National Recovery Plan for the Rufous Pomaderris *Pomaderris brunnea*

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Sustainability
and Environment

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TABLE OF CONTENTS

Summary1	
Species Information 1	
Description	1
Distribution	1
Habitat	2
Populations	2
Decline and Threats 2	
Recovery Information	l.
Existing Conservation Measures	5
Recovery Objectives	5
Program Implementation and Evaluation	5
Recovery Actions and Performance Criteria	6
Management Practices7	I.
Affected Interests	7
Role and Interests of Indigenous People	7
Biodiversity Benefits	7
Social and Economic Impacts	7
Acknowledgments	7
Bibliography7	I
Priority, Feasibility and Estimated Costs of Recovery Actions	9
Figure 1. Distribution of Pomaderris brunnea1	
Table 1. Population location, numbers, manager and threat information	

Summary

The Rufous Pomaderris (*Pomaderris brunnea*) is endemic to south-eastern Australia, where it occurs in eastern New South Wales and eastern Victoria. Sixteen populations containing about 1,000 plants have been recorded. Threats include sand extraction, weed invasion, logging, browsing, altered fire regimes, recreational impacts and disturbance from storm water run-off. The species is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 and the NSW *Threatened Species Conservation Act* 1995. This national Recovery Plan for the Rufous Pomaderris is the first recovery plan for the species, and details its distribution, habitat, threats and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

The Rufous Pomaderris (*Pomaderris brunnea*) (Family Rhamnaceae) is a small to mediumsized compact shrub 2–4 m in height. The stems have a moderately dense covering of simple greyish or pale hairs on the of branchlets. The leaves are alternate, elliptic or obovate, 15–40 mm long and 8–15 mm wide, with deeply impressed lateral veins on the hairless upper surface, the lower surface covered with greyish to reddish simple hairs largely obscuring greyish stellate hairs. Flowers are small and cream, externally grey to brownish and hairy, and occur in dense bracteate clusters forming pyramidal panicles 3–5 cm long, the pedicels 0.5–1 mm long, the hypanthium 0.6–0.8 mm long, the sepals 1.5–1.7 mm long, and lack petals (description from Walsh 1999). *Pomaderris ligustrina* is most similar to *P. brunnea* but differs in having finer branchlets immediately below the inflorescence and glabrous stems below current season's growth (Walsh 1999).

Distribution

The Rufous Pomaderris is endemic to south-eastern Australia, where it occurs in eastern New South Wales in the Sydney Basin, NSW North Coast and New England Tableland IBRA bioregions (*sensu* DEH 2000) and in eastern Victoria in the South East Corner bioregion (Figure 1). Maps showing the distribution of *P. brunnea* are available from the Department of Environment, Climate Change and Water (for NSW) and the Department of Environment and Sustainability (for Vic).



Figure 1. Distribution of Pomaderris brunnea

Habitat

In New South Wales, *Pomaderris brunnea* grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. In the north of the range the associated overstorey species are Silver-top Strigybark (*Eucalyptus laevopinea*), Sydney Blue Gum (*E. saligna*) and New England Blackbutt (*E. campanulata*). Southern populations occur in open eucalypt woodland dominated by Cabbage Gum (*E. amplifolia*) with an understorey shrubland dominated by *Allocasuarina* spp. and *Bursaria* spp. Sites on alluvial floodplains are dominated by eucalypts including River Peppermint (*E. elata*), Sydney Peppermint (*E. piperita*) and Grey Gum (*E. punctata*) with the understorey commonly consisting of Sweet Bursaria (*Bursaria spinosa*) and Austral Bracken (*Pteridium esculentum*).

In Victoria, *P. brunnea* occurs on sheltered river or creek flats and associated lower slopes in forest areas. The substrate varies from shallow, shaley soils derived from ordovician sediments to floodplain deposits (for the largest population) to Snowy River volcanics (for the smallest population). Associated flora species consist of an overstorey containing Southern Blue Gum (*E. globulus*), Manna Gum (*E. viminalis*) and Messmate Stringybark (*E. obliqua*). On alluvial soils Yellow Box (*E. melliodora*) can occur. The understorey has a wide variation in species, but the dominant species are Sweet Bursaria, Common Ground-fern (*Calochlaena dubia*), Spiny-headed Mat-rush (*Lomandra longifolia*), Vanish Wattle (*Acacia verniciflua*), Burgan (*Kunzea ericoides*) and Kanooka (*Tristaniopsis laurina*).

Proposed recovery actions include determination of habitat critical to survival of P. brunnea.

Populations

Pomaderris brunnea has been recorded from sixteen locations (Table 1), 14 in NSW and two in Victoria. Of the 14 NSW locations, records at four are over 30 years old and it is not known if the species is still extant at these sites. Known populations contain about 600 plants, with the majority of these in south-west Sydney (Wollondilly and Camden local government areas), plus others in the Hawkesbury-Wollemi region north of Sydney and in Tuggolo State Forest south of Walcha in the northern tablelands. The two Victorian populations of *P. brunnea* occur in the Snowy River National Park and Tabby State Forest, near Orbost in East Gippsland, and contain fewer than 400 plants.

Decline and Threats

There is little information on the previous distribution and abundance of *Pomaderris brunnea*, so it is not possible to determine if there has been any historic decline in the species. Only two populations are known to contain more than 100 plants, with the remainder having small numbers of plants or are of unknown size. An urgent recovery action is to resurvey populations to determine current size, condition and threats. The habitats in which *P brunnea* occurs in have not been fully surveyed, so there is the possibility of discovering new populations with further field surveys. Identification and management of threats is the principal cornerstone of recovery, and are the foundation of management. A variety of current and potential threats exist at the known populations of *P. brunnea*, including:

Sand extraction

Two populations in NSW occur in areas that are subject to sand extraction. One of these populations is the subject of a translocation program.

Weed invasion

Several populations in NSW are threatened by weeds, particularly Cape Ivy *Delairea odorata* and African Olive (*Olea europaea* subsp. *Africana*). One Victorian sub-population in the Snowy River NP has minor weed invasion by blackberry (*Rubus fruiticosis* spp. agg).

Browsing

Browsing by cattle is a threat to one population in NSW.

Disturbance/destruction

Several populations in NSW are threatened by disturbance from trampling and recreational vehicle use.

Stormwater run-off

Disturbance by stormwater run-off has been identified as a threat for at least two NSW populations. This could potentially include physical damage, soil erosion, sedimentation and/or soil nutrification.

Timber harvesting operations

Two populations occur in State forest in NSW, where protection zones have been established around the plants at these locations.

Altered fire regimes

The sensitivity of *Pomaderris. brunnea* to fire is unknown, although other *Pomaderris* species do not resprout after fire (Maryott-Brown & Wilks 1993). The moist habitat in which *P. brunnea* grows may be sensitive to fire, and sites where the species has been observed in the Sydney area are typically those where fires are infrequent (Peacock 1996). Plants need an estimated 4–6 years to reach maturity and produce seed (Maryott-Brown & Wilks 1993). Based on this assessment, the occurrence of fires at a higher frequency than once every 10 years may be detrimental to populations. There has been no research to determine the effect of fire on germination from seed, or the longevity of the soil seed bank.

Table 1.	Population location, nu	mbers. manager and thr	reat information for <i>P. brunnea</i>
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Location ¹	Numbers (year)	Manager	Threats recorded	Comments	Source	
New South Wales						
Tuggolo SF	2 plants (1995)	DPI	Cattle grazing		R. Peacock pers. comm.; NPWS Wildlife Atlas	
Wollemi NP (Cudgegong River)	1 plant (1997)	DECCW	Not recorded		NPWS Wildlife Atlas	
Wollemi NP (Tea Tree Creek)	15 plants (1997)	DECCW	None identified		NPWS Wildlife Atlas	
Wollemi NP (Boorai Creek)	Not recorded (1966)	DECCW	Not recorded	Old record; low accuracy	NPWS Wildlife Atlas	
Lower Colo River (Lower Portland)	15 – 20 plants (2005)	Private	Not recorded		T. James pers. comm.	
Spring Farm (west), Camden	Not recorded (1977)	Private	Not recorded	Old record; site now highly disturbed by sand extraction	NPWS Wildlife Atlas	
Spring Farm (east), Camden	500 - 600 plants (2005)	Private	Sand extraction Weed invasion Stormwater run-off	Originally 15 plants present in 1995. High numbers are due to propagation.	G. Bray pers. comm.	
	74 plants (2005)	Camden Council; private	Weed invasion Recreational vehicles Stormwater run-off	Site extends west from Gundungurra Reserve (south) onto adjacent private land	J. Rodd pers. comm.	
	6 plants (2008)	DPI	Weed invasion	Three separate sites have been recorded from the northern section of Elizabeth Macarthur Agricultural. Only the Sawyers Reserve is known to be extant.	MABG (2008); NPWS Wildlife Atlas; P. Cuneo pers. comm.	
Elizabeth Macarthur Agricultural Institute (east)	Not recorded (1996)	DPI	Not recorded	Western bank of Nepean River, opposite Menangle Park	NPWS Wildlife Atlas	
Elizabeth Macarthur Agricultural Institute (south-east)	Not recorded (1996)	DPI	Weed invasion	On riverbank north of Menangle Bridge.	NPWS Wildlife Atlas	
Nepean River, Douglas Park	Not recorded (1966)	Private	Not recorded	Old record; low accuracy	NPWS Wildlife Atlas	
Rockford Bridge, Tahmoor	3 plants (1997)	DoL	Weed invasion		NPWS Wildlife Atlas	
Wirrimbirra Sanctuary, Bargo	3 plants (2005)	Private	Weed invasion Recreational vehicles Stormwater run-off	Ockendon pools vicinity. Previously described as 'common along gully for c. 300 m'. National Trust property managed as a flora and fauna refuge.	M. Farago pers.comm.; NPWS Wildlife Atlas	
	Not recorded	Private	Weed invasion	Petrophile Pass vicinity. Previously described as 'frequent' in the area. National Trust property managed as a flora and fauna refuge.	M. Farago pers.comm.; NPWS Wildlife Atlas	
Dogtrap Creek, Bargo	1 plant (2005)	DoL	Frequent fire		NPWS Wildlife Atlas	
Upper Cordeaux Dam	Not recorded (1957)	SCA	Not recorded	Old record; low accuracy	NPWS Wildlife Atlas	
Victoria						
Snowy River NP	160 plants (2004)	PV	Weed invasion	plants in 2 sub-populations		
Tabby SF	230 plants (2004)	DSE	Logging	plants in 4 sub-populations		

Abbreviations: DECCW – Department of Environment, Climate Change & Water (NSW); DPI – Department of Primary Industries (NSW); DoL – Department of Lands (NSW); DSE – Department of Sustainability and Environment (Vic); NP – National Park; PV – Parks Victoria; SCA – Sydney Catchment Authority; SF – State Forest

¹ For this recovery plan, discrete groups of plants that are separated from other discrete groups by more than one kilometre are considered to be a single population

Recovery Information

Existing Conservation Measures

A number of conservation measures have been undertaken for *P. brunnea*, including:

- Fencing and habitat regeneration in Sawyers Reserve, Elizabeth Macarthur Agricultural Institute (DPI Agriculture).
- Development of a management plan for Gundungurra Reserve, Camden.
- Incorporation of the Tabby State Forest (Vic) site into a special management zone.
- Establishment of a 20 m exclusion zone around plants prior to timber harvesting in Tuggolo State Forest (DPI Forests)

Recovery Objectives

The overall objective of recovery is to minimise the probability of extinction of *P. brunnea* in the wild and to increase the probability of populations becoming self-sustaining in the long term. Within the duration of this Recovery Plan, the specific objectives for the recovery of *P. brunnea* are to:

- 1. Determine current status and threats
- 2. Determine habitat requirements
- 3. Protect and manage populations on public and private land
- 4. Monitor response of populations to active management
- 5. Identify key biological functions
- 6. Establish a population in cultivation
- 7. Build community support for conservation

Program Implementation and Evaluation

This Recovery Plan guides recovery actions for *P. brunnea* and will be implemented and managed by the Department of Environment and Climate Change (for NSW) and the Department of Environment and Sustainability (for Vic), supported by other agencies, educational institutions, regional natural resource management authorities and community groups as appropriate. Technical, scientific, habitat management or education components of the Recovery Plan will be referred to specialist groups on research, *in situ* management, community education and cultivation as required. Contact will be maintained between the State agencies on recovery issues concerning *P. brunnea*. The Recovery Plan will be reviewed and revised within five years of the date of its adoption under the EPBC Act..

Cost of Implementation

The estimated cost of implementation of recovery actions over five years is \$141 000.

Recovery Actions and Performance Criteria

Action	Description	Performance Criteria					
Specific Objective 1: Determine current status and threats							
1.1	Undertake surveys to determine current status, population size, structure and extent and current threats.	 70% of current population sites searched and mapped for population size, condition and habitat. 					
	Responsibility: DECCW, DSE, PV						
1.2	Review conservation status following field survey.	Conservation status under Commonwealth and					
	Responsibility: DECCW	NSW legislation reviewed.					
Specific	Objective 2: Determine habitat requirements						
2.1	Survey known habitat, collect floristic and environmental information relevant to community ecology and condition.	 70% of sites surveyed, habitat critical to survival mapped for these populations. 					
	Responsibility: DECCW, DSE, PV						
Specific	Objective 3: Ensure that all populations and their habita	at are protected and managed appropriately					
3.1	Improve the long-term security of sites on public and private land that are outside reserves.	 Conservation covenants or other secure protection measures arranged for two sites. 					
	Responsibility: DECCW, HNCMA, DPI, DoL						
3.2	Prepare and implement management plans including threat control for public land sites.	Management plans for four NSW & two Vic sites					
	Responsibility: DECCW, DPI, DoL, SCA, DSE, Camden Council						
3.3	Include all sites in land-use planning and environmental impact assessment processes (e.g. sand extraction, residential development, bushfire hazard reduction).	 Location details for surveyed NSW sites accurately (i.e. <100m) recorded on the DECCW Wildlife Atlas 					
	Responsibility: DECCW, DSE, PV						
3.4	Protect populations on private land.	Private land management agreements at two sites.					
	Responsibility: DECCW, HNCMA						
Specific	Objective 4: Monitor response of populations to active	management					
4.1	Monitor response to management/threat abatement	 Annual monitoring at three NSW & two Vic sites. 					
	Responsibility: DECCW, DPI, DoL, HNCMA, SCA, CC,	 Monitoring data use to inform management plans/agreements at sites. 					
Specific	Objective Fuldentify key biological functions						
Specific	Construction of the second sec						
5.1	longevity, fecundity and recruitment levels.	Reproductive ecology and regenerative potential quantified for two Vic sites.					
		Seed bank potential quantified for two Vic sites.					
5.2	Identify key stimuli for seed germination requirements.	Stimuli for recruitment identified.					
	Responsibility: DSE	 Management strategies identified to maintain, enhance or restore processes fundamental to reproduction and survival. 					
Specific	Objective 6: Establish a population in cultivation						
6.1	Establish plants in cultivation to provide a research population and potentially for reintroductions.	 Development of effective propagation and cultivation techniques. 					
	Responsibility: DSE, RBG	 At least 50 healthy, genetically diverse, mature plants in cultivation. 					
6.2	Establish a seed bank and determine seed viability.	Seed from five NSW & two Vic populations in long-					
	Responsibility: RBG-S/M, ANBG	term storage.					
Specific Objective 7: Build community support for conservation							
7.1	Identify opportunities for community involvement in the conservation of <i>P. brunnea</i> .	 Community groups involved in surveying, monitoring, bush regeneration at two sites. 					
	Responsibility: DECCW, CC, DSE, PV						

Abbreviations: ANBG=Australian National Botanic Gardens Canberra; CC=Campden Council; DECCW=Department of Environment, Climate Change and Water (NSW); DPI=Department of Primary Industries (NSW); DoL=Department of Lands (NSW); DSE=Department of Sustainability and Environment (Victoria); HNCMA=Hawkesbury Nepean Catchment Management Authority; PV=Parks Victoria; RBG=Royal Botanic Gardens Melbourne; SCA=Sydney Catchment Authority

Management Practices

On-ground site management will aim to mitigate threatening processes and thereby insure against extinction. Major threats requiring management include accidental destruction, competition from pest plants, inappropriate fire regimes, storm water runoff/excess nutrient loading and grazing by pest animals. A range of strategies will be necessary to alleviate these threats including weed control, fire management, fencing and stormwater management.

Affected Interests

The organisations responsible for or involved in management of *P. brunnea* include the Department of Environment and Climate Change, Department of Primary Industries, Department of Lands, Hawkesbury Nepean Catchment Management Authority, Sydney Catchment Authority and Camden Council, plus private landowners for populations in the New South Wales, and the Department of Sustainability and Environment and Parks Victoria for the Victorian populations.

Role and Interests of Indigenous People

Indigenous communities on whose traditional lands *P. brunnea* occurs have been advised, through the relevant regional Indigenous facilitator, of the preparation of this Recovery Plan and invited to provide comments and be involved in the implementation of the plan.

Biodiversity Benefits

The Recovery Plan includes a number of potential biodiversity benefits for other species and vegetation communities in Victoria. Principally, this will be through the protection and management of habitat. The adoption of broad-scale management techniques and collection of baseline data will also benefit a number of other plant species growing in association with *Pomaderris brunnea*, particularly those species with similar life forms and/or flowering responses. The Recovery Plan will also provide an important public education role as threatened flora have the potential to act as 'flagship species' for highlighting broader nature conservation and biodiversity issues such as land clearing, grazing, weed invasions and habitat degradation.

Social and Economic Impacts

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. Most populations occur on public land managed by local and State government agencies. Implementation of protection measures at these sites will be negotiated with the relevant public authorities during the implementation of the plan. Protection for the populations on private land will be achieved through voluntary arrangements with landowners.

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Action	Description	Priority	Feasibility	Responsibility	Cost estimate					
					Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Distribution, abundance									
1.1	Surveys	1	100%	DECCW, DSE, PV	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
1.2	Status review	1	100%	DECCW	\$0	\$0	\$1,000	\$0	\$0	\$1,000
2	Habitat requirements									
2.1	Known habitat	1	100%	DECCW, DSE, PV	\$2,000	\$2,000	\$2,000	\$0	\$0	\$6,000
3	Habitat protection									
3.1	Site security	1	100%	DECCW, HNCMA, DPI, DoL	?	?	?	?	?	?
3.2	Management plans	1	100%	DECCW, DPI, DoL, SCA, DSE, CC	\$2,000	\$2,000	\$2,000	\$0	\$0	\$6,000
3.3	Land-use planning	1	75%	DECCW, DSE, PV	\$2,000	\$2,000	\$2,000	\$0	\$0	\$6,000
3.4	Private land	2	75%	DECCW, HNCMA	?	?	?	?	?	?
4	Monitoring									
4.1	Population monitoring	1	75%	DECCW, DPI, DoL, HNCMA, SCA, CC, DSE, PV	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
5	Biological functions									
5.1	Reproductive status	2	75%	DSE	\$0	\$0	\$10,000	\$10,000	\$5,000	\$25,000
5.2	Seed germination	2	75%	DSE	\$0	\$0	\$5,000	\$5,000	\$5,000	\$15,000
6	Cultivation									
6.1	Cultivated plants	3	100%	DSE, RBG	\$6,000	\$3,000	\$3,000	\$3,000	\$3,000	\$18,000
6.2	Seed bank	3	100%	RBG S/M, ANBG	\$3,000	\$3,000	\$1,000	\$1,000	\$1,000	\$9,000
7	Community support									
7.1	Community extension	3	75%	DECCW, CC, DSE, PV	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
				TOTALS	\$26,000	\$23,000	\$37,000	\$30,000	\$25,000	\$141,000*

Priority, Feasibility and Estimated Costs of Recovery Actions

* **Important note:** costs are included for Victorian actions only, as actions for NSW have not been costed (except for 1.2).