaderris cotoneaster (Cotoneaster Pomaderris) Conservation Advice

		<p>through increased drying of sites. Plants in some subpopulations were observed to die back following drought, although were found to be resprouting from the base following wetter conditions (Carr 1999).</p> <p>Furthermore, fire-drought interactions may affect Cotoneaster Pomaderris, as obligate seeders respond to fire for recruitment, yet seedlings have rudimentary root systems vulnerable to desiccation if post-fire drought occurs (Burgman and Lamont 1992).</p>
Habitat loss, disturbance and modifications		
Land clearing	<ul style="list-style-type: none"> • Timing: current • Confidence: known • Consequence: major • Trend: unknown • Extent: across part of its range 	<p>Complete removal of plants is a threat to the Canyonleigh population, which is partly on road reserve, freehold land and a power easement. The boundaries between these tenures are not defined by fences and some clearing has previously occurred (DECCW 2009). Other populations on unsecured private land are at risk of clearing.</p>
Invasive species		
Feral herbivores	<ul style="list-style-type: none"> • Timing: current • Confidence: known • Consequence: moderate • Trend: unknown • Extent: across part of its range 	<p>Browsing by goats and deer is a threat to Cotoneaster Pomaderris across its range (DPIE 2020). Continuous browsing can kill adult plants and germinating seedlings and browsing by goats is currently listed as a Key Threatening Process under the EPBC Act (DEWHA 2008).</p>
Competition with weeds	<ul style="list-style-type: none"> • Timing: current • Confidence: known • Consequence: minor • Trend: unknown • Extent: across part of its range 	<p>Serrated Tussock (<i>Nassella trichotoma</i>) is present in the Bungonia National Park subpopulation and Blackberry (<i>Rubus fruticosus</i> spp. agg.) is present in Kosciuszko National Park and Tantawangalo Creek subpopulations (DPIE 2020). Both are Weeds of National Significance and are capable of outcompeting native plant species (DAWE 2020) and are believed to be impacting Cotoneaster Pomaderris subpopulations (DPIE 2020).</p> <p>Frequent fires may exacerbate the risk posed by weed invasion, as fires can create gaps in vegetation allowing superior competitors to invade</p>
Genetic threats resulting from small and fragmented populations		
Small population size	<ul style="list-style-type: none"> • Timing: current • Confidence: inferred • Consequence: moderate • Trend: unknown • Extent: across entire range 	<p>Many small, isolated populations are subject to the effects of low genetic diversity (Frankham et al. 2014). It is likely that this is impacting the Cotoneaster Pomaderris, although subpopulations may have some resilience to genetic risks due to their ability to reproduce apomictically (Chen 2019).</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 species. 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 experts and using available literature.

Table 3 Cotoneaster 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
Likely	Low risk	Moderate risk Competition with weeds	High risk Increased frequency and severity of drought Feral herbivores Small population size	Very high risk Increased severity and frequency of bushfire	Very high risk
Possible	Low risk	Moderate risk	High risk	Very high risk Land clearing	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

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 monitoring.

Conservation and recovery actions

Primary conservation objective

By 2030, the population of Cotoneaster Pomaderris will have increased in abundance and viable subpopulations are sustained in habitats where very high risk threats are managed effectively.

Conservation and management priorities

Climate change and fire

- Develop and implement a fire management strategy that optimises the survival of Cotoneaster Pomaderris.
 - Avoid planned burns in all recently burnt habitat.
 - Protect unburnt subpopulations (i.e. no planned burns, clearing or other disturbance).
 - Take the likelihood of increasingly frequent bushfires into account when developing planned burning programs, to avoid excessively frequent burning of any subpopulations.
- Survey known populations to monitor impacts from the 2019–20 bushfires.

- Identify current and future habitat likely to remain or become available due to climate change.
- Implement an ongoing monitoring program that will provide data capable of addressing the link between population dynamics and drought.

Habitat loss

- Protect subpopulations of Cotoneaster Pomaderris from direct destruction.
- Liaise with landowners about entering into voluntary management agreement to maintain or enhance the species and its habitat on unsecured private land.
- Ensure all subpopulations are adequately documented on databases used by land managers and, where deemed necessary, physically identified to avoid accidental damage.

Invasive species

- Reduce the impacts of browsing by feral herbivores by using herbivore control and/or fencing, particularly during the post-fire recovery phase (approximately 0–5 years post-fire) for subpopulations burnt in the 2019–20 bushfires, including as described in the *Threat abatement plan for competition and land degradation by unmanaged goats* (DEWHA 2008). Fenced subpopulations should be monitored to ensure that the fence itself does not pose a threat to the species by facilitating a buildup of biomass.
- Monitor the impacts of weeds across all subpopulations and implement appropriate control measures where necessary.

Genetic threats resulting from small and fragmented populations

- Collect and maintain ex-situ seed collections at Botanic Gardens from a majority of subpopulations to ensure genetic diversity is captured, and ensure collections are large and viable.

Stakeholder engagement/community engagement

- Engage and involve Traditional Owners in conservation actions, including survey, monitoring and management actions.
- Encourage ongoing and effective coordination of action to support conservation of Cotoneaster Pomaderris.
- If appropriate, engage interested nature conservation groups in participating in surveys for the species in areas of suitable habitat.

Survey and monitoring priorities

- Conduct targeted surveys throughout the range of Cotoneaster Pomaderris to better inform its population size.
- Establish and maintain a monitoring program to:
 - document post-fire recovery;
 - determine minimum tolerable fire intervals;
 - determine trends in population size and distribution;
 - determine threats and their impacts; and,

- monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Improve understanding of distribution of Cotoneaster Pomaderris by undertaking surveys in areas of potential habitat.
- Improve understanding of the effect of fire on Cotoneaster Pomaderris, including minimum tolerable fire intervals.
- Further studies are required to understand its ecological requirements, reproductive strategies, soil seedbank dynamics, longevity, fecundity, recruitment levels, and seed germination requirements.

Links to relevant implementation documents

[National Recovery Plan for Pomaderris cotoneaster \(Cotoneaster pomaderris\) \(2009\).](#)

[Threat abatement plan for competition and land degradation by unmanaged goats \(2008\).](#)

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