RECOVERY PLAN
for
a sub-alpine herb (*Gentiana baeuerlenii*)

A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth), based on an Action Plan (Action Plan No. 5) prepared for the species under the ACT *Nature Conservation Act 1980* (ACT).

In accordance with section 21 of the *Nature Conservation Act 1980* (ACT), the **sub-alpine herb *(Gentiana baeuerlenii)*** was declared an **endangered** species on 15 April 1996. Section 23 of the Act requires the ACT Conservator of Flora and Fauna to prepare an Action Plan in response to each declaration (ACT Government 1997).

Gentiana baeuerlenii is a declared **endangered** species under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (Part 13, Division 1, Subdivision A). The Act requires the preparation of a Recovery Plan for a listed threatened species (Part 13, Division 5, Subdivision A).

Preamble

The *Nature Conservation Act 1980* (ACT) establishes the ACT Flora and Fauna Committee with responsibilities for assessing the conservation status of ACT flora and fauna and the ecological significance of potentially threatening processes. Flora and Fauna Committee assessments are made on nature conservation grounds only and are guided by specified criteria as set out in its publication *Threatened Species and Communities in the ACT*, July 1995. In making its assessment of *Gentiana baeuerlenii*, the Committee concluded that it satisfied the following criteria:

Criteria Satisfied	
1.1	The species is known or suspected to occur in the ACT region and is already recognised as endangered in an authoritative international or national listing.
1.2	The species is observed, estimated, inferred or suspected to be at risk of premature extinction in the ACT region in the medium-term future, as demonstrated by: 1.2.6 Extremely small population.

Species Distribution and Abundance

DESCRIPTION

Gentiana baeuerlenii is a small annual herb, standing 2–4 cm high. The flowers are borne singly at the ends of branching stems. Each is bell shaped, greenish outside and blue-white inside with five petals (Figure 1).

DISTRIBUTION and ABUNDANCE

The species is currently known from one location, in the Orroral Valley, Namadgi National Park, ACT (Figure 2). It was rediscovered by chance by Mr Laurie Adams of the Australian National Herbarium. It was believed to be extinct, having previously been described from the Quidong area near Bombala NSW, from specimens found there in 1887.

When found in 1991, the site contained 20 plants. It was resurveyed in 1994 (11 plants), 1997 (one plant), and 1998 (four plants). Annual surveys since 1998 have failed to locate any plants. Other species of rare gentians e.g. *Gentiana wingecarribiensis* have been observed to disappear from sites for several years before reappearing (Young 2001).

ACT DEPARTMENT OF URBAN SERVICES
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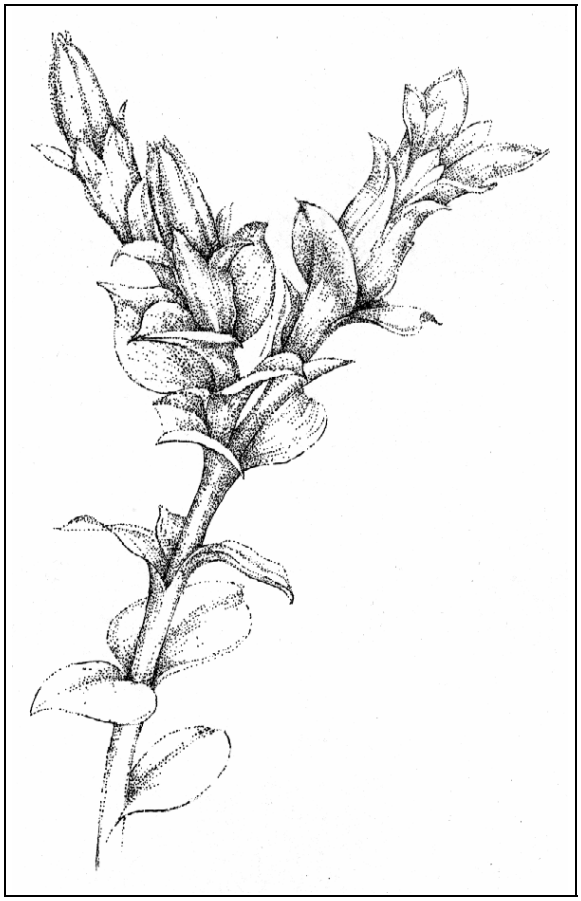

Figure 1: *Gentiana baeuerlenii*.

As it is not known under what conditions germination of the species occurs, the site will continue to be monitored for the presence of plants.

HABITAT

The species occurs in the inter-tussock space of moist tussock grassland and sedgeland (*Poa labillardieri* and *Carex gaudichaudii*) associated with ground water, possibly a spring-fed area. The area is probably secondary grassland or a relict grassland opening once surrounded by open woodland. The site is on the lower slopes of a broad valley, above a river and lower valley floor.

The orchid, *Spiranthes sinensis*, the herb, *Ranunculus pimpinellifolius* and the grass *Hemarthria uncinata* were found in association with *Gentiana baeuerlenii* and this group of more widespread species may be indicators for other potential sites.

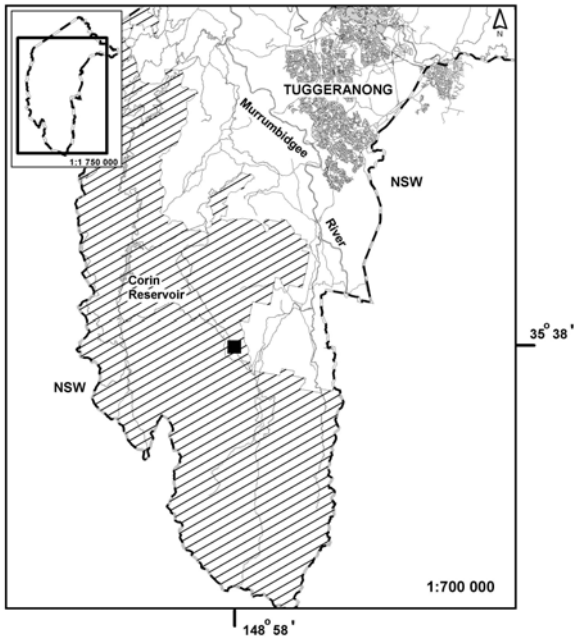

Figure 2: Map showing location (■) of *Gentiana baeuerlenii* within Namadgi National Park, ACT.

Conservation Status

G. baeuerlenii is recognised as a threatened species in the following jurisdictions:

Commonwealth

Endangered: *Environment Protection and Biodiversity Conservation Act 1999* (Part 13, Division 1, Subdivision A).

Australian Capital Territory

Endangered: Section 21 of the *Nature Conservation Act 1980,* Determination No. 89 of 1997 (formerly Determination No. 29 of 1996).

Special Protection Status Species: Schedule 6 of the *Nature Conservation Act 1980,* Determination No. 77 of 1996.

New South Wales

Endangered: Part 1, Schedule 1 of the *Threatened Species Conservation Act 1995.*

Threats

It is very likely that the species was once widespread but has become restricted through activities associated with land clearing and grazing, particularly in times of drought as the

wet grassy areas in which it is found would have remained palatable well into the driest seasons. Although the species is likely to be unpalatable to stock because it contains certain chemicals known to render plants distasteful, it could have been grazed inadvertently, along with other herbage species. Its habitat may have been trampled, especially when adjoining areas dried out.

Since the original discovery of 20 plants in 1991, the population at the site has continued to decline. No plants have been located in annual surveys since 1998.

The main threats to survival of this population and therefore the species are likely to be: (a) unintended consequences of actions associated with park management in the local area; and (b) damage caused to the area by feral pigs. It is not clear whether grazing animals such as kangaroos may also pose a threat to survival of remaining plants, or whether such grazing may benefit the species by keeping competing grass tussocks and other plant growth short and open.

Conservation Objectives

The objectives of the Recovery Plan are to:

1. Preserve the existing ACT population of *Gentiana baeuerlenii* as it is the only known population of the species.

2. Conserve and manage the habitat of *Gentiana baeuerlenii* so that natural ecological processes continue to operate.

Issues and options for the genetic conservation of *Gentiana baeuerlenii* have been examined by Young (2001). Young (pp. 26–7) concludes that 'the paucity of information on the genetic diversity and structure of *G. baeuerlenii* and the absence of even basic data on breeding system and ecology make development of genetic management strategies for long term conservation difficult. Given this, the key to genetic conservation of this species is to use whatever sexual reproductive events may occur at the current site to generate as much genetic variation as possible, and then to transplant seed-bearing plants to new localities to establish additional populations. Given how little is known about germination requirements for the species, this strategy is to be preferred over attempts at *ex-situ* conservation'.

Conservation and Management Actions

SURVEY/MONITORING/RESEARCH

As it is very unlikely that the species exists anywhere else in the ACT, surveys beyond its immediate location are not economically justified. However, awareness of the species by field workers and others is important for potentially locating other sites. Contact will be maintained with the NSW National Parks and Wildlife Service regarding the species.

1. Environment ACT (Wildlife Research and Monitoring (WR&M)) will advise field workers, interested naturalists and conservation groups of the presence of the species to increase the potential that any other existing populations are identified;
2. Environment ACT (WR&M) will monitor the site of the known population annually.

SPECIFIC MANAGEMENT ACTIONS

Management of the *G. baeuerlenii* site will be directed to maintaining site conditions and monitoring for the re-emergence of the plants. If the species re-emerges, the recovery recommendations outlined by Young (2001) will be evaluated and appropriate actions taken, depending, for example, upon the extent of regeneration. The management actions being undertaken are unlikely to have any adverse impact on other native species or ecological communities. The bushfires that burnt most of Namadgi National Park in 2003 had minimal effect on the site (Carey *et al.* 2003).

1. The site will kept open if necessary, by artificially trimming the tussock grass during the non-flowering season. This will be done by careful use of a 'whipper-snipper' and removing cut grass by raking to avoid continuous build up of decaying matter that smothers soil and small plants. Any spread of tea-tree will be monitored and appropriately controlled. (Annual)
2. Herbicide will not be used anywhere in the vicinity of the site, where there is any possibility of it adversely affecting the species. (Ongoing)
3. Activities, such as track development, which could alter drainage, will not be allowed near the site. (Ongoing)
4. Feral pig control in the area will be maintained. (Annual, ongoing)

5. The site will be protected from uncontrolled fire. (Ongoing)
6. If the species re-emerges, the recovery actions outlined by Young (2001) will be evaluated and appropriate actions undertaken. (No time scale definable)
7. If the species re-emerges, the potential benefit of research into its fire ecology will be evaluated. (No time scale definable)

PERFORMANCE CRITERIA

1. The site of the population of *Gentiana baeuerlenii* is monitored annually. (Annual)
2. Existing habitat conditions are maintained by site management (control of tussock grasses and tea-tree) and control or avoidance of potential threats (herbicide use, feral pigs, track development or other works, uncontrolled fire). (Annual/ongoing)
3. If the species re-emerges, the recovery actions outlined by Young (2001) are evaluated and appropriate actions undertaken. (No time scale definable).

EVALUATION OF PERFORMANCE

Environment ACT has primary responsibility for implementation of this Recovery Plan and will review progress of the Plan after three years, using the above performance criteria. The review will be reported to the ACT Flora and Fauna Committee providing the opportunity to assess progress and establish revised directions and priorities for future conservation action.

Protection

The location where the species was found is in Namadgi National Park. Visitor access to the area is not encouraged and there will be no track development near the site. The site has been fenced to protect the area from damage by feral pigs.

Socio-economic Issues

There are no foreseen activities or land uses that are likely to conflict with achievement of the conservation objective. The one known location of the species is well within Namadgi National Park, and there are no potential adverse social or economic impacts that may result from the implementation of the plan.

The conservation and management of the *G. baeuerlenii* is the responsibility of Environment ACT. Specific conservation measures, such as grass management, will be undertaken within funding provided to Environment ACT (ACT Parks and Conservation Service) for the management of Namadgi National Park.

Legislative Provisions

The following legislation is relevant to conservation of flora and fauna in the ACT:

***Nature Conservation Act 1980* (ACT)**

Parts 4 and 5 of the Nature Conservation Act protect native plants and animals. Section 21 of the Act authorises the declaration of vulnerable or endangered species and a threatening process.

Native plants and animals may be declared as *protected* (s. 17) or *having special protection status* (s. 16) in recognition of a particular conservation concern that warrants additional protection.

***Land (Planning and Environment) Act 1991* (ACT)**

The Land (Planning and Environment) Act is the primary authority for land planning and administration in the ACT. It establishes the Territory Plan and several of its provisions are relevant to the protection of flora and fauna. These include the reservation of Public Land, the establishment of a Heritage Places Register, and the undertaking of environmental assessments and inquiries.

***Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)**

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary Commonwealth legislation for environment protection. Under the EPBC Act, an action will require approval from the (Commonwealth) Environment Minister if the action has, will have, or is likely to have a significant impact on a matter of national environmental significance. Nationally listed threatened species and ecological communities are matters of national environmental significance.

Consultation and Community Participation

The original Action Plan was released as a draft in October 1997 for public comment (minimum 21 days). Availability of the draft was advertised in *The Canberra Times*. Following analysis of the comments, the final plan was released in January 1998.

As the one known location of the species is well within Namadgi National Park, little direct community involvement in the management of the species is likely.

Role and Interests of Indigenous People

Local indigenous communities are involved in the management of Namadgi National Park. The Australian Capital Territory Government entered into an agreement on 30 April 2001 with members of the Ngunnawal Aboriginal community that provides for joint management of the park by the parties to the agreement. An Interim Namadgi Advisory Board consists of five Aboriginal and five non-Aboriginal members. The board provides advice to the ACT Conservator of Flora and Fauna on park planning and management matters.

Implementation

Environment ACT (Wildlife Research and Monitoring) will have responsibility for coordinating implementation of this Recovery Plan. In Namadgi National Park, the conservation and management of the species is also the responsibility of Environment ACT (ACT Parks and Conservation Service).

Duration of Recovery Plan and Estimated Costs

The Recovery plan is for a period of three years. Some of the actions specified in the plan are part of wider ACT land management e.g. feral pig control is undertaken as part of the *ACT Vertebrate Pest Management Strategy* (ACT Government 2002). Specific control measures may be needed at the *Gentiana baeuerlenii* site, which has been fenced. The estimated costs of implementing actions identified in this Recovery Plan are shown in Table 1.

Table1 Estimated costs of implementing actions identified in this Recovery Plan

ACTION	EXPENSES	COST	RESPONSIBILITY	TIME FRAME
Survey/monitoring/ research		(Total for three years)		
1. Awareness of the species	Salary (1 day p.a. for 3 yrs)	$1050	Environment ACT (WRM, ACT P&CS)	Yr 1–3
2. Annual monitoring	Salary (2 days p.a. for 3 yrs)	$2100	Environment ACT (WRM, ACT P&CS)	Yr 1–3
Specific management actions				
1–5. Control of vegetation and other potential threats, fence maintenance	Salary (field staff) (2 days p.a. for 3 yrs), equipment, vehicle	$1950	Environment ACT (ACT P&CS)	Yr 1–3
6. If plants re-emerge, evaluation and undertaking of recovery actions	To be determined	Tbd	Environment ACT (WRM) and consultant	No time scale definable
7. If plants re-emerge, evaluation of potential benefit of research into fire ecology	To be determined	Tbd	Environment ACT (WRM) and consultant	No time scale definable
TOTAL		$5100		3 years

Salary based on ACT SOG 'C' ($350 per day) (Survey/monitoring/research). Field staff cost based on GSO 5 ($175 per day) (Specific management actions).

Acknowledgements

The illustration of the species (Figure 1) was prepared for Environment ACT by John Pratt.

References

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ACT Government 2002 *ACT Vertebrate Pest Management Strategy*. Environment ACT, Canberra.

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Further Reading

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