

Conservation Assessment of *Pomaderris walshii*

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***Pomaderris walshii* J.C. Millott & K.L. McDougall (Rhamnaceae)**

Distribution: Endemic to NSW

Current EPBC Act Status: Not listed

Current NSW BC Act Status: Critically Endangered

Proposed change for alignment: List on EPBC as Critically Endangered

Conservation Advice: *Pomaderris walshii* (Carrington Falls Pomaderris)

Summary of Conservation Assessment

Pomaderris walshii was found to be eligible for listing as Critically Endangered under Criteria B1+B2ab(iii)(iv)(v); C2a(i); and D.

The main reasons for this species being eligible are:

- i) the species has a very restricted geographic range, with both the extent of occurrence (EOO) and the area of occupancy (AOO) being 8 km²;
- ii) it is currently known from only 38 mature individuals in the Upper Catchment of the Kangaroo River in NSW;
- iii) the extent and quality of habitat is threatened by change in land-use at the private tenure sites and also likely by climate change as the area is highly dependent on orographic rainfall;
- iv) a continuing decline in the number of populations and the number of mature individuals. One site on private land had a reduction of 23 plants from 2003 to 2015 due to habitat degradation, and now has only 7 known individuals. There is flood damage to the known habitat area while an adverse fire regime may represent a threat, as may genetic consequences of a small population size (seed set is very poor).

Description and Taxonomy

The NSW Scientific Committee (2007) states that “*Pomaderris walshii* J.C. Millott & K.L. McDougall (family Rhamnaceae), is a shrub or small tree to 3 m tall. The young stems, petioles, leaf undersurfaces and outer surface of the flowers are covered with a layer of white stellate hairs mixed with loosely appressed silvery white or rusty simple hairs. The leaves are narrowly ovate, about 36-60 mm long, 14-22 mm wide, with a cuneate to obtuse base; margins entire and flat or slightly recurved; apex acute to acuminate; adaxial (upper) surface green and hairless; abaxial (lower) surface with the lateral veins clearly evident and marked by rusty simple hairs. Flowers are 200-100 together in pyramidal to hemispherical terminal heads 4-7.5 cm long and wide at the base; individual flowers are cream to yellow, externally pubescent to villous; pedicels 1.5-4.3 mm long; hypanthium 0.8-1.2 mm long, 0.8-1.4 mm in diameter; sepals 1.8-2.0 mm long; petals 1.7-1.9 mm long, spreading, spatulate; stamens 2-2.5 mm long; anthers 0.7-1.2 mm long; ovary inferior, summit pubescent with simple hairs; style hairless, 1.6-1.9 mm long, branched in lower or middle third. A more detailed description is given in Millot and McDougall (2005).”

“*Pomaderris walshii* is thought to be most closely related to *P. nitidula* (Benth.) N.A. Wakef., from which it differs in its greater stature, smaller flowers, and more obtuse leaf lamina base. *P. nitidula* occurs on the North Coast and Northern Tablelands of New South Wales, with the most southerly known occurrence at Gloucester Tops, some 300 km from the *P. walshii* locality. *P. walshii* differs from *P. argyrophylla* N.A. Wakef. *sens. str.* in its more obtuse leaf base, shorter leaves, and details of leaf vein indumentum; from *P. graniticola* N.A. Wakef. K.L. McDougall & J.C. Millott

(formerly *P. argyrophylla* subsp. *graniticola* N.A. Wakef.) in its broader inflorescence, larger leaves, and leaf vein indumentum; and from *P. parrisiae* N.G. Walsh in these same characters. Delimitation of the species based on morphometric analysis is discussed in Millot and McDougall (2005)."

Since the final determination by the NSW Scientific Committee (2007), there have been observations of plants of *Pomaderris walshii* growing to up to 5m (J. Devereaux, pers. comm. April 2017).

Distribution and Abundance

The NSW Scientific Committee (2007) state that "*Pomaderris walshii* has a very highly restricted distribution. It is currently known only from the upper catchment of the Kangaroo River, above the escarpment near Robertson within the Sydney Basin Bioregion (Thackway and Creswell 1995). It occurs as two small populations within a total area of occurrence of about three lineal kilometres of riparian habitat, with very low numbers of individuals."

Pomaderris walshii is known to occur within riparian habitats, being located of shrubland to open grassy forest. *P. walshii* occurs within two vegetation classes of Tozer *et al.* (2010). These are: (1) Southern Lowland Wet Sclerophyll Forests, in which *P. walshii* occurs within the Escarpment Foothills Wet Forest; and (2) Sydney Montane Dry Sclerophyll Forest (Natale 2016).

Pomaderris walshii is found in two spatially distinct populations (four sites) which are about 1.2 km apart. The northern population that combines two adjacent private properties is severely fragmented from the main population, which occurs in Budderoo National Park and an adjacent private property (J. Devereaux, pers. comm. April 2017).

In 2003, 30 plants of *P. walshii* were known from one site within the northern population on private land. By 2015, this site had only 7 plants left due to individuals impacted by habitat degradation (J. Devereaux, pers. comm. April 2017, D. Bain, pers. comm. April 2017).

Since 2015, larger surveys have been conducted by NPWS Highland Area staff covering the total known distribution of the species. During the period of 2015-2017, the total population size declined from about 50 to 38 mature individuals (98 plants to 69 plants) (J. Devereaux, pers. comm. April 2017). Currently, the number of mature individuals in the northern population is about 10, and there are 28 mature plants in the main population (J. Devereaux, pers. comm. April 2017).

Ecology

The NSW Scientific Committee (2007) state that "The habitat constraints, ecology, and reproductive biology of *P. walshii* are very poorly known. Fruit and seed are not yet reported and it is possible that the plants do 'not reliably produce fruit, which is unusual in this genus' (N. Walsh, National Herbarium of Victoria, pers. comm., 14 April 2005). Millot and McDougall (2005) suggest a possible capability for resprouting following flood damage. They also report that the population in Budderoo National Park is mostly 'apparently young', suggestive of cohort recruitment. Patterns of fecundity, recruitment, longevity, genetic variation and fitness, and self-pollination capability are not known. The response of the species to pathogens is unknown."

Since the final determination by the NSW Scientific Committee (2007) was made, larger surveys have been conducted by NSW NPWS Highlands Area staff, resulting in the following observations:

- *Pomaderris walshii* does produce viable seeds. However, there is no information on whether cross pollination is needed or indeed occurring.
- Individual plants do frequently resprout post flood damage.
- The report of "the population in Budderoo National Park is mostly 'apparently young', suggestive of cohort recruitment" does not apply anymore as a greater number of

plants have since been found in Budderoo National Park (due to increasing survey) and these plants show evidence of older stems with resprout material present. Very few seedlings have been found, suggesting possible episodic recruitment.

(J. Devereaux, pers. comm. April 2017, D. Bain, pers. comm. April 2017).

In a recent study, Natale (2016) determined that *Pomaderris walshii* seeds are physically dormant. Control replicates showed little to no germination demonstrating that an environmental cue is required to break dormancy, allowing for water to penetrate the seed coat and initiate germination. Heat shock treatments at high temperatures allow for a significant increase in the proportion of seeds which germinate, suggesting that a high severity fire would allow for the highest rate of germination post-fire as such fires produce the highest soil temperatures. Natale (2016) found that the greatest germination response occurred after the 100°C treatment, indicating that this species has a high dormancy-breaking temperature threshold as do many other physically dormant species in the region (Auld and O'Connell 1991). The results of this study lead to the conclusion that this species responds to fire and that seedling recruitment after fire is promoted by fire cues (Natale 2016). Implementing fires of sufficient severity to promote breaking of the physical seed dormancy and promote germination post-fire should be considered when considering fire planning at known sites.

There are no observations of the fire response of *P. walshii*. However, this species may be an obligated seeder, as are the majority of species in this genus according to the NSW Flora Fire Response Database. Alternatively, the ability to show some vegetative recovery after flooding may suggest some resprouting ability in the species.

Threats

The NSW Scientific Committee (2007) state that "Threats operating at the Budderoo National Park site may include flooding, as the habitat is riparian and the area has a relatively high rainfall of about 1800 mm p.a. Millot and McDougall (2005) report apparent flood damage. Changed fire regimes may represent a threat, as may genetic consequences of small population size. Climate change and its effects on habitat may constitute a threat as the area is highly dependent on orographic rainfall. Potential or actual threats operating at the second, private tenure site include all of the above, plus the possibility of changed land use. These threats together with the very low numbers and very restricted area of occupancy are likely to lead to future decline."

The species is currently facing several threats that are likely to lead to future declines (J. Devereaux, pers. comm. April 2017, D. Bain, pers. comm. April 2017):

- Flood damage, the area has a high regional rainfall of approximately 1800 mm p.a. Ten years of observational information by NSW NPWS Highlands Area staff have shown that floods damage parent stems (e.g. snap off at base or weak point due to borers, or individual plants are covered by debris). While in such cases some plants may regrow from the base of the stem in 1-2 years+, regrowth is not guaranteed. If regrowth occurs, then there is a time lag to reproduction while new stems establish.
- As many plants are showing signs of senescing, there may be a lack of recruitment or triggers for recruitment. This species is likely to benefit from high severity fire to break physical seed dormancy and hence promote germination post-fire. The last wildfire in the area was in 1983 and hence a lack of fire may be a threat to the species.
- Lack of understanding between the interaction of flood and fire regimes impacting on the species. *Pomaderris walshii* is known to occur within riparian habitats, being located of shrubland to open grassy forest in the Sydney Basin Region where fire-prone vegetation is present. A fire shortly after the population has been damaged by flood

could kill mature individuals and any seedling or juvenile recruits from the floods (and vice versa).

- *P. walshii* is predicted to be affected by deer that are increasingly present in the habitat area. Deer are likely to cause further habitat degradation by trampling and grazing and browsing.
- The northern population is fragmented from the main population. The plants on private property still are not stable after the decline from 2003 – 2015, with all individuals senescent and no seedling recruitment. These plants are threatened by future changes in land use and habitat degradation via grazing.

Assessment against IUCN Red List criteria

For this assessment, it is considered that the survey of *Pomaderris walshii* has been adequate and there is sufficient scientific evidence to support the listing outcome.

Criterion A Population Size reduction

Assessment Outcome: Data Deficient

Justification: In 2003, there were 30 plants of *P. walshii* found during a survey that covered only a part of the species distribution. By 2015, this same site had only 7 plants left due to individuals impacted by habitat degradation. The number of plants on this property remains in decline as all individuals are senescent with no seedling recruitment and there is ongoing habitat degradation and possible future changes in land use. Since 2015, surveys have been conducted by NSW NPWS Highland Area staff covering the known distribution of *P. walshii*. During the period of 2015-2017 the total population size declined from about 50 to 38 mature individuals (98 plants to 69 plants). This is the only data available on the entire population size, but it does not cover a long enough timespan to make a conclusion concerning potential decline (J. Devereaux, pers. comm. April 2017), nor does it address likely population size changes after a fire when there is expected to be recruitment. Therefore, there is insufficient information to assess this species under this criterion.

Criterion B Geographic range

Assessment Outcome: Critical Endangered under B1+2ab(iii)(iv)(v)

Justification: The extent of occurrence (EOO) for the *Pomaderris walshii* was estimated to be 8 km² based on a convex hull polygon fitted around all known records as per IUCN Guidelines (2017). A species with an EOO of less than 100km² qualifies for the Critical Endangered category for this criterion. The area of occupancy (AOO) was also estimated to be 8 km², based on two 2 x 2 km grid as recommended by IUCN (2017). A species with an AOO of less than 10km² qualifies for the Critical Endangered category.

In addition to these thresholds, at least two of three other conditions must be met. These conditions are:

- a) The population or habitat is observed or inferred to be severely fragmented or there is only one (CR); ≤5 (EN); or ≤10 (VU) location.

Assessment outcome: sub criterion met at Critically Endangered thresholds assuming one location and severely fragmented.

Justification: This species is very highly restricted as it is currently known only from the upper catchment of the Kangaroo River. The northern population on private land, is separated from the main population. This population is not likely to be viable given low population numbers and habitat degradation. Therefore, the species is considered to be severely fragmented.

Location: The main threats are the interaction between fire and flooding. Floods have affected the entire population simultaneously. Flood damages parent stems (e.g. snap off at base or weak point due to borers, or plant gets covered by debris). While plants may recover from buried stem base in 1-2 years+, regrowth is not guaranteed. If regrowth occurs, then there is a time lag to reproduction while new stems establish. *Pomaderris walshii* is known to occur within riparian habitats, being located of shrubland to open grassy forest in the Sydney Basin Region where fire-prone vegetation is present. An adverse fire regime in combination with floods may impact the entire population or only part of it if the whole are does not burn. Therefore, there are likely to be one (floods and fire impact all populations) or two (floods impact the all populations but fire may not impact all the populations) locations.

- 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 populations; (v) number of mature individuals

Assessment outcome: sub criterion met

Justification: Continuing decline is inferred in the following;

(iii) Extent and quality of habitat: there is ongoing degradation at the private freehold sites; possible changes to landuse at these sites and possible climate change impacts on orographic rainfall affecting flooding across all sites.

(iv) The northern population is very small (only 10 mature individuals), impacted by habitat degradation, fragmented from the main population and the individuals are ageing with no seedling recruitment occurring.

(v) The number of mature individuals is expected to continue declining due to habitat degradation at the northern population; overall low numbers, with plants showing signs of senescing; and a lack of recruitment.

- c) Extreme fluctuations.

Assessment outcome: sub criterion data deficient

Justification: There is not enough information to determine if *Pomaderris walshii* undergoes extreme fluctuation as size fluctuation depends on the interaction between flooding and fire regimes and in particular the severity and frequency of each. Floods damage or kill parent stems, while fire may kill all above ground plants. Recovery from a soil seedbank may occur after fires or possibly floods, while the timing of fires and floods has the potential to deplete the soil seed bank and eliminate above ground plants and/or recruitment (e.g. a fire kills above ground plants and promotes germination but a flood occurring shortly after a fire may eliminate any post-fire recruitment, leaving a greatly depleted soil seed bank). However, there is no quantitative information to determine the effect of the interaction of flood and fire on the species and how this may cause extreme fluctuations (J. Devereaux, pers. comm. April 2017).

Criterion C Small population size and decline

Assessment Outcome: Critically Endangered under Criterion C2a(i)

Justification: A species with less than 50 mature individuals, would be considered to meet the threshold for the category of Critically Endangered. The current estimated total population size is 38 mature individuals (although this may increase if a recruitment promoting disturbance such as fire stimulates seed germination for a soil seedbank).

At least one of two additional conditions must be met. These are:

- 1) An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future).

Assessment outcome: sub criterion data deficient

Justification: In 2003, there were 30 plants of *P. walshii* found during a survey that covered only a part of the species distribution. By 2015, this same site had only 7 plants left due to individuals impacted by habitat degradation. The number of plants on this property remains in decline as all individuals are senescent with no seedling recruitment and there is ongoing habitat degradation and possible future changes in land use. Since 2015, surveys have been conducted by NSW NPWS Highland Area staff covering the known distribution of *P. walshii*. During the period of 2015-2017 the total population size declined from about 50 to 38 mature individuals (98 plants to 69 plants). This is the only data available on the entire population size, but it does not cover a long enough timespan to make a conclusion concerning potential decline (J. Devereaux, pers. comm. April 2017), nor does it address likely population size changes after a fire when there is expected to be recruitment. Therefore, there is insufficient information to assess this species under this sub criterion.

- 2) An observed, estimated, projected or inferred continuing decline.

Assessment outcome: sub criterion met

Justification: The number of mature individuals is expected to continue declining due to habitat degradation at the northern population; overall low numbers, with plants showing signs of senescing; and a lack of recruitment.

In addition, at least 1 of the following 3 conditions:

- a (i). Number of mature individuals in each population

Assessment outcome: sub criterion met at Critically Endangered threshold

Justification: The number of mature individuals in the northern population is about 10 and there are 28 in the main population, meeting the Critically Endangered threshold of < 50 mature plants in each population.

- a (ii). % of mature individuals in one population

Assessment outcome: sub criterion not met

Justification: The percentage of mature individuals in the main population is 74% (28 mature individuals).

- b. Extreme fluctuations in the number of mature individuals

Assessment outcome: sub criterion data deficient

Justification: There is not enough information to determine if *Pomaderris walshii* undergoes extreme fluctuation as size fluctuation depends on the interaction between flooding and fire regimes and in particular the severity and frequency of each. Floods damage or kill parent stems, while fire may kill all above ground plants. Recovery from a soil seedbank may occur after fires or possibly floods, while the timing of fires and floods has the potential to deplete the soil seed bank and eliminate above ground plants and/or recruitment (e.g. a fire kills above ground plants and promotes germination but a flood occurring shortly after may eliminate any post-fire recruitment, leaving a greatly depleted soil seed bank) There is no quantitative information to determine the effect of the interaction of flood and fire on the species and how this may cause extreme fluctuations (J. Devereaux, pers. comm. April 2017).

Criterion D Very small or restricted population

Assessment Outcome: Critically Endangered under Criterion D

Justification: A species with less than 50 mature individuals, would be considered to meet the threshold for the category of Critically Endangered. The total population size is currently estimated to have 38 mature individuals in a population of 68 plants. There is some uncertainty around the long-term population size as it may fluctuate in relation to fire and flooding. (e.g. a disturbance such as fire may stimulate seed germination for a soil seedbank).

Criterion E Quantitative Analysis

Assessment Outcome: Data Deficient

Justification: There is insufficient data available for *Pomaderris walshii* to estimate the risk of extinction.

Conservation and Management Actions

There is no National Recovery Plan for this species, however, there is a NSW Saving Our Species site managed program.

Habitat loss, disturbance and modification

- Remove debris after floods where there is serious impact on mature plants in the Upper Kangaroo River riparian zone at Carrington Falls.

- Build and maintain stock fences where appropriate to minimise the impact of stock grazing on the habitat of the species. NSW National Parks and Wildlife Service is responsible for construction and maintenance and liaison with landholder.

Ex situ conservation

- Establish an ex situ seed bank. Mount Annan Botanical Gardens to continue to collect seeds for ex situ seed bank storage
- Develop a plan for re-introduction (e.g. seed, cuttings) into existing site/s depending on ongoing decline and any recruitment events promoted by fire and flood. Wollongong Botanic Gardens to continue to propagate cuttings for potential translocation back into the wild. Identify appropriate sites for translocation. Develop monitoring and maintenance plans for any translocation so that the population is able to persist for long periods without intensive management and become self-sustaining.

Stakeholder Management

- Liaise with landholder(s) about entering into a volunteering management agreement to maintain or enhance the species and its habitat.
- Liaise with NSW National Parks and Wildlife Service to incorporate species fire-specific requirements into Budderoo National Park fire management strategy, Illawarra Bushfire Risk Management Plan and future prescribed burn plans. Avoid two successive burns within a time-frame that eliminates recruitment after the first burn. Ensure fire severity is sufficient to likely promote post-fire germination. Minimise fires after flood events, so that plants have time to recover.

Survey and Monitoring priorities

- Monitoring habitat condition.
- Monitoring disturbance impacts. Assess recovery after floods or fires.
- Flora monitoring: assess population abundance, survival, reproduction and recruitment.
- Ongoing monitoring of growth and survival of any translocated individuals.

Information and Research priorities

- Further understand the role of disturbance in recruitment and health of individuals into the population and the interaction between flood and fire regimes in plant survival and recruitment.
- Determine if the species is capable of resprouting after fire.
- Develop specific fire management guidelines for this species to accommodate fire frequency, season, severity and patch size elements.

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Expert Communications

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Devereaux, Jacqueline. Office of Environment and Heritage, NSW.

Pomaderris walshii - critically endangered species listing

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 walshii* J.C. Millott & K.L. McDougall as a CRITICALLY ENDANGERED SPECIES in Part 1 of Schedule 1A 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 walshii* J.C. Millott & K.L. McDougall (family Rhamnaceae), is a shrub or small tree to 3 m tall. The young stems, petioles, leaf undersurfaces and outer surface of the flowers are covered with a layer of white stellate hairs mixed with loosely appressed silvery white or rusty simple hairs. The leaves are narrowly ovate, about 36-60 mm long, 14-22 mm wide, with a cuneate to obtuse base; margins entire and flat or slightly recurved; apex acute to acuminate; adaxial (upper) surface green and hairless; abaxial (lower) surface with the lateral veins clearly evident and marked by rusty simple hairs. Flowers are 200-100 together in pyramidal to hemispherical terminal heads 4-7.5 cm long and wide at the base; individual flowers are cream to yellow, externally pubescent to villous; pedicels 1.5-4.3 mm long; hypanthium 0.8-1.2 mm long, 0.8-1.4 mm in diameter; sepals 1.8-2.0 mm long; petals 1.7-1.9 mm long, spreading, spatulate; stamens 2-2.5 mm long; anthers 0.7-1.2 mm long; ovary inferior, summit pubescent with simple hairs; style hairless, 1.6-1.9 mm long, branched in lower or middle third. A more detailed description is given in Millot and McDougall (2005).

2. *Pomaderris walshii* is thought to be most closely related to *P. nitidula* (Benth.) N.A. Wakef., from which it differs in its greater stature, smaller flowers, and more obtuse leaf lamina base. *P. nitidula* occurs on the North Coast and Northern Tablelands of New South Wales, with the most southerly known occurrence at Gloucester Tops, some 300 km from the *P. walshii* locality. *P. walshii* differs from *P. argyrophylla* N.A. Wakef. *sens. str.* in its more obtuse leaf base, shorter leaves, and details of leaf vein indumentum; from *P. graniticola* N.A. Wakef. K.L. McDougall & J.C. Millott (formerly *P. argyrophylla* subsp. *graniticola* N.A. Wakef.) in its broader inflorescence, larger leaves, and leaf vein indumentum; and from *P. parrisiae* N.G. Walsh in these same characters. Delimitation of the species based on morphometric analysis is discussed in Millot and

McDougall (2005).

3. *Pomaderris walshii* has a very highly restricted distribution. It is currently known only from the upper catchment of the Kangaroo River, above the escarpment near Robertson within the Sydney Basin Bioregion (Thackway and Creswell 1995). It occurs as two small populations within a total area of occurrence of about three lineal kilometres of riparian habitat, with very low numbers of individuals.

4. One population occurs in a conservation reserve, Budderoo National Park, with 13 known individual plants (Milot and McDougall 2005). This population occurs in riparian shrubland dominated by *Callicoma serratifolia*, *Ceratopetalum apetalum*, and *Grevillea rivularis*, in an area known to have last been burnt in 1983. The second population occurs on private freehold land upstream, comprises about 30 individual plants (Milot and McDougall 2005), and occurs in disturbed open grassy forest dominated by *Eucalyptus fastigata*, partly cleared for grazing. An unvouchered survey record (Jordan 1989) of an undescribed *Pomaderris* species close to Carrington Falls reports a habitat of *Eucalyptus piperita*/*E. sieberi* forest, but this occurrence has not been relocated and it is unclear whether it relates to *P. walshii*. Survey efforts in the general area of Carrington Falls have been reasonably intensive and have not disclosed any more populations (K. McDougall, pers. comm.). Identification of other possible areas of habitat on the Illawarra escarpment would be desirable, followed by further survey.

5. The habitat constraints, ecology, and reproductive biology of *P. walshii* are very poorly known. Fruit and seed are not yet reported and it is possible that the plants do 'not reliably produce fruit, which is unusual in this genus' (N. Walsh, National Herbarium of Victoria, pers. comm., 14 April 2005). Milot and McDougall (2005) suggest a possible capability for resprouting following flood damage. They also report that the population in Budderoo National Park is mostly 'apparently young', suggestive of cohort recruitment. Patterns of fecundity, recruitment, longevity, genetic variation and fitness, and self-pollination capability are not known. The response of the species to pathogens is unknown.

6. Threats operating at the Budderoo National Park site may include flooding, as the habitat is riparian and the area has a relatively high rainfall of about 1800 mm p.a. Milot and McDougall (2005) report apparent flood damage. Changed fire regimes may represent a threat, as may genetic consequences of small population size. Climate change and its effects on habitat may constitute a threat as the area is highly dependent on orographic rainfall. Potential or actual threats operating at the second, private tenure site include all of the above, plus the possibility of changed land use. These threats together with the very low numbers and very restricted area of occupancy are likely to lead to future decline.

7. *Pomaderris walshii* J.C. Millott & K.L. McDougall 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 either:

(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 17

The total number of mature individuals of the species is observed, estimated or inferred to be:

(a) extremely low.

Associate Professor Lesley Hughes

Chairperson

Scientific Committee

Proposed Gazettal date: 20/04/07

Exhibition period: 20/04/07 - 15/06/07

References

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