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

Approved Conservation Advice for *Tetratheca juncea*

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

Tetratheca juncea, Family Tremandraceae, also known as Black-eyed Susan, is a low growing shrub with clumps of stems to 1 m or more in length. Stems are hairless, with 2–3 wings. Leaves are usually reduced to narrow-triangular scales to 3 mm long, otherwise to 20 mm long and about 5 mm wide, hairless, and lacking a stalk. The flowers, which are bisexual, odourless and nectarless, are on stalks, 5–10 mm long, with four petals, 7–11 mm long, dark pink or rarely white (Thompson, 1976; Gardner & Murray, 1992). High levels of fruit-set may require the assistance of buzz-pollinators such as native bees (Gross et al., 2003).

Conservation Status

Tetratheca juncea is listed as **vulnerable**. This species is eligible for listing as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as, in 2005, the Minister considered the Threatened Species Scientific Committee's (TSSC) advice under section 189 of the EPBC Act and amended the list under section 184 to include *Tetratheca juncea*. The TSSC determined that this species met criteria 2 and 3 of their eligibility criteria (TSSC, 2005). The species is also listed as vulnerable under the *Threatened Species Conservation Act 1995* (NSW).

Distribution and Habitat

Tetratheca juncea occurs in NSW, chiefly in coastal districts from Bulahdelah to Lake Macquarie (Gardner & Murray, 1992). Extant populations occur in the areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes, and Cessnock (DECC, 2005a), with a north-south range of about 125 km and an east-west range of approximately 50 km (NSW NPWS, 2000a). This species has also been recorded from the Sydney region, but these populations are possibly now extinct (Gardner & Murray, 1992).

Tetratheca juncea is conserved within Awabakal Nature Reserve, Glenrock State Conservation Area (SCA), Munmorah SCA and Lake Macquarie SCA (Briggs & Leigh, 1996; NSW NPWS, 2000b). Surveys in the late 1990s found an estimated 8000 plant clumps in 241 sites over the range of the species; other surveys may not take into account the rhizomatous nature of this species (Payne, 2000; NSW NPWS, 2000b).

Tetratheca juncea usually grows in nutrient poor soils on ridges, in open forest and woodland with a mixed shrub understorey and grassy groundcover, but has also been recorded in heath and moist forest (Gardner & Murray, 1992; DECC, 2005a). Associated species include *Angophora costata*, *Corymbia gummifera*, *Eucalyptus haemastoma*, and *E. capitellata*. This species occurs within the Hunter–Central Rivers (NSW) Natural Resource Management Region.

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

Threats

The main identified threats to *Tetratheca juncea* are habitat loss due to clearing for urban development; inappropriate fire regimes; weed invasion; stormwater runoff; and dieback associated with the plant pathogen *Phytophthora cinnamomi* (NSW Scientific Committee, 2003; DECC, 2005a; TSSC, 2005). This species should be protected from too-frequent fire (DECC, 2005a).

The main potential threat is poor recruitment as fresh seed viability is high but fire may be required for germination and seeds are not long-lived in the soil (Bellairs et al., 2006).

Research Priorities

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

- More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Investigate population dynamics and genetic diversity within and between populations of *T. juncea* (DECC, 2005b).
- Investigate optimal fire interval and intensity for *T. juncea*.
- Undertake additional research on the reproductive biology of *T. juncea* (DECC, 2005b), including the poor recruitment.
- Undertake a review of the extent and distribution of *T. juncea* as well as the type of land tenures on which it occurs (DECC, 2005b).
- Prepare guidelines for survey methodology to promote consistency of approach to assessments (DECC, 2005b).

Regional and Local Priority Actions

The following regional and local priority recovery and threat abatement actions can be done to support the recovery of *T. juncea*.

Habitat Loss, Disturbance and Modification

- Seek to increase the level of legislative protection for the species on private land through appropriate land-use planning mechanisms and negotiating conservation agreements, particularly for large populations and those at the limits of distribution (DECC, 2005b).
- Monitor known populations to identify key threats.
- Identify populations of high conservation priority.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Ensure stormwater infrastructure and associated development involving substrate or vegetation disturbance do not adversely impact on *T. juncea* and manage any associated hydrological change, such as increased runoff.

Invasive Weeds

- Undertake weed control activities as appropriate using approved bush regeneration methods at priority sites on private and public land (DECC, 2005b).
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on *T. juncea*.

Fire

- Develop and implement a suitable fire management strategy for *T. juncea*.
- 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.

Diseases, Fungi and Parasites

- Implement suitable hygiene protocols to protect known sites from further outbreaks of dieback caused by *Phytophthora cinnamomi* (EA, 2001).

Conservation Information

- Raise awareness of *T. juncea* within the local community, particularly with state conservation area users.

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 *T. juncea*, 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

- Glenrock State Conservation Area – Plan of Management (NSW NPWS, 1997),
- Lake Macquarie State Conservation Area – Fire Management Strategy (NSW NPWS, 2006),
- Munmorah State Conservation Area and Bird Island Nature Reserve – Plan of Management (NSW NPWS, 2005),
- NSW Priority Actions Statement for Ecological Consequences of High Frequency Fires (DECC, 2005c), and
- Threat Abatement Plan for Dieback caused by the Root-root Fungus *Phytophthora cinnamomi* (EA, 2001).

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

Information Sources:

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