National Recovery Plan for the Genoa River Correa *Correa lawrenceana* variety *genoensis*

Oberon Carter and Neville Walsh

Australian Government

Department of Environment, Climate Change and Water NSW

State Government Victoria
Department of Sustainability and Environment

Prepared by Oberon Carter (Department of Sustainability and Environment, Victoria) and Neville Walsh (Royal Botanic Gardens, Melbourne).

Published by the Victorian Government Department of Sustainability and Environment (DSE) Melbourne, February 2010.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

ISBN 1 74152 334 6

This is a Recovery Plan prepared under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999, with the assistance of funding provided by the Australian Government Natural Heritage Trust.

This Recovery Plan has been developed with the involvement and cooperation of a range of stakeholders, but individual stakeholders have not necessarily committed to undertaking specific actions. The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved. Proposed actions may be subject to modification over the life of the plan due to changes in knowledge.

An electronic version of this document is available on the Department of the Environment, Water, Heritage and the Arts website www.environment.gov.au

For more information contact the DSE Customer Service Centre 136 186

Citation: Carter, O. and Walsh, N. 2010. National Recovery Plan for the Genoa River Correa *Correa lawrenceana* variety *genoensis*. Department of Sustainability and Environment, Melbourne.

Contents

Figures

Summary

The Genoa River Correa *Correa lawrenceana* variety *genoensis* is a small shrub endemic to a confined area in Victoria and New South Wales. There are five wild populations containing an unknown (but small) number of plants. Threats to populations include weed invasion and altered fire and hydrological regimes. The taxon is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. This national Recovery Plan for *C. lawrenceana* var. *genoensis* details the species' distribution and biology, conservation status and threats, and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

The Genoa River Correa *Correa lawrenceana* variety *genoensis* is an erect to spreading shrub growing to 2 m tall. It has ovate leaves to 70 x 40 mm, the margins smooth, the upper surface dark green, glossy and hairless, while the lower surface is pale grey-green and densely covered with stellate hairs. The solitary, yellow-green flowers are about 25 mm long, drooping, tubular, hairy outside and have four curved, triangular lobes at the end of tube. The calyx is hemispherical, to 5 mm long, more or less hairless and has four teeth. The stamens protrude from the flower. Flowers appear mostly in spring (description from Walsh & Entwisle 1999). *Correa lawrenceana* var. *genoensis* differs from the type variety of *C. lawrenceana* in its prominently gland-dotted calyx with long acuminate lobes (Wilson 1961) and a green and glabrescent calyx (Walsh & Entwisle 1999). There have been no specific ecological studies of *C. lawrenceana* var. *genoensis.* It is likely that birds or bees pollinate the tubular flowers of this taxon, as was observed for *Correa* species in Tasmania (Hingston & McQuillan 2000).

Distribution

Correa lawrenceana var. *genoensis* is restricted to a few very small populations in far eastern Victoria, fringing the Genoa River, and one population in south-eastern New South Wales, fringing Redstone Creek, in the IBRA South East Corner bioregion (DEH 2000). Altitudinal range is 60–380 m above sea level.

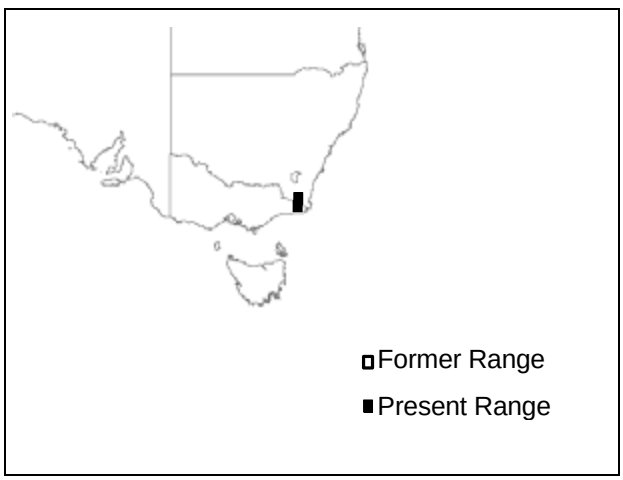

Figure 1. Distribution of *Correa lawrenceana* var. *genoensis*

Maps showing the detailed distribution of *Correa lawrenceana* var. *genoensis* are available from the Department of Sustainability and Environment for Victoria, and the Department of Environment, Climate Change and Water for NSW.

Population Information

Five populations of *C. lawrenceana* var. *genoensis* are known, one in New South Wales and four in Victoria. Population sizes are difficult to estimate for some populations due to their location in steep, rocky terrain in remote areas (D. Cameron DSE pers. comm.), but most are believed to be small.

New South Wales

- South East Forest National Park. Occurs along several hundred metres of Redstone Creek. Population size unknown but believed to be locally common.

Victoria

- Coopracambra National Park
    - Site 1. Ivor Track, Genoa River. Population size unknown.
    - Site 2. 1 plant.
- Genoa River, Wangarabelle. 7 wild plants, plus 10 plants grown from cuttings by the Royal Botanic Gardens Melbourne were added in 1999 and were still growing in January 2000.
- Lower Genoa River. Population size unknown

Habitat

In the single known population in New South Wales, *C. lawrenceana* var. *genoensis* occurs in riparian forest on a narrow alluvial terrace in sandy soil derived from sandstone. Associated species at that site include *Eucalyptus elata*, *Eucalyptus obliqua*, *Eucalyptus radiata*, *Eucalyptus cypellocarpa*, *Pomaderris aspera* and *Bedfordia arborescens*. Victorian populations also occur in riparian forest or riparian scrub, tending to ecotonal vegetation between forest, or *Kunzea ericoides* scrub, and treeless riparian scrub. Associated species may include *Acacia floribunda*, *Acacia mearnsii*, *Dodonaea viscosa*, *Leptospermum brevipes*, *Lomandra longifolia*, *Pomaderris aspera*, *Tristaniopsis laurina* and *Westringia eremicola*. Recovery actions include survey and mapping of habitat that will lead to the identification of habitat critical to the survival of the species.

Decline and Threats

The Genoa River Correa was almost certainly more widespread and abundant within the region where it currently occurs, but populations have been fragmented and depleted historically by land clearance, especially of the fertile alluvial flats in the Genoa area. This decline may be continuing, with at least one recent record, a 1996 record from Mallacoota Lake, not being relocated despite targeted searches. Clearing of habitat is an historical threat that is now less likely, as all remaining populations occur on public land managed for nature conservation. Current threats are generally rated as low, with populations most at risk from inadvertent damage. Given the extremely limited distribution and very low numbers of plants, the risk from stochastic events is probably high. Current threats are summarised as follows:

Weed invasion: Most populations are relatively weed-free, however Blackberry *Rubus fruticosus* species aggregate threatens at least one population. This species is a Weed of National Significance.

Altered fire regimes: Multiple fires in quick succession are likely to destroy individuals.

Altered hydrological regimes: This species occurs in the riparian zone, and severe flooding or modification to hydrological processes may damage plants.

Recovery Information

Directions for recovery of *C. lawrenceana* var. *genoensis* include habitat conservation, restoration and management, combined with an understanding of the species' ecological and biological requirements. To achieve this, recovery actions are primarily structured to (i) acquire baseline data, (ii) assess habitat condition including ecological and biological function,

(iii) protect populations to maintain or improve population growth and (iv) to engage the community in recovery actions.

Overall Objective

The **overall objective** of recovery is to minimise the probability of extinction of *Correa lawrenceana* var. *genoensis* in the wild and to increase the probability of important populations becoming self-sustaining in the long term.

Within the life span of this Recovery Plan, the **specific objectives** of recovery for *Correa lawrenceana* var. *genoensis* are to:

1. Acquire accurate information for conservation status assessments.
2. Identify habitat that is critical, common or potential.
3. Ensure that all populations and their habitat are protected and managed appropriately.
4. Manage threats to populations.
5. Identify key biological functions
6. Determine the growth rates and viability of populations.
7. Establish populations in cultivation.
8. Establish cultivated plants in the wild.
9. Build community support for conservation.

Program Implementation

The Recovery Plan will run for five years from the time of implementation and will be managed by the Department of Sustainability and Environment in Victoria and the Department of Environment, Climate Change and Water in NSW. Technical, scientific, habitat management or education components of the Recovery Plan will be referred to specialist sub-committees on research, *in situ* management, community education and cultivation.

Program Evaluation

The Recovery Team will be responsible for annual assessments of progress towards recovery. This Recovery Plan will be reviewed within five years of the date of its adoption.

Recovery Actions and Performance Criteria

Action	Description	Performance Criteria
Specific objective 1: Acquire accurate information for conservation status assessments		
11	Conduct detailed surveys including identification of area & extent of populations, number, size and structure of populations and estimation of population change. **Responsibility: DSE, DECCW**	• Determination or update of conservation status for inclusion on state and national threatened species lists. • Target populations accurately mapped.
Specific objective 2: Identify habitat that is critical, common or potential		
2.1	Accurately survey known habitat and collect floristic and environmental information relevant to community ecology and condition. **Responsibility: DSE, DECCW**	• Requirements for completion of essential life history stages, recruitment and dispersal identified at known sites. • Habitat critical to survival mapped.
2.2	Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference. **Responsibility: DSE, DECCW**	• Predictive model for potential habitat developed and tested.
Specific objective 3: Ensure that all populations and their habitats are legally protected		
3.1	Protect populations on public land. **Responsibility: DSE**	• Formal conservation measures negotiated (eg. Special Protection Zone) at Wangarabelle and Lower Genoa River sites.
Specific objective 4: Manage threats to populations		
4.1	Identify disturbance regimes to maintain habitat. **Responsibility: DSE**	• Disturbance regimes determined that maintain habitat. • Ecological burning plan established for all known populations.
4.2	Control threats from pest plants, using careful application of herbicide or hand removal of weeds, and control accidental destruction by installing appropriate signage. **Responsibility: DSE, PV, DECCW**	• Measurable seedling recruitment/vegetative regeneration at all 5 known sites. • A measurable reduction in plant mortality at all 5 known sites. • Signage installed at sites likely to be subject to disturbance (e.g. Lower Genoa River, Ivor Creek sites).
Specific objective 5: Identify key biological functions		
5.1	Evaluate current reproductive/regenerative status, seed bank status and longevity, fecundity and recruitment levels by conducting field based experimental trials. **Responsibility: DSE, DECCW**	• Seed bank/regenerative potential quantified for target populations.
5.2	Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli and determine stimuli for vegetative regeneration. **Responsibility: DSE, DECCW**	• Stimuli for recruitment/regeneration identified. • Management strategies identified to maintain, enhance or restore processes fundamental to reproduction and survival.

Specific objective 6: Determine the growth rates and viability of populations		
6.1	Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. **Responsibility: DSE, DECCW**	• Techniques for monitoring developed and implemented. • Census data for target populations.
6.2	Collate, analyse and report on census data and compare with management histories. **Responsibility: DSE, DECCW**	• Population growth rates determined and Population Viability Analyses completed for target populations.
Specific objective 7: Establish populations in cultivation		
7.1	Establish cultivated plants *ex situ* for inclusion in living collections to safeguard against any unforeseen destruction of wild populations. **Responsibility: RBG**	• Development of effective propagation and cultivation techniques. • At least 30 mature plants in cultivation.
7.2	Establish a seed bank and determine seed viability. **Responsibility: DSE**	• Long-term storage facility identified. • Seed from target populations in storage.
Specific objective 8: Establish cultivated plants in the wild		
8.1	Select and evaluate suitable translocation sites that are ecologically and biologically suitable, have secure land tenure and are managed appropriately. **Responsibility: DSE, DECCW**	• Criteria for site suitability identified and sites selected. • Preparation of translocation plan.
8.2	Establish a minimum population size of cultivated plants. **Responsibility: DSE, DECCW, RBG**	• 20 plants in cultivation that are disease free and vigorous.
8.3	Prepare site(s) to achieve maximum survival of translocated plants and implement translocation plan. **Responsibility: DSE, DECCW, RBG**	• Development of successful translocation techniques.
8.4	Maintain and monitor translocated plants. **Responsibility: DSE, DECCW, RBG**	• At least 30% survival of translocated plants.
Specific objective 9: Build community support for conservation		
9.1	Identify opportunities for community involvement in the conservation of *Correa lawrenceana* var. *genoensis*. **Responsibility: DSE**	• Presentation(s) to community nature conservation groups.

Abbreviations: DECCW=Department of Environment, Climate Change and Water (NSW); DSE=Department of Sustainability and Environment, Victoria; PV=Parks Victoria; RBG=Royal Botanic Gardens, Melbourne

Management Practices

Management practices that will aid recovery

On-ground site management will aim to mitigate threatening processes to prevent declines and create conditions for maintenance or increase of population size. Major threats requiring management include accidental destruction, competition from pest plants, inappropriate fire regimes and grazing by pest animals. A range of strategies will be necessary to alleviate these threats including weed control and fire management. In addition, some *ex situ* conservation measures including seed storage and germination trails, will be required, with reintroductions to the wild highly desirable. Addressing major knowledge gaps is also required, especially determining the mechanisms underlying recruitment and regeneration. Successful *in situ* population management will be founded on understanding the relationships between *C. lawrenceana* var. *genoensis* and associated flora, and its response to environmental processes. These are directly linked to biological function and are thus vital to recovery. Demographic censusing will be necessary to gather life history information and to monitor the success of particular management actions. Surveys of known and potential habitat should continue to better define the distributions and size of populations. Providing information to land managers and the broader community in the region will increase awareness of the species, provide for increased protection of existing populations, an increased likelihood on new populations being found, and reducing the risk of inadvertent damage occurring.

Management practices that will avoid significant adverse impacts

Providing land managers with information on the location, distribution, habitat and ecology of *C. lawrenceana* var. *genoensis* will help to protect existing populations from inadvertent damage, and raise general awareness that may result in the location of any new populations. Populations occurring in potentially high-risk locations may need appropriate signposting or fencing. Surveys in potential habitat likely to be impacted by any development proposals will be required to avoid damage to or destruction of any currently unknown populations. Identification and protection of current and potential habitat such as through planning scheme overlays and restrictions on clearance of native vegetation are a high priority.

Affected Interests

Correa lawrenceana var. *genoensis* populations occur on land managed by the Department of Environment, Climate Change and Water (NSW) and Parks Victoria (Vic), who have approved actions outlined in this Recovery Plan.

Role and Interests of Indigenous people

Indigenous communities on whose traditional lands *Correa lawrenceana* var. *genoensis* occurs are being 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 Recovery Plan.

Biodiversity Benefits

The Recovery Plan includes a number of potential biodiversity benefits for other species and vegetation communities in Victoria and New South Wales. 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 *Correa lawrenceana* var. *genoensis*, 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 will not cause any significant adverse social and economic impacts, as all populations occur on land that is managed with nature conservation already a high priority.

Acknowledgments

The authors would like to thank David Cameron and Fiona Coates (DSE), and Geoffrey Carr (Ecology Australia, Fairfield, Vic.), Anthony Nelson (Shire of East Gippsland) and Max James (Genoa, Vic.) for contributions to this Recovery Plan.

Bibliography

DEH 2000. *Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the Development of Version 5.1. - Summary Report*. Environment Australia, Canberra.

Hingston, A.B. and McQuillan, P.B. 2000. Are pollination syndromes useful predictors of floral visitors in Tasmania? *Austral Ecology* 25: 600–609.

Walsh, N.G. and Entwisle, T.J. 1999. *Flora of Victoria, Vol 4: Dicotyledons: Cornaceae to Asteraceae*. Inkata Press, Melbourne.

Wilson, P.G. 1961. A taxonomic revision of the genus *Correa* (Rutaceae). *Transactions of the Royal Society of South Australia* 85: 21–53.

Priority, Feasibility and Estimated Costs of Recovery Actions

Action	*Description*	*Priority*	*Feasibility*	*Responsibility*	*Cost estimate*					
					Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	**Conservation status**									
1.1	Collect baseline data	1	100%	DSE NPWS	**$12000**	**$10000**	**$0**	**$0**	**$0**	**$22000**
2	**Habitat requirements**									
2.1	Survey known habitat	1	100%	DSE NPWS	**$20000**	**$20000**	**$0**	**$0**	**$0**	**$40000**
2.2	Identify, survey potential habitat	1	75%	DSE NPWS	**$0**	**$20000**	**$20000**	**$0**	**$0**	**$40000**
3	**Legal protection of habitat**									
3.1	Protect public land habitat	1	75%	DSE	**$5000**	**$5000**	**$5000**	**$5000**	**$5000**	**$25000**
4	**Manage threats**									
4.1	Identify disturbance regimes	2	75%	DSE	**$0**	**$0**	**$8000**	**$0**	**$0**	**$8000**
4.2	Control threats	1	75%	DSE PV NPWS	**$4000**	**$4000**	**$4000**	**$4000**	**$4000**	**$20000**
5	**Identify key biol. functions**									
5.1	Evaluate reproductive status	2	75%	DSE NPWS	**$0**	**$0**	**$6000**	**$6000**	**$0**	**$12000**
5.2	Seed germination	2	75%	DSE NPWS	**$0**	**$0**	**$5000**	**$0**	**$0**	**$5000**
6	**Growth rates, pop. viability**									
6.1	Conduct censusing	2	100%	DSE NPWS	**$0**	**$4000**	**$0**	**$4000**	**$0**	**$8000**
6.2	Collate, analyse and report	2	100%	DSE NPWS	**$0**	**$2000**	**$0**	**$2000**	**$0**	**$4000**
7	**Establish pops in cultivation**									
7.1	Establish cultivated plants	3	50%	RBG	**$0**	**$2000**	**$2000**	**$2000**	**$2000**	**$8000**
7.2	Establish a seed bank	3	50%	DSE	**$0**	**$3000**	**$0**	**$3000**	**$0**	**$6000**
8	**Establish pops. in the wild**									
8.1	Select sites	3	100%	DSE NPWS	**$0**	**$0**	**$5000**	**$0**	**$0**	**$5000**
8.2	Cultivate plants for translocation	3	50%	DSE NPWS RGB	**$0**	**$0**	**$5000**	**$0**	**$0**	**$5000**
8.3	Prepare site(s), implement plan	3	50%	DSE NPWS RGB	**$0**	**$0**	**$0**	**$10000**	**$6000**	**$16000**
8.4	Maintain and monitor	3	50%	DSE NPWS RGB	$**0**	$**0**	$**0**	**$12000**	**$12000**	**$24000**
9	**Education, communication**									
9.1	Community extension	3	100%	DSE	**$6000**	**$6000**	**$6000**	**$6000**	**$6000**	**$30000**
				Totals	**$47,000**	**$76,000**	**$66,000**	**$54,000**	**$35,000**	**$278,000**