

A statement for the purposes of approved conservation advice
(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

Approved Conservation Advice for
***Gentiana wingecarribiensis* (Wingecarribee Gentian)**

This Conservation Advice has been developed based on the best available information at the time this conservation advice was approved.

Description

Gentiana wingecarribiensis, Family Gentianaceae, also known as Wingecarribee Gentian, is an erect glabrous annual herb 4–9 cm high or to 11 cm high in flower, with reddish, unbranched or sparsely-branched stems (DECC, 2005). The corolla (petals) is greenish-ribbed outside and purplish-blue or sky blue inside (Adams & Williams, 1988; Harden, 1992; Kodela et al., 1994; Adams, 1996). The species flowers chiefly from October until December (Kodela et al., 1994).

Conservation Status

Wingecarribee Gentian 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 endangered under the *Threatened Species Conservation Act 1995* (NSW).

Distribution and Habitat

Wingecarribee Gentian is endemic to NSW and is known from only two localities—Wingecarribee Swamp near Robertson on the central tablelands and Hanging Rock Swamp (Penrose State Forest area), 40 km south-west of Wingecarribee Swamp (Harden, 1992; Adams, 1996; NSW NPWS, 1999). At Wingecarribee Swamp there are two to three discrete patches of the species on the southern side of the swamp, with estimated populations of 36, 6 and 50 plants (Kodela et al., 1994; NSW NPWS, 1999). At Hanging Rock, four discrete patches have been found (Matthes et al., 1996). All the recorded sites of this species at Wingecarribee Swamp appear to be either on freehold land or on the border of freehold land and the swamp, which was acquired by the Sydney Water Board in 1993.

Wingecarribee Gentian occurs within the Hawkesbury–Nepean (NSW) Natural Resource Management Region.

Wingecarribee Gentian occurs in herbland with emergent shrubs, sometimes on peat deposits (Cohn, 1993; Kodela et al., 1994) on damp or occasionally saturated soils (Kodela et al., 1994). Associated species include *Leptospermum juniperinum* and *L. obovatum* scattered within damp grassland of *Poa labillardieri*, *Isachne globosa* and *Tetrarrhena turfosa* (NSW NPWS, 1999). Swamps supporting a dense cover of sedgeland or reedland and/or too high water levels are apparently unsuitable for Wingecarribee Gentian (Kodela et al., 1994).

The distribution of this species overlaps with the “Temperate Highland Peat Swamps on Sandstone” EPBC Act-listed threatened ecological community.

Threats

The main identified threats to Wingecarribee Gentian are grazing and pasture improvement; cattle trampling; altered hydrology of swamps; competition with other species including native shrubby species and weeds (Kodela et al., 1994; DECC, 2005) and inappropriate fire regimes (NSW NPWS, 1999).

A fire shortly before Wingecarribee Gentian's growing season or subsequent to completion of fruiting could be beneficial in reducing competition with other species, however if the fire coincides with the flowering and fruiting stages the plants are likely to be killed (Kodela et al., 1994).

Research Priorities

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

- Investigate the ecology of the species (DECC, 2005),
- Further research into the propagation of the species (DECC, 2005), and
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences.

Regional Priority Actions

The following regional priority recovery and threat abatement actions can be done to support the recovery of Wingecarribee Gentian.

Habitat Loss, Disturbance and Modification

- Identify populations of high conservation priority.
- Manage threats to areas of vegetation that contain populations/occurrences of Wingecarribee Gentian.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on Wingecarribee Gentian.
- Manage any changes to hydrology that may result in changes to the water table levels, increased run-off, sedimentation or pollution.
- Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure.
- Investigate effective types of habitat management to assist species survival (DECC, 2005).

Fire

- Develop and implement a suitable fire management strategy for Wingecarribee Gentian.
- Identify appropriate intensity and interval of fire to promote seed germination.
- Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.

Conservation Information

- Raise awareness of Wingecarribee Gentian within the local community.

Enable Recovery of Additional Sites and/or Populations

- Undertake appropriate seed collection and storage.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement appropriate national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.
- If the species can be successfully propagated, re-establish populations in suitable parts of Wingecarribee Swamp and Hanging Rock Swamp (DECC, 2005), following national translocation protocols (Vallee et al., 2004).

Local Priority Actions

The following local priority recovery and threat abatement actions can be done to support the recovery of Wingecarribee Gentian.

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.
- Control access routes to suitably constrain public access to known sites on public land.
- Minimise adverse impacts from land use at or near known sites.
- Regular slashing of known sites on the swamp margins should be undertaken to control competition from other vegetation (DECC, 2005).
- Protect populations through the development of conservation agreements and/or covenants.

Invasive Weeds

- Continue woody weed control in Wingecarribee Swamp (DECC, 2005).
- Control exotic pasture grass invasion of species habitat on the margins of Wingecarribee Swamp (DECC, 2005) or invasion by other weed species.
- Investigate options to re-establish the water table in Wingecarribee Swamp to assist in control of weed invasion (DECC, 2005).
- Identify and remove weeds in the Hanging Rock Swamp area, which could become a threat to Wingecarribee Gentian, using appropriate methods.
- Manage Hanging Rock Swamp to prevent the introduction of invasive weeds, which could become a threat to Wingecarribee Gentian, using appropriate methods.

Trampling, Browsing or Grazing

- Prevent trampling, browsing and grazing at known sites through exclusion fencing or other barriers.

Fire

- Implement an appropriate fire management regime for local populations.

This list does not necessarily encompass all actions that may be of benefit to Wingecarribee Gentian, 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

- Conservation Research Statement and Recovery Plans for *Gentiana wingecarribiensis* (Cohn, 1993),
- *Gentiana wingecarribiensis* Species Recovery Plan (Matthes, Nash & Robertson, 1996),
- Wingecarribee Swamp and Special Area Plan of Management 2007 (Sydney Catchment Authority 2007a), and
- Special Areas Strategic Plan of Management 2007 (Sydney Catchment Authority 2007b).

Information Sources:

Adams, LG 1996, 'Gentianaceae', *Flora of Australia*, vol. 28, pp. 72-104.

Adams, LG & Williams, JB 1988, '*Gentiana* sect. *Chondrophyllae* (Gentianaceae) in Australia', *Telopea*, vol. 3, no. 2, pp. 167-176.

Cohn, J 1993, *Conservation status statement and recovery plans for Gentiana wingecarribiensis*, NSW NPWS, Hurstville.

Department of Environment and Climate Change (DECC) 2005, *Threatened species profile database, Wingecarribee Gentian - profile*, viewed 11 March 2008, <<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10347>>.

Harden, GJ (ed) 1992, *Flora of New South Wales, Volume Three*, University of NSW Press, Kensington, NSW.

Kodala, PG, James, TA & Hind, PD 1994, 'Observations on the ecology and conservation status of the rare herb *Gentiana wingecarribiensis*', *Cunninghamia*, vol. 3, no. 3, pp. 535-541.

Matthes, M, Nash, S & Robertson, G 1996, *Gentiana wingecarribiensis Species recovery plan, annual report*, NSW NPWS, Hurstville.

New South Wales National Parks & Wildlife Service (NSW NPWS) 1999, *Threatened species information: Gentiana wingecarribiensis*, viewed 11 March 2008, <http://contacts.environment.nsw.gov.au/PDFs/tsprofile_gentiana_wingecarribiensis.pdf>.

Sydney Catchment Authority 2007a, *Wingecarribee Swamp and Special Area Plan of Management 2007*, Sydney Catchment Authority and Department of Environment and Conservation, accessed 11 March 2008, <<http://www.sca.nsw.gov.au/publications/by-subject>>.

Sydney Catchment Authority 2007b, *Special Areas Strategic Plan of Management 2007 (SASPoM)*, Sydney Catchment Authority (SCA) and Department of Environment and Conservation (DEC), viewed 11 March 2008, <<http://www.sca.nsw.gov.au/publications/by-subject>>.

Vallee, L, Hogbin, T, Monks, L, Makinson, B, Matthes, M & Rossetto, M 2004, *Guidelines for the Translocation of Threatened Plants in Australia - Second Edition*, Australian Network for Plant Conservation, Canberra.