

This Conservation Advice was approved by the Minister / Delegate of the Minister on:
1/10/2008

Approved Conservation Advice
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

**Approved Conservation Advice for
Boronia revoluta (Ironcap Boronia)**

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Boronia revoluta, Family Rutaceae, also known as Ironcap Boronia, is an erect shrub varying in height between 0.5–1.5 m, with sparsely to densely hairy branches (Wilson, 1971; Leigh et al., 1984; Hopper et al., 1990; Duretto, 1999). The leaves are stalked, and divided into three distinctive, sessile, almost cylindrical leaflets each 7-8 mm long and to 1 mm wide, smooth on the upper surface and hairy below (Brown et al., 1998; Duretto, 1999). The flowers are hairy, pale to dark pink, with petals 6-7 mm long and 3-4 mm wide (Wilson, 1971; Leigh et al., 1984; Hopper et al., 1990; Duretto, 1999). Fruit dimensions are not known (see Duretto, 1999).

Conservation Status

Ironcap Boronia is listed as **endangered**. This species is eligible for listing as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as, prior to the commencement of the EPBC Act, it was listed as endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). The species is also listed as Rare under the *Wildlife Conservation Act 1950* (Western Australia).

Distribution and Habitat

Ironcap Boronia occurs over a range of about 40 km in the South Ironcap–Hatter Hill area, north-east of Lake King, south-west Western Australia (Wilson, 1971; Leigh et al., 1984; Hopper et al., 1990; Brown et al., 1998; CPBR, 2007). It has been collected at only three locations: Hatter’s Hill, where there are approximately 60 plants; South Ironcap, where there are 400–500 plants; and Middle Ironcap, where the species has not been found since 1976 (Buehrig, 1997; Duretto, 1999). This species occurs within the Avon (Western Australia) Natural Resource Management Region.

Ironcap Boronia occurs in well drained, sandy loam and laterite on top of ridges and small hills, where it grows in low eucalypt woodland, semi-arid mallee scrub, or heath with occasional emergent eucalypt species. It also grows in cracks in sheets of Ironstone (Wilson, 1971; Leigh et al., 1984; Hopper et al., 1990; Brown et al., 1998; Duretto, 1999). Associated genera include *Banksia*, *Allocasuarina*, *Calothamnus*, *Drummondita*, *Gastrolobium*, and *Dryandra*.

The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological communities.

Threats

The main identified threats to Ironcap Boronia include mineral exploration and mining, and too frequent fire (Brown et al., 1998; Duretto, 1999). The establishment of grid lines has disturbed some plants at the third locality (Middle Ironcap) and further mineral exploration may endanger the remainder of this population (Brown et al., 1998).

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The main potential threats to the species include increasing fragmentation and loss of habitat; salinity; changes in hydrology conditions; and exotic weeds (ANRA, 2007).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- Identify intensity and interval of fire that do not adversely affect this species.
- More precisely assess fire ecology, population size, distribution, ecological requirements, and the relative impacts of threatening processes.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences/remnants.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment.

Regional and Local Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of Ironcap Boronia.

Habitat Loss, Disturbance and Modification

- Monitor known populations to identify key threats.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Identify populations of high conservation priority.
- Ensure exploration and mining activities, and road widening and maintenance activities (or other infrastructure or development activities) involving substrate or vegetation disturbance in areas where Ironcap Boronia occurs do not adversely impact on known populations.
- Manage any changes to hydrology that may result in changes to the water table levels, increased run-off, or salinity levels.
- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land.
- Consider marking the South Ironcap population near main access track and prohibiting new seismic lines in area (Durell & Buehrig, 2001).
- Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure.

Invasive Weeds

- Develop and implement a management plan for the control of exotic weeds in the local region.
- Identify and remove weeds in the local area, which could become a threat to Ironcap Boronia, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to the species, using appropriate methods.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on Ironcap Boronia.

Fire

- Develop and implement a suitable fire management strategy for Ironcap Boronia.
- Provide maps of known occurrences to local and state Rural Fire Services and land managers and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.

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Conservation Information

- Raise awareness of Ironcap Boronia within the local community, particularly among consent authorities, mineral exploration and mining companies.

Enable Recovery of Additional Sites and/or Populations

- Undertake appropriate seed collection and storage.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

This list does not necessarily encompass all actions that may be of benefit to Ironcap Boronia, but highlights those that are considered to be of highest priority at the time of preparing the conservation advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

- Declared Rare and Poorly Known Flora in the Esperance District (Craig & Coates 2001),
- Declared Rare and Poorly Known Flora in the Narrogin District (Durell & Buehrig, 2001), and
- Ironcap Boronia (*Boronia revoluta*) Recovery Plan 1997–2000 (Buehrig 1997).

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

Information Sources:

Australian Natural Resource Atlas (ANRA) 2007, *Biodiversity Assessment – Mallee*, Department of the Environment, Water, Heritage and the Arts (DEWHA), viewed 6 May 2008, <<http://www.anra.gov.au/topics/vegetation/assessment/wa/ibra-mal-species-threats.html>>.

Brown, A, Thomson-Dans, C & Marchant, N (Eds.) 1998, *Western Australia's Threatened Flora*, CALM, Como.

Buehrig, RM 1997, *Ironcap Boronia (Boronia revoluta) Recovery Plan 1997–2000*, Department of Conservation and Land Management (CALM), WA.

Centre for Plant Biodiversity Research (CPBR) 2007, *Australia's Virtual Herbarium*, viewed 11 June 2008, <<http://www.anbg.gov.au/avh/>>.

Craig, GF & Coates, DJ 2001, *Declared Rare and Poorly Known Flora in the Esperance District*, Western Australian Wildlife Management Program No. 21, Department of Conservation and Land Management (CALM) WA, viewed 6 May 2008, <http://www.naturebase.net/pdf/nature/flora/flora_mgt_plans/esperance_2000/esperance_drf.pdf>.

Durell, GS & Buehrig, RM 2001, *Declared Rare and Poorly Known Flora in the Narrogin District*, Western Australian Wildlife Management Program No. 30, Department of Conservation and Land Management (CALM) WA, viewed 6 May 2008, <http://www.naturebase.net/pdf/nature/flora/flora_mgt_plans/narrogin_2000/narrogin_wmp30.pdf>.

Duretto, MF 1999, 'Systematics of *Boronia* section *Valvatae sensu lato* (Rutaceae)', *Muelleria*, vol. 12, no. 1.

Hopper, SD, van Leeuwen, S, Brown, AP, & Patrick, SJ 1990, *Western Australia's Endangered Flora and other plants under consideration for declaration*, Department of Conservation and Land Management (CALM), Perth.

Leigh, J, Boden, R & Briggs, J 1984, *Extinct and Endangered Plants of Australia*, Macmillan, Melbourne.

Vallee, L, Hogbin, T, Monks, L, Makinson, B, Matthes, M & Rossetto, M 2004, *Guidelines for the Translocation of Threatened Plants in Australia* (2nd ed.), Australian Network for Plant Conservation, Canberra.

Wilson, PG 1971, 'Taxonomic notes on the family Rutaceae, principally of Western Australia', *Nuytsia*, vol 1, no. 2, pp. 197–207.