

***Pomaderris delicata* N.G. Walsh & F. Coates (Rhamnaceae)**

Distribution: Endemic to NSW

Current EPBC Act Status: Not Listed

Current NSW TSC Act Status: Critically Endangered

Proposed change for alignment: List on EPBC Act as Critically Endangered

Conservation Advice: *Pomaderris delicata* N.G. Walsh & F. Coates (family Rhamnaceae).

**Summary of Conservation Assessment**

*Pomaderris delicata* is eligible for listing as Critically Endangered under Criteria B1ab(iii) (v) and B2ab (iii) (v); and C1

The main reasons for the species being eligible for listing in the Critically Endangered category are i) that the species has a very highly restricted geographic range with an area of occupancy (AOO) estimated to be approximately 8 km<sup>2</sup> based on two 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2016) AND an extent of occurrence (EOO) for *P. delicata* of 12 km<sup>2</sup> based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2016).; ii) a continuing decline is estimated in area and extent and quality of habitat and the number of mature individuals mainly due to the impact on the species from habitat clearing; browsing impacting regeneration; a decline in mature individuals that is suspected to be more than just senescence; and fluctuations in small population size; iii) the species is inferred to be severely fragmented; and iv) there are less than 100 mature individuals and observed decline was estimated to be more than 25% over one generation length.

Assessment against IUCN Red List criteria

*Criterion A Population Size reduction.*

Assessment Outcome: data deficient.

Justification: Insufficient data to assess.

*Criterion B Geographic range*

Assessment Outcome: Critically Endangered under Criterion 2 B1 (a), (b) (iii) (v). B2 (a), (b) (iii) (v).

Justification: The two localities from which the species is known represent an extent of occurrence of no more than 12 km<sup>2</sup> based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2016), and an area of occupancy of 8 km<sup>2</sup>, based on occupancy of two 2 x 2 km grid cells, the scale of assessment recommended by IUCN (2016).

and at least 2 of the following:

a) the population or habitat is observed or inferred to be severely fragmented or known to exist at one location.

Assessment Outcome: subcriterion met.

Justification: The habitat for the species has been extensively cleared. The long-term viability of either remaining site is not certain and no seed dispersal between patches is likely.

The 2 sites currently known are considered to be 2 locations (*sensu* IUCN 2016) as they are separated by 30 kms and the major threat of roadside disturbance is likely to operate independently at each site (as has occurred in the past).

b) a projected or continuing decline is observed, estimated or inferred.

Assessment Outcome: subcriterion met.

Justification: A projected continuing decline is inferred in (iii) quality of habitat, and (v) number of mature individuals. This is mainly due to the impact on the species from habitat clearing; browsing by swamp wallabies impacting regeneration; a decline in mature individuals that is suspected to be more than just senescence; and fluctuations in small population size.

c) extreme fluctuations:

Assessment Outcome: data deficient.

Justification: This is currently unknown but possible. *Pomaderris* species can respond to disturbances (e.g. fire) by mass recruitment, but the role of fire and disturbance in the ecology of *P. delicata* is unknown.

*Criterion C Small population size and decline.*

Assessment Outcome: Critically Endangered via C1 and Endangered via C2a(i).

Justification: The total number of mature individuals of *Pomaderris delicata* in 2016 was less than 100 mature plants.

C1. Assessment Outcome: subcriterion met.

Justification: There has been an observed decline between 2002 (>215 plants) and 2016 (approx. 86 plants) equivalent to a 60% decline over 14 years. The longevity of the species is unknown although it has been estimated to be around 15-50 years (NSW Scientific Committee 2009). The generation length is uncertain and the NSW Scientific Committee estimated a generation length of between eight to 26 years (NSW Scientific Committee 2009). Assuming a constant rate decline, for a generation length of eight years (the most conservative estimate of generation length), decline is estimated to be just over 32% in one generation and so is greater than the Critically Endangered threshold of at least 25% within 3 years or 1 generations, whichever is longer; This decline is not thought to be simply plant senescence, eg after a fire or other disturbance. A number of other species co-occurring with *P. delicata* have also been impacted and show signs of dieback and decline. It is currently unknown as to whether the decline is due to local environmental or site conditions, an introduced pathogen or some other factor.

OR

C2. Continuing decline in number of mature individuals:

Assessment Outcome: subcriterion met.

Justification: Continuing decline in (iii) quality of habitat, and (v) number of mature individuals. This is mainly due to the impact on the species from habitat clearing, browsing swamp wallabies impacting regeneration, a decline in mature individuals that is suspected to be more than just senescence; and fluctuations in small population size.

and one of the following three:

(a)(i) Population structure:

Assessment Outcome: subcriterion met at Endangered threshold.

Justification: the number of mature individuals in each population are estimated to be 19 and 67 in 2016. Planted individuals are not yet considered to be self-sustaining.

(a)(ii) % mature individuals in one population

Assessment Outcome: subcriterion not met.

Justification: just under 80% of all mature individuals are in one population.

b) Extreme fluctuations in the number of mature individuals

Assessment Outcome: data deficient.

Justification: Justification: This is currently unknown but possible. *Pomaderris* species can respond to disturbances (e.g. fire) by mass recruitment, but the role of fire and disturbance in the ecology of *P. delicata* is unknown.

*Criterion D Very small or restricted population.*

Assessment Outcome: Endangered via D1.

Justification: D1. The total number of mature individuals of *Pomaderris delicata* in 2016 was less than 100 mature plants but more than 50.

*Criterion E Quantitative Analysis.*

Assessment Outcome: data deficient.

Justification: insufficient data to assess.

## Description

NSW Scientific Committee (2010) state that "*Pomaderris delicata* N.G. Walsh & F. Coates (Delicate Pomaderris) (family Rhamnaceae) is described by Walsh & Coates (1997) as follows: 'shrub 1-2 m high. Young stems pubescent with very sparse, loosely appressed greyish-yellow or rusty simple hairs and dense, greyish-yellow stellate hairs. Leaves elliptic, 13-30 mm long, 5-15 mm wide; base cuneate; margins entire, plane or slightly recurved; apex obtuse to broadly acute; adaxial lamina glabrous, smooth lateral veins not or slightly impressed; abaxial lamina densely pubescent with greyish stellate hairs; midrib with a few appressed, pale or rusty simple or comb-like hairs, sometimes extending onto lateral veins; petiole 3-5 mm long; stipules triangular, acute, 1-2 mm long, caducous. Inflorescence of 20 to >50 flowers, pyramidal, terminal, 1.5-4 cm long, 2-5 cm wide; bracts caducous; pedicels 1.5-3 mm long. Flowers golden-yellow; externally pubescent with sparse to moderately dense, loosely appressed to spreading greyish simple hairs (sometimes very short) and dense, greyish stellate hairs, both hair types less dense on sepals; hypanthium 0.8-1.2 mm in diameter, 0.8-1 mm long; sepals 1.7-2 mm long, spreading; petals 1.7-2 mm long, spatulate; stamens c. 1.5 mm long; anthers 0.9-1.1 mm long; ovary inferior, pubescent with simple and stellate hairs; style glabrous, 1-1.5 mm long, branched in upper to middle third. Fruit ellipsoid to obovoid, 2.5-3.5 mm long, brown; apex obtuse; torus c. equatorial; operculum c. two-thirds pyrene length; seed c. 2 mm long.' Flowers occur in October and fruits in December (Walsh & Coates 1997)."

## Distribution

NSW Scientific Committee (2010) state that "*Pomaderris delicata*, discovered in 1995, is known from two populations south-west of Goulburn on the Southern Tablelands of NSW (K McDougall pers. comm. 2009). These populations are separated by roughly 30 km and both occur on roadside reserves, adjoining private property and Crown land." "The current number of mature individuals for *Pomaderris delicata* is estimated to be about 120, with a maximum of 270 (K McDougall pers. comm. 2009)."

At one site, population numbers varied from around 200 in 2002, 74 in 2012 to 19 in 2014 and 2016. The cause of the decline is unknown but may relate to environmental conditions or senescence of above ground plants or something else such as a pathogen. In addition, there are 3 planted individuals at this site, but they are not yet known to be self sustaining.

At the second site there were initially (2002) thought to be around 15 plants, but this is now considered to be an underestimate. Much of the site was destroyed in 2007 through roadworks. Regeneration has resulted in counts of 30 plants in 2012 and 67 in 2016. Around 500 cuttings were planted at the site and 60% have survived, but they are not yet known to be self sustaining.

Part of one site occurs within Pomaderris Nature Reserve.

### **Ecology**

NSW Scientific Committee (2010) state that “Both populations of *Pomaderris delicata* are found in dry sclerophyll forest dominated by *Eucalyptus sieberi* with a dense shrubby understorey on shallow, rocky soil, derived from Silurian and Ordovician sediments (Walsh & Coates 1997).”

Seed set in the species is limited.

### **Threats**

NSW Scientific Committee (2010) state that “Understorey clearing and overgrazing on private property has greatly reduced the size of *Pomaderris delicata* populations, with much of the land between the two known populations now cleared.”

“The greatest immediate threat to *Pomaderris delicata* is from roadside damage (e.g. slashing, fire prevention works). For example, half of one population was destroyed by roadwork in late 2007 (K McDougall pers. comm. 2008). Low population numbers and restricted distribution also make the species susceptible to demographic and environmental stochasticity.”

Additional threats include browsing of regenerating plants by swamp wallabies and ongoing loss of habitat.

### **Conservation and Management Actions**

There is no recovery plan for this species but there is a NSW Saving Our Species site managed program for the species in NSW that is designed to minimise disturbance, adverse grazing, road maintenance or fire impacts and use translocation as a means to enhance known sites and establish an additional site.

#### Habitat loss, disturbance and modification

- Prevent clearing or disturbance of known and suitable habitat;
- Ensure infrastructure construction and maintenance (e.g. for roads and tracks) does not damage plants or remaining habitats.
- Instigate appropriate fire management that is not detrimental to the species. This requires consideration of all components of the fire regime and adherence to fire frequency thresholds in the NSW Rural Fire Service Bush Fire Code Threatened Species Hazard Reduction list for plants.  
[http://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0017/24335/ThreatenedSpeciesHazardReductionList-Part1-Plants.pdf](http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0017/24335/ThreatenedSpeciesHazardReductionList-Part1-Plants.pdf)

#### Invasive species

- reduce impact of browsing through exclusion fencing at known populations.

#### Ex situ conservation

- Develop a targeted seed collection program for ex situ seed banking.
- Use translocation to enhance existing populations and to establish a new population.

#### Stakeholder Management

- Inform land owners and managers of sites where there are known populations and consult with these groups regarding options for conservation management and protection of the species.

### Survey and Monitoring priorities

- Monitor known sites to determine trends in population size over time.
- Monitor impact of herbivore exclusion on habitat quality and population numbers.

### Information and research priorities

- Undertake further ecological research into the species' life history, ecology and germination requirements relevant to the persistence of the species. Priorities include controls on germination (fire, season, rainfall); flowering and successful seed production; development of soil seed banks; juvenile plant growth and survival.
- Examine the sensitivity of the species to the pathogen *Phytophthora cinnamomi*.

### References

IUCN Standards and Petitions Subcommittee (2016) Guidelines for Using the IUCN Red List Categories and Criteria. Version 12. Prepared by the Standards and Petitions Subcommittee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

NSW Scientific Committee (2009) *Pomaderris delicata* N.G.Walsh & F.Coates (Rhamnaceae) Review of Current Information in NSW. Accessed 24<sup>th</sup> January 2017. <http://www.environment.nsw.gov.au/resources/nature/schedules/Pomadelic.pdf>

NSW Scientific Committee (2010) Final Determination to list the shrub *Pomaderris delicata* N.G. Walsh & F. Coates as a CRITICALLY ENDANGERED SPECIES. Accessed 6<sup>th</sup> September 2016. <http://www.environment.nsw.gov.au/determinations/pomaderrisdelicataFD.htm>

Walsh NG, Coates F (1997) New taxa, new combinations and an infrageneric classification in *Pomaderris* (Rhamnaceae). *Muelleria* **10**, 27–56.

# NSW SCIENTIFIC COMMITTEE

## Final Determination

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list the shrub *Pomaderris delicata* N.G. Walsh & F. Coates as a **CRITICALLY ENDANGERED SPECIES** in Part 1 of Schedule 1A of the Act, and as a consequence, to omit reference to *Pomaderris delicata* N.G. Walsh & F. Coates from Part 1 of Schedule 1 (Endangered species) of the Act. Listing of Critically Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Pomaderris delicata* N.G. Walsh & F. Coates (Delicate Pomaderris) (family Rhamnaceae) is described by Walsh & Coates (1997) as follows: 'shrub 1-2 m high. Young stems pubescent with very sparse, loosely appressed greyish-yellow or rusty simple hairs and dense, greyish-yellow stellate hairs. Leaves elliptic, 13-30 mm long, 5-15 mm wide; base cuneate; margins entire, plane or slightly recurved; apex obtuse to broadly acute; adaxial lamina glabrous, smooth lateral veins not or slightly impressed; abaxial lamina densely pubescent with greyish stellate hairs; midrib with a few appressed, pale or rusty simple or comb-like hairs, sometimes extending onto lateral veins; petiole 3-5 mm long; stipules triangular, acute, 1-2 mm long, caducous. Inflorescence of 20 to >50 flowers, pyramidal, terminal, 1.5-4 cm long, 2-5 cm wide; bracts caducous; pedicels 1.5-3 mm long. Flowers golden-yellow; externally pubescent with sparse to moderately dense, loosely appressed to spreading greyish simple hairs (sometimes very short) and dense, greyish stellate hairs, both hair types less dense on sepals; hypanthium 0.8-1.2 mm in diameter, 0.8-1 mm long; sepals 1.7-2 mm long, spreading; petals 1.7-2 mm long, spatulate; stamens c. 1.5 mm long; anthers 0.9-1.1 mm long; ovary inferior, pubescent with simple and stellate hairs; style glabrous, 1-1.5 mm long, branched in upper to middle third. Fruit ellipsoid to obovoid, 2.5-3.5 mm long, brown; apex obtuse; torus c. equatorial; operculum c. two-thirds pyrene length; seed c. 2 mm long.' Flowers occur in October and fruits in December (Walsh & Coates 1997).
2. *Pomaderris delicata* has a close affinity with *P. andromedifolia*; a species that occurs in close proximity to *P. delicata* populations, but *P. delicata* is distinguished by leaves that are generally shorter and not silky on the lower surface. In addition, the upper surface of the leaf of *P. delicata* is generally smooth, unlike the wrinkled surface of *P. andromedifolia*. *Pomaderris delicata* also differs in having stipules that fall before or soon after the expansion of the leaf blade whereas those of *P. andromedifolia* usually persist for several nodes below the growing tip and are larger (2-4 mm long) (Walsh & Coates 1997).
3. *Pomaderris delicata*, discovered in 1995, is known from two populations south-west of Goulburn on the Southern Tablelands of NSW (K McDougall pers. comm. 2009). These populations are separated by roughly 30 km and both occur on roadside reserves, adjoining private property and Crown land. No populations are currently known to occur within a conservation area.
4. Both populations of *Pomaderris delicata* are found in dry sclerophyll forest dominated by *Eucalyptus sieberi* with a dense shrubby understorey on shallow, rocky soil, derived from Silurian and Ordovician sediments (Walsh & Coates 1997).
5. *Pomaderris delicata* has a very highly restricted geographic distribution. The two localities from which the species is known represent an extent of occurrence of no more than 12 km<sup>2</sup>

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and an area of occupancy of 8 km<sup>2</sup>, based on occupancy of two 2 × 2 km grid cells, the scale of assessment recommended by IUCN (2008).

6. The current number of mature individuals for *Pomaderris delicata* is estimated to be about 120, with a maximum of 270 (K McDougall pers. comm. 2009).
7. Understorey clearing and overgrazing on private property has greatly reduced the size of *Pomaderris delicata* populations, with much of the land between the two known populations now cleared. 'Clearing of native vegetation' is listed as a Key Threatening Process under the *Threatened Species Conservation Act 1995*.
8. The greatest immediate threat to *Pomaderris delicata* is from roadside damage (e.g. slashing, fire prevention works). For example, half of one population was destroyed by roadwork in late 2007 (K McDougall pers. comm. 2008). Low population numbers and restricted distribution also make the species susceptible to demographic and environmental stochasticity.
9. *Pomaderris delicata* N.G. Walsh & F. Coates is eligible to be listed as a Critically Endangered species as, in the opinion of the Scientific Committee, it is facing an extremely high risk of extinction in New South Wales in the immediate future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2002*:

## Clause 15

The geographic distribution of the species is estimated or inferred to be:

- (a) very highly restricted,
- and
- (d) a projected or continuing decline is observed, estimated or inferred in either:
  - (i) an index of abundance appropriate to the taxon, or
  - (ii) geographic distribution, habitat quality or diversity, or genetic diversity.

## Clause 16

The estimated total number of mature individuals of the species is:

- (a) very low,
- and
- (d) a projected or continuing decline is observed, estimated or inferred in either:
  - (i) an index of abundance appropriate to the taxon, or
  - (ii) geographic distribution, habitat quality or diversity, or genetic diversity.

Dr Richard Major  
Chairperson  
Scientific Committee

Proposed Gazettal date: 16/07/10  
Exhibition period: 16/07/10 – 10/09/10

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## References:

IUCN (2008) 'Guidelines for using the IUCN Red List Categories and Criteria. Version 7.0.' (Standards and Petitions Working Group of the IUCN Species Survival Commission Biodiversity Assessments Sub-committee: Switzerland).

(<http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>).

Walsh NG, Coates F (1997) New taxa, new combinations and an infrageneric classification in *Pomaderris* (Rhamnaceae). *Muelleria* **10**, 27–56.