Department of
Sustainability and
Environment

National Recovery Plan for the Euroa Guinea-flower *Hibbertia humifusa* subspecies *erigens*

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Australian Government

Victoria
The Place To Be

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Published by the Victorian Government Department of Sustainability and Environment (DSE) Melbourne, November 2006.

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

ISBN 1 74152 269 2

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.

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.

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This plan should be cited as follows: Murphy, A.H. and Downe, J. 2006. National Recovery Plan for the Euroa Guinea-flower *Hibbertia humifusa* subspecies *erigens*. Department of Sustainability and Environment, Melbourne.

Cover photograph: Euroa Gunea-flower *Hibbertia humifusa* subspecies *erigens*, by Judy Downe.

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Summary

The Euroa Guinea-flower *Hibbertia humifusa* subspecies *erigens* is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999, and is listed as threatened under the Victorian *Flora and Fauna Guarantee Act* 1988. The taxon is endemic to north-eastern Victoria, where about 16 populations containing several thousand plants occur. Many populations occur along roadsides and on private land, and are at great risk. Major threats include weed invasion, grazing and lack of regeneration, road-widening and altered fire regimes. This national Recovery Plan for the Euroa Guinea-flower details the species' distribution and biology, conservation status, threats, and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

The Euroa Guinea-flower *Hibbertia humifusa* subspecies *erigens* is a low procumbent shrub with numerous wiry branches up to 25 cm in length, with scattered stellate hairs. Yellow flowers are held on long very narrow peduncles that have a single bract near the base. Sepals are 4–8 mm in length and 2–3 mm wide. Leaves are narrow elliptic, 6–9 mm long and 1–3 mm wide, gradually constricted to a blunt, rarely acute apex with a tuft of simple hairs. Flowers are produced from September to November (description from Walsh & Entwisle 1996). Little is known of the biology and ecology of the Euroa Guinea-flower and further investigation is required. The plant has mostly been recorded from disturbed sites on nutrient poor, gravelly soils. Optimum fire regimes are not known.

Distribution

The Euroa Guinea-flower is endemic to north-eastern Victoria, where it is known from several locations including Longwood, Euroa, Creighton, Avenel and Locksley (Figure 1), in the Riverina IBRA Bioregion (DEH 2000).

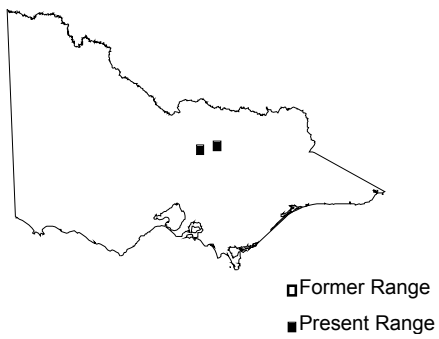

Figure 1. Distribution of the Euroa Guinea-flower in Victoria

Maps showing the detailed distribution of the Euroa Guinea-flower are available from the Department of Sustainability and Environment Flora Information System (DSE-FIS). The FIS is a state-wide repository for flora grid and site distribution data, photographs and text descriptions. This information is available on request in a variety of formats for natural resource management purposes.

Population Information

At least 16 populations of Euroa Guinea-flower are known. Although no accurate count of plants has occurred, the total number is estimated at several thousand plants. Populations occur in the following locations:

State Forest

- Warrenbayne – Strathbogie State Forest

Unreserved Crown Land

- Euroa Arboretum (Euroa Arboretum Inc.)
- Creighton Rail Reserve (Freight Australia)

Roadsides (Shire of Strathbogie)

- Berry's Lane, Longwood
- Hume Fwy, Longwood
- Mansfield – Longwood Rd, Longwood
- Seven Creek Estate Rd, Euroa
- Mansfield Rd, Euroa
- Walter's Rd, Euroa
- Old Hume Hwy, Avenel

Private Land

- Creightons Creek, Longwood – Gobur Rd, Longwood
- Drysdale Rd and Longwood – Pranjip Rd, Longwood
- Mansfield – Longwood Rd, Longwood
- Airfield, Drysdale Rd, Euroa
- Creighton Hills Bushland, Euroa
- Between Old Hume Hwy and Hume Hwy, Euroa

Habitat

The Euroa Guinea-flower is occurs in *Eucalyptus blakelyi*, *Eucalyptus polyanthemos* and *Eucalyptus macrorhyncha* woodland with a tall shrub understorey comprising *Acacia verniciflua*, *Acacia genistifolia* and/or *Acacia implexa*. Smaller shrubs, grasses and ground covers include *Gonocarpus tetragynus*, *Melichrus urceolatus*, *Aristida ramosa* and *Themeda triandra.* Some populations occur in *Allocasuarina luehmannii* dominated woodland that is listed as a Threatened community (Grey Box - Buloke Grassy Woodland) under the Victorian *Flora and Fauna Guarantee* Act 1988. Soils are shallow sandy loams to gravelly clay loams, and sites often show some disturbance. Recovery actions include survey and mapping of habitat that will lead to the identification of habitat critical to the survival of the species.

Threats

The Euroa Guinea-flower 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 for settlement and agriculture. No populations occur in any nature reserve. The largest population occurs on Crown Land in the Warrenbayne – Strathbogie State Forest, where it is threatened from disturbance caused by firewood collection and habitat fragmentation from walking tracks, and potentially from grazing of stock and infection by the pathogen *Phytophthora cinnamomi* (Cinnamon fungus). The majority of the remaining populations are found on roadsides or private land sites. The roadside populations tend to be small, narrow, sometimes fragmented and potentially vulnerable to changes in management. Threats to roadsides include weed invasion, vehicle traffic, soil disturbance such as road grading, rubbish dumping as well as occasional alteration of hydrological regimes as a result of drainage construction. Private land sites are also threatened by weed invasion, soil disturbance, grazing and rubbish dumping. The main threats to the Euroa Guinea-flower are summarised as follows:

Weed invasion: Weed invasion is considered the greatest threat to almost all populations. Commonly reported weed species reported include *Acetosella vulgaris*, *Aira elegantissima*,

Arctotheca calendula, *Asparagus scandens*, *Briza maxima*, *Briza minor*, *Bromus catharticus*, *Ehrharta calycina*, *Ehrharta longiflora*, *Erodium sp.*, *Holcus sp.*, *Hypochoeris radicata*, *Paspalum dilatatum*, *Pennisetum clandestinum* and *Romulea rosea*, with the nationally significant *Rubus fruticosus* species aggregate being present at some sites.

Grazing: Grazing by domestic stock is a threat on some private and one public land site. Rabbit grazing and digging is a threat on some roadside and private land sites. Competition and land degradation by feral Rabbits is listed under the EPBC Act as a Key Threatening Process. However, light grazing may be beneficial in reducing competition from environmental weeds, and this needs to be determined from populations most at risk.

Road works: Some roadside sites and one private land site are currently threatened by soil disturbance such as grading and drainage construction on roadside sites. Erosion has been recorded on a number of roadside sites and will be exacerbated by continued soil disturbance. Drainage construction itself could be a threat as it is likely to alter hydrological processes.

Inappropriate fire regimes: If fire frequency is too low to maintain an open ground cover, the Euroa Guinea-flower may be at risk of being crowded out by competing plants, especially environmental weeds. Investigation into the most beneficial method and timing for biomass reduction is required.

Disturbance: Many populations are threatened by disturbance such as vehicle and machinery movement, soil dumping, some recreational activity, firewood collection and other removal of timber that may cause habitat damage.

Infection by *Phytophthora cinnamomi:* Some *Hibbertia* species are susceptible to the root pathogen *Phytophthora cinnamomi*, although its impact on the Euroa Guinea-flower is not known. Dieback caused by the *Phytophthora cinnamomi* is listed as a Key Threatening Process under the EPBC Act.

Population fragmentation: All populations are now highly fragmented, and many are small and isolated, greatly restricting gene flow and the ability to recolonise after decline or loss.

Recovery Information

Directions for recovery of the Euroa Guinea-flower 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 the Euroa Guinea-flower 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** for recovery of the Euroa Guinea-flower are to:

- Acquire accurate information for conservation status assessments.
- Identify habitat that is critical, common or potential.
- Ensure that all populations and their habitat are protected and managed appropriately.
- Manage threats to populations.
- Identify key biological functions.
- Determine the growth rates and viability of populations.
- Establish populations in cultivation.
- 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. A Threatened Flora Recovery Team, consisting of scientists, land managers and field naturalists will be established to oversee threatened flora recovery in Victoria in general. 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. Regional Recovery Teams will be responsible for preparing work plans and monitoring progress toward recovery.

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		
1.1	Acquire baseline population data by conducting detailed field and desk top surveys including (a) identification of the area and extent of populations; (b) estimates of the number, size and structure of populations and (c) estimation of population change. **Responsibility: DSE**	• Determination or update of conservation status for inclusion on state and national threatened species lists. • Identify target populations.
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** **Supporting organisation: Euroa Environment Group**	• Requirements for completion of essential life history stages, recruitment and dispersal identified at known sites. • Habitat critical to survival of the species is mapped.
2.2	Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference. **Responsibility: DSE** **Supporting organisation: Euroa Environment Group**	• Predictive model for potential habitat developed and tested.
Specific objective 3		
Ensure that all populations and their habitat are legally protected		
3.1	Negotiate a Special Protection Zone for the Warrenbayne - Strathbogie State Forest, erect “Significant Vegetation” signage at roadside sites, develop municipal Vegetation Protection and / or Environmental Significance Overlays to legally protect populations in consultation with DSE. **Responsibility: DSE / Shire of Strathbogie**	• Development of a Special Protection Zone for the Warrenbayne – Strathbogie State Forest. • Signage erected at all roadside sites. • Vegetation Protection and / or Environmental Significance Overlays developed.
3.2	Encourage the development of private land management agreements in consultation with private land owners under the *Victorian Conservation Trust Act* 1972 at all private land sites or where appropriate. Encourage landholders to protect populations. **Responsibility: DSE / DPI / TfN**	• Establish a private land conservation management network for threatened taxa at all sites (management agreements will be dependent on landholder participation). • Extension to encourage landholders to place property covenants

Action	Description	Performance Criteria
Specific objective 4		
Manage threats to populations		
4.1	Identify disturbance regimes to maintain habitat. **Responsibility: DSE** **Supporting organisation: Euroa Environment Group**	• Preparation of management prescriptions for ecological burning and grazing for the Warrenbayne – Strathbogie State Forest and all public land sites.
4.2	Control threats from vehicle and stock access, and from pest plants and animals by preventing access and re-routing tracks at some roadside sites, undertaking negotiations with adjacent landholders, fencing selected sites and using integrated pest plant and animal control methods. **Responsibility: DSE / DPI / Shire of Strathbogie** **Supporting organisations: Euroa Arboretum / Euroa Environment Group**	• Measurable seedling recruitment / at all public land sites. • A measurable reduction in plant mortality at all public land sites.
Specific objective 5		
Identify key biological functions		
5.1	Evaluate current reproductive/regenerative status by determining seed bank status and longevity, fecundity and recruitment levels. **Responsibility: DSE** **Supporting organisation: Euroa Environment Group**	• 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. **Responsibility: DSE**	• Stimuli for recruitment identified at target populations. • 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** **Supporting organisation: Euroa Environment Group**	• Techniques for monitoring developed and implemented. • Annual census data for target populations.
6.2	Collate, analyse and report on census data and compare with management histories. **Responsibility: DSE**	• Population growth rates determined and Population Viability Analysis completed for target populations.

Action	Description	Performance Criteria
Specific objective 7 **Establish populations in cultivation**		
7.1	Investigate and establish a seed bank and determine seed viability. **Responsibility: DSE**	• Long-term storage facility identified. • Seed from target populations in long term storage.
Specific objective 8 **Build community support for conservation**		
8.1	Identify opportunities for community involvement in the conservation of *Hibbertia humifusa* subsp. *erigens*. **Responsibility: DSE/DPI**	• Presentations to community nature conservation groups.

Management Practices

The philosophy of the strategy for recovery is habitat conservation, restoration and management combined with an understanding of the ecological and biological requirements of Euroa Guinea-flower *Hibbertia humifusa* subsp. *erigens*. The emphasis is on using knowledge to better implement *in situ* management techniques that protect populations and promote regeneration and recruitment. 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.

On-ground site management will aim to mitigate threatening processes and thereby ensure against extinction. 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, fire management, fencing, and control of pest animals.

Broadscale protection measures applicable to all populations include legal protection of sites, habitat retention and liaison with land managers including private landholders. In addition, searches of known and potential habitat should continue to better define the distributions and size of populations.

The Recovery Plan also advocates strategies to fill some of the major gaps in our knowledge to date. These include an understanding of the mechanisms underlying recruitment and regeneration. Successful *in situ* population management will be founded on understanding the relationships between Euroa Guinea-flower *Hibbertia humifusa* subsp. *erigens* 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.

In addition to the above, *ex situ* conservation measures in the form of seed storage will be required. Cultivating *ex situ* populations will also aim to increase the amount of seed available for reintroduction to sites.

Community participation in recovery actions will be sought, particularly in regard to recovery team membership and implementation of on-ground works.

To reduce the likelihood of unforseen development activities negatively impacting upon *Hibbertia humifusa* subsp. *erigens*, the threatened flora team should seek relevant information on it's distribution, ecology and/or habitat to relevant land managers. Such increased awareness should allow new populations to be found if they exist, and improve the likelihood of adequate searches being made during environmental impact assessments.

Affected interests

Those organisations and individuals involved in the recovery of Euroa Guinea-flower include DSE, the Shire of Strathbogie, Benalla Arboretum and Freight Australia. A project officer will work closely with the other agencies such as the Euroa Environment Group, Euroa Arboretum, Goulburn Broken Catchment Management Authority, DSE and Trust for Nature to enhance and protect existing populations on both public and private land. Efforts to raise awareness regarding conservation of Euroa Guinea-flower and its habitat will be undertaken during the implementation of this Recovery Plan. Legal protection for some sites through the use of covenants and private land management agreements will be encouraged through extension activities.

Role and interests of indigenous people

Indigenous communities on whose traditional lands Euroa Guinea-flower occurs will be advised, through the relevant DSE Regional Indigenous Facilitator, of the preparation of this Recovery Plan and invited to provide comments if so desired. Indigenous communities will be invited to be involved in the implementation of the Recovery Plan.

Benefits to other species/ecological communities

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 Euroa Guinea-flower, 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 conservation of Euroa Guinea-flower is unlikely to lead to any significant economic losses to a particular industry or individual. Minor issues include a change to management regimes for some roadsides and a restriction of firewood collection from certain parts of the Warrenbayne–Strathbogie State Forest. The Shire of Strathbogie supports the requirement to re-examine roadside management for those sites where the plant still persists. It also is willing to follow recommendations that may result from such an investigation.

Greater protection from direct damage is required for many roadside sites. The prevention of vehicle and stock access will be strongly discouraged or prevented. The closure of access tracks to some populations will be considered, in other cases negotiation with landholders and signage will be required. A project officer will assist the Shire of Strathbogie to identify and map populations to include in geospatial data libraries and roadside management plans in order to prevent future damage. Currently roadside management activities are required to follow guidelines developed by VicRoads.

Acknowledgments

The authors would like to thank the following people for their help in the compilation of this Recovery Plan: Sue Berwick, David Cameron, Oberon Carter, Fiona Coates, James Fitzsimons, Andrew Straker and Gary Backhouse (all DSE); Shannon Lee (Strathbogie Shire); Sally Mann (Euroa Arboretum Inc.); Darren Robertson and Shirley Saywell (Euroa Environment Group); and Ray Thomas.

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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	2	100%	DSE	$15,000	$0	$0	$0	$0	**$15,000.00**
2	**Habitat requirements**									
2.1	Survey known habitat	2	75%	DSE	$20,000	$0	$0	$0	$0	**$20,000.00**
2.2	Identify, survey potential habitat	2	50%	DSE/EEG	$0	$20,000	$0	$0	$0	**$20,000.00**
3	**Legal protection of habitat**									
3.1	Protect public land habitat	1	75%	DSE/Strathbogie S	$0	$10,000	$10,000	$0.00	$0.00	**$20,000**
3.2	Protect private land habitat	1	50%	DSE/DPI/TfN	$0	$10,000	$10,000	$0.00	$0.00	**$20,000**
4	**Manage threats**									
4.1	Identify disturbance regimes	1	75%	DSE	$0	$12,000	$12,000	$0	$0	**$24,000.00**
4.2	Control threats	1	75%	DSE/DPI/EEG Strathbogie Shire Euroa Arboretum	$20,000	$20,000	$10,000	$10,000	$0	**$60,000.00**
5	**Identify key biol. functions**									
5.1	Evaluate reproductive status	2	75%	DSE/EEG	$5,000	$5,000	$0	$0	$0	**$10,000**
5.2	Seed germination	3	50%	DSE	$0.00	$5,000	$5,000	$0	$0	**$10,000**
6	**Growth rates, pop. viability**									
6.1	Conduct censusing	2	100%	DSE/EEG	$15,000	$15,000	$15,000	$15,000	$15,000	**$75,000**
6.2	Collate, analyse and report	2	100%	DSE	$2,000	$2,000	$2,000	$2,000	$10,000	**$18,000**
7	**Establish pops. in cultivation**									
7.1	Establish a seed bank	2	50%	DSE	$4,000	$2,000	$2,000	$2,000	$2,000	**$12,000**
8	**Education, communication**									
8.1	Community extension	1	100%	DSE/DPI	$10,000	$10,000	$10,000	$10,000	$10,000	**$50,000**
	TOTAL				**$91,000**	**$111,000**	**$76,000**	**$39,000**	**$37,000**	**$354,000**