

***Pomaderris cocoparrana* N.G.Walsh (Rhamnaceae)**

Distribution: Endemic to NSW

Current EPBC Act Status: Not Listed

Current NSW TSC Act Status: Endangered

Proposed change for alignment: List on EPBC Act as Endangered

Conservation Advice: *Pomaderris cocoparrana* N.G.Walsh (family Rhamnaceae).

**Summary of Conservation Assessment**

*Pomaderris cocoparrana* is eligible for listing as Endangered under Criterion B1ab(iii) (v) and B2ab (iii) (v)

The main reasons for the species being eligible for listing in the Endangered category are i) that the species has a highly restricted geographic range with an area of occupancy (AOO) estimated to be approximately 80 km<sup>2</sup> based on twenty 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2016) AND an extent of occurrence (EOO) for *P. cocoparrana* of 786 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 goat browsing; and iii) all or nearly all mature individuals are observed or inferred to occur within a small number (<5) of locations.

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: Endangered under Criterion B1 (a), (b) (iii) (v); B2 (a), (b) (iii) (v).

Justification: The geographic distribution of *Pomaderris cocoparrana* is highly restricted. The extent of occurrence (EOO) for *P. cocoparrana* is 786 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). This estimate includes the disjunct population near Ardlethan. The area of occupancy (AOO) is estimated to be 80 km<sup>2</sup> based on 20 (2 x 2 km) grid cells, the scale recommended for assessing AOO 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 no more than five locations,

Assessment Outcome: subcriterion met (at endangered threshold).

Justification: Due to the impact of goat grazing throughout the Cocoparra Range, there are considered to be only two or three locations for *Pomaderris cocoparrana*.

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 goat browsing that is apparent throughout the Cocoparra Range. The impact may be seen in the lack of future recruitment as a result of a reduced seed bank as grazed individuals may not be able to flower and set seed and may be killed.

c) extreme fluctuations:

Assessment Outcome: subcriterion not met (but data deficient).

Justification: Scott (2014) reports that "*Pomaderris cocoparrana* could be considered to undergo extreme fluctuations as the number of plants in a given area have been known to go from zero to over a thousand from a single recruitment event. Fire or disturbance that was followed by rainfall, have been seen to promote germination of soil-stored seed to produce many seedlings in a relatively small area. For example, there has been mass recruitment observed in a two hectare area following a fire (a fire in 1998 led to an estimated 1500 plants at Woolshed Flat fire trail (Egan 2011)), and following disturbance (possible soil disturbance followed by heavy rain stimulated recruitment in a small area below a track in late 2010 (Egan 2014)). Many species from the genus *Pomaderris* have fire-promoted regeneration and then decline over a period of 20 years or so, with or without drought (Walsh *in litt.* 2011). They have mesic leaves that are sensitive to dry periods, and can die back. *Pomaderris cocoparrana* have been observed resprouting from the base following grazing of the plant, and after rains following dry period die-back (Egan 2011). *Pomaderris cocoparrana* plants are thought to be killed by fire, however some plants have been observed to resprout from the base if only partially burnt (Egan 2011). "

However, at present it is uncertain as to the extent of extreme fluctuations in the species.

*Criterion C Small population size and decline.*

Assessment Outcome: Data deficient to Vulnerable via C2.

Justification: The total number of mature individuals of *Pomaderris cocoparrana* in 2013/14 was less than 2000 plants (Egan 2014). It is estimated there may be more than 2500, but less than 10,000 mature individuals, once other areas of potential habitat in the Park are considered (Egan 2011).

C1. Assessment Outcome: subcriterion not met.

Justification: This was considered to be data deficient;

or

C2. Continuing decline in number of mature individuals:

Assessment Outcome: subcriterion met.

Justification: Continuing decline is inferred in the abundance of *Pomaderris cocoparrana* from the impact of goat grazing.

And one of the following:

a(i) The number of mature individuals in each population is less than a certain threshold:

Assessment Outcome: subcriterion not met.

Justification: The main population is estimated to contain more than 1000 mature individuals (Vulnerable threshold).

a(ii) the % mature individuals on one population is at certain thresholds:

Assessment Outcome: data deficient.

Justification: all mature individuals occur across two populations. While precautionary estimates suggest around 95% of mature individual occur in one population, further population abundance data are needed to substantiate this.

b) Extreme fluctuations in the number of mature individuals

Assessment Outcome: data deficient.

Justification: As mentioned above, this is uncertain.

If there is considered to be extreme fluctuations, then Criterion C is vulnerable. If there are no extreme fluctuations, then the subcriteria are not met and Criterion C is least concern.

*Criterion D Very small or restricted population.*

D1. Assessment Outcome: Least concern.

Justification: The total number of mature individuals of *Pomaderris cocoparrana* in 2013/14 was less than 2000 plants (Egan 2014). It is estimated there may be more than 2500, but less than 10,000 mature individuals, once other areas of potential habitat in the Park are considered (Egan 2011). Population size is therefore estimated to be more than 1000 mature individuals; or

D2. Assessment Outcome: Least concern.

Justification: The AOO for *Pomaderris cocoparrana* is not very restricted, however, the number of locations are fewer than 5.

It is questionable whether one can justify that *Pomaderris cocoparrana* is “prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is this capable of becoming Critically Endangered or even extinct on a very short time period” (IUCN 2001). The main threat for *Pomaderris cocoparrana* is from goat grazing and this is thought to be slowly leading to the decline of the species largely from a lack of regeneration. There is evidence for a soil seedbank and the plants have been seen to resprout, giving them a level of resilience in the short term.

Consequently, *Pomaderris cocoparrana* is unlikely to meet Criterion D2.

*Criterion E Quantitative Analysis.*

Assessment Outcome: data deficient.

Justification: Insufficient data to assess.

## Description

NSW Scientific Committee (2015) state that “*Pomaderris cocoparrana* N.G.Walsh (family Rhamnaceae) is described by the Royal Botanic Gardens and Domain Trust (2014) as: “Shrub 1–3 m high, stems rusty with short simple and stellate hairs. Leaves ovate to ± circular, 1–3 cm long, 8–15 mm wide, upper surface dark green, ± velvety with very short erect hairs; lower surface greyish with a short stellate-tomentum below longer appressed rusty simple hairs, secondary veins prominent with rusty simple hairs. Flowers yellow, in small terminal panicles. Sepals not persistent in fruit. Petals usually absent. Capsule and hypanthium covered with fine stellate tomentum below fine whitish scattered simple hairs.”

## Distribution

NSW Scientific Committee (2015) state that “*Pomaderris cocoparrana* is endemic to New South Wales and mainly occurs in the Cocoparra Range, about 30 km northeast of Griffith, within the Cobar Peneplain and the NSW South Western Slopes Bioregions (*sensu* Thackway and Creswell 1995). There is an outlying population on private property north of Ardlethan, approximately 65 km to the east of the Cocoparra Range. Most populations of *P. cocoparrana* are within the Cocoparra National Park (NP) and Nature Reserve (NR). However its distribution may extend into adjoining State Forests and private land. *Pomaderris cocoparrana* occurs in rocky sites at higher altitudes within the Cocoparra Range (Royal Botanic Gardens and Domain Trust PlantNET 2014) and in creek lines and sheltered east and south-facing slopes (Egan 2014).”

“*Pomaderris cocoparrana* occurs throughout the Cocoparra Range. The population in the Cocoparra Range in 2014 was estimated to be fewer than 2000 mature individuals and these were spread throughout the known range from Ironbark Creek in the north to Mt Brogden in the south (Egan 2014). The population near Ardlethan had at least 100 individuals when it was surveyed in August 2010 (Egan 2011). However, fluctuations in the number of mature plants are likely due to environmental conditions, herbivore impact and time since the last fire. In addition, there may be some other areas of suitable habitat for the species that have not been sampled.”

## Ecology

NSW Scientific Committee (2015) state that “*Pomaderris cocoparrana* is a long-lived perennial shrub. Death and dieback of the leaves and upper stems of *P. cocoparrana* have been observed after drought (Egan 2011) but some plants have been observed to resprout at the base following rain (Egan 2014). *Pomaderris cocoparrana* individuals are killed by fire but may resprout if only partially burnt (Egan 2011). Little is known about the seed biology of this species. However it is likely to follow the pattern of many other *Pomaderris* species which have fire-promoted regeneration and then decline over a period of 20 years or so, with or without drought (N. Walsh *in litt.* June 2011). Mass recruitment of seedlings has been observed following a small bushfire in Cocoparra NP (Egan 2011) suggesting the presence of a soil seed bank that requires fire, or a similar disturbance, to promote germination. Surveys of *P. cocoparrana* in 1995/1996, 2010/2011 and 2014 have shown that the numbers of mature plants fluctuated greatly over a period of a decade (Egan 2011, 2014).”

There may also be some recruitment seedling recruitment after suitable rainfall but ongoing grazing by goats (see below) limits any effective recruitment.

## Threats

NSW Scientific Committee (2015) state that “The main threat to *Pomaderris cocoparrana* is from feral goats (Egan 2014). Adverse impacts of grazing of *P. cocoparrana* by feral goats are widespread within Cocoparra NP and NR (Egan 2014). Grazing is considered to limit seedling regeneration and the ability of plants to reach maturity (Egan 2014). Fallow Deer (*Dama dama*) have recently been detected in Cocoparra NP and may pose an additional potential threat (Egan 2014). An absence of fire may also be a threat to this species in the future as this may lead to the decline in both above ground plants and the soil seed bank.”

There is also likely to be an interaction between climate change and feral herbivore grazing. The predicted hotter, extended dry periods will limit recruitment and exacerbate goat browsing impacts, thus placing great emphasis on limiting goat numbers.

## 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 manage control of feral goats and instigate fire regime appropriate for the species.

### 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 any fire frequency thresholds developed 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 feral goats on known populations to allow recovery of *Pomaderris cocoparrana* and other impacted species.

### Ex situ conservation

- Undertake targeted seed collection to supplement the ex situ seed banking program so that a full representation of seeds from across the distribution of the species is held in an ex situ seed bank.

### 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 goat control 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 grazing impacts and degree of goat control needed to alleviate adverse impacts; factors controlling germination including fire, season and rainfall; development and maintenance of a persistent soil seed bank.

### **References**

Egan D (2011) An assessment of the distribution and abundance of the Cocoparra *Pomaderris* *Pomaderris cocoparrana* in 2010/2011. Unpublished report, Griffith Area, NSW National Parks and Wildlife Service, Office of Environment and Heritage.

Egan D (2014) A review of current *Pomaderris cocoparrana* status 2013-2014: distribution, threats and a preliminary assessment of nomination criteria for listing under the NSW TSC Act. Unpublished report, Griffith Area, NSW National Parks and Wildlife Service, Office of Environment and Heritage.

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 (2015) Final Determination to list the shrub *Pomaderris cocoparrana* N.G. Walsh as an ENDANGERED SPECIES. Accessed 15<sup>th</sup> August 2016. <http://www.environment.nsw.gov.au/resources/threatenedspecies/determinations/FDPomacocoES.pdf>

Royal Botanic Gardens and Domain Trust (2014) PlantNET - The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia (version 2.0). <http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Pomaderris~cocoparrana> (Accessed 4 August 2014)

Scott J (2014) *Pomaderris cocoparrana* N.G. Walsh Report to the NSW Scientific Committee.

Thackway R, Creswell ID (1995) An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program. Version 4.0. ANCA, Canberra.

# NSW SCIENTIFIC COMMITTEE

## Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act* 1995 (the Act), has made a Final Determination to list the shrub *Pomaderris cocoparrana* N.G.Walsh as an ENDANGERED SPECIES in Part 1 of Schedule 1 of the Act. Listing of Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Pomaderris cocoparrana* N.G.Walsh (family Rhamnaceae) is described by Royal Botanic Gardens and Domain Trust PlantNET (2014) as: “Shrub 1–3 m high, stems rusty with short simple and stellate hairs. Leaves ovate to  $\pm$  circular, 1–3 cm long, 8–15 mm wide, upper surface dark green,  $\pm$  velvety with very short erect hairs; lower surface greyish with a short stellate-tomentum below longer appressed rusty simple hairs, secondary veins prominent with rusty simple hairs. Flowers yellow, in small terminal panicles. Sepals not persistent in fruit. Petals usually absent. Capsule and hypanthium covered with fine stellate tomentum below fine whitish scattered simple hairs.”
2. *Pomaderris cocoparrana* is endemic to New South Wales and mainly occurs in the Cocoparra Range, about 30 km northeast of Griffith, within the Cobar Peneplain and the NSW South Western Slopes Bioregions (*sensu* Thackway and Creswell 1995). There is an outlying population on private property north of Ardlethan, approximately 65 km to the east of the Cocoparra Range. Most populations of *P. cocoparrana* are within the Cocoparra National Park (NP) and Nature Reserve (NR). However its distribution may extend into adjoining State Forests and private land. *Pomaderris cocoparrana* occurs in rocky sites at higher altitudes within the Cocoparra Range (Royal Botanic Gardens and Domain Trust PlantNET 2014) and in creek lines and sheltered east and south-facing slopes (Egan 2014).
3. *Pomaderris cocoparrana* is a long-lived perennial shrub. Death and dieback of the leaves and upper stems of *P. cocoparrana* have been observed after drought (Egan 2011) but some plants have been observed to resprout at the base following rain (Egan 2014). *Pomaderris cocoparrana* individuals are killed by fire but may resprout if only partially burnt (Egan 2011). Little is known about the seed biology of this species. However it is likely to follow the pattern of many other *Pomaderris* species which have fire-promoted regeneration and then decline over a period of 20 years or so, with or without drought (N. Walsh *in litt.* June 2011). Mass recruitment of seedlings has been observed following a small bushfire in Cocoparra NP (Egan 2011) suggesting the presence of a soil seed bank that requires fire, or a similar disturbance, to promote germination. Surveys of *P. cocoparrana* in 1995/1996, 2010/2011 and 2014 have shown that the numbers of mature plants fluctuated greatly over a period of a decade (Egan 2011, 2014).
4. *Pomaderris cocoparrana* occurs throughout the Cocoparra Range. The population in the Cocoparra Range in 2014 was estimated to be fewer than 2000 mature individuals and these were spread throughout the known range from Ironbark Creek in the north to Mt Brogden in the south (Egan 2014). The population near Ardlethan had at least 100 individuals when it was surveyed in August 2010 (Egan 2011). However, fluctuations in the number of mature plants are likely due to environmental conditions, herbivore impact and time since the last fire. In addition, there may be some other areas of suitable habitat for the species that have not been sampled.

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5. The geographic distribution of *Pomaderris cocoparrana* is highly restricted. The extent of occurrence for *P. cocoparrana* is 786 km<sup>2</sup> based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2014). This estimate includes the disjunct population near Ardlethan. The area of occupancy (AOO) is estimated to be 80 km<sup>2</sup> based on 20 (2 x 2 km) grid cells, the scale recommended for assessing AOO by IUCN (2014).
6. The main threat to *Pomaderris cocoparrana* is from feral goats (Egan 2014). Adverse impacts of grazing of *P. cocoparrana* by feral goats are widespread within Cocoparra NP and NR (Egan 2014). Grazing is considered to limit seedling regeneration and the ability of plants to reach maturity (Egan 2014). Fallow Deer (*Dama dama*) have recently been detected in Cocoparra NP and may pose an additional potential threat (Egan 2014). An absence of fire may also be a threat to this species in the future as this may lead to the decline in both above ground plants and the soil seed bank. 'Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758' is listed as a Key Threatening Process under the Act.
7. *Pomaderris cocoparrana* N.G.Walsh is not eligible to be listed as a Critically Endangered species.
8. *Pomaderris cocoparrana* N.G.Walsh is eligible to be listed as an Endangered species as, in the opinion of the Scientific Committee, it is facing a very high risk of extinction in New South Wales in the near future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation* 2010:

## Clause 7 Restricted geographic distribution and other conditions

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

(b) highly restricted,

and:

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

Dr Mark Eldridge  
Chairperson  
Scientific Committee

Exhibition period: 02/10/15 – 27/11/15

Proposed Gazettal date: 02/10/15

## References:

- Egan D (2011) An assessment of the distribution and abundance of the Cocoparra *Pomaderris cocoparrana* in 2010/2011. Unpublished report, Griffith Area, NSW National Parks and Wildlife Service, Office of Environment and Heritage.
- Egan D (2014) A review of current *Pomaderris cocoparrana* status 2013–2014: distribution, threats and a preliminary assessment of nomination criteria for listing under the NSW

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TSC Act. Unpublished report, Griffith Area, NSW National Parks and Wildlife Service, Office of Environment and Heritage.

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<http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Pomaderris~cocoparrana>

(Accessed August 2014)

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