

# Action Statement

Flora and Fauna Guarantee Act 1988

No. 233

## Dwarf Gnephosis *Trichanthodium baracchianum*

*This Action Statement is based on a draft Recovery Plan prepared for this species by DSE under contract to the Australian Government Department of the Environment, Water, Heritage and the Arts.*

### Description

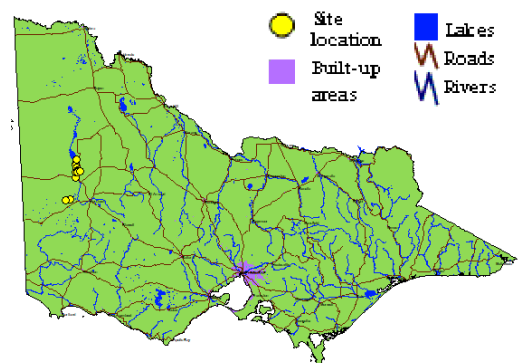
Dwarf Gnephosis (*Trichanthodium baracchianum*, formerly *Gnephosis baracchianum*) is a small annual herb, 10–100 mm in height, with semi-succulent, linear or narrowly elliptic leaves, 4.5–12 mm long and 0.5–2.2 mm wide (Short 1990). The leaf surfaces are generally glabrous or occasionally woolly. There is a short mucro (spine) at the tip of the leaf, and the petiole also has woolly hairs. The dense inflorescence compound is 4–7 mm in length and 5–11 mm wide, and consists of 8–50 capitula. The involucre is approximately half the length of the capitula. There is one floret per capitulum with 4–7 subtending bracts. The cypselas are 1.3 – 1.5 mm in length, and the pappus forms a serrated ring 0.3–0.4 mm in length. Dwarf Gnephosis flowers from September to November (Walsh & Entwisle 1999).



Dwarf Yellow Heads (Photo: Carter)

### Distribution

*T. baracchianum* is a highly restricted species endemic to Victoria in the Antwerp to Jeparit region and near the town of Mitre (Walsh & Entwisle 1999). All currently known populations occur within the Lowan Salt Lake valley (Blackburn *et al.* 1967). Much of the floor of this valley contains salt lakes or swamps, including Lake Hindmarsh in the north (Blackburn *et al.* 1967). Habitat for *T. baracchianum* is located on the periphery of saline flats in samphire communities.



Distribution in Victoria  
(Flora Information System DSE 2007)

### Abundance

There are estimated to be approximately 4000 plants remaining in six wild populations.

### Important populations

Important populations necessary to the long term survival and recovery of occur in the following locations:

<i>Population</i>	<i>Estimated size</i>
Mitre Lake Flora and Fauna Reserve	To be assessed
Olivers Lake Flora and Fauna Reserve	To be assessed
Lake Wich-I-pei	>1000 plants in 1983 in VROTPop database
Banu-Bonyit Channel	>1000 plants estimated in 1983 in VROTPop database
West Road	>1000 plants estimated in 1983 in VROTPop database
Tullyvea East Channel	>1000 plants estimated in 1983 in VROTPop database

### Habitat

Populations of *T. baracchianum* occur in saline flats and depressions on the fringes of salt lakes. This taxon is often found on disturbed ground with Glassworts (*Sarcocornia* spp.), and in the higher parts dominated by Blackseed Glasswort (*Halosarcia pergranulata*) and/or Bluish Glasswort (*H. pruinosa*) (Short 1990). Elevated areas are often anthropogenic in origin, such as the edges of dams. It is suspected that the soil in those areas is slightly less saline than in surrounding, lower lying areas. Land-use changes in the Wimmera area in recent years, including irrigation and the removal of deep-rooted perennial vegetation, are known to have led to rising saline ground waters, and are likely to have severely marginalised the availability of suitable habitat for *T. baracchianum*.

Scarlett reports (VROTPop database) that this species forms very dense patches on raised areas of 'puffy' gypseous clay around the bases of *Halosarcia* bushes. However, the authors found *T. baracchianum* was virtually absent from areas of 'puffy' gypseous clay, and was instead abundant on higher ground between *Halosarcia* bushes in association with Spear-grasses (*Austrostipa* spp.) and Barley (*Hordeum* spp.). Where these grasses formed dense patches, *T. baracchianum* was much less abundant. The specific soil, light and nutrient requirements of this species require further investigation to determine its habitat tolerances.

### Life history and ecology

Short (1990) determined lower rates of cross-pollination in *T. baracchianum* than in other *Trichanthodium* species. "The reduction in pollen production is reflected in smaller anther size and the smaller, barely protruding anther appendages are also indicative of a greater degree of inbreeding in this species" (Short 1990, p215).

## Conservation status

### National conservation status

Dwarf Gnephosis is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

### Victorian conservation status

Dwarf Gnephosis is listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*.

It is considered vulnerable in Victoria according to DSE's *Advisory List of Rare or Threatened Vascular Plants in Victoria - 2005* (DSE 2005).

### Decline and threats

#### Grazing / Trampling

While it is unlikely that this species is selectively grazed, it may be vulnerable to trampling and soil disturbance by sheep or rabbits. Significant alterations to current grazing regimes may detrimentally affect the abundance of this species. Further work is required to determine the species' response to grazing.

#### Weed invasion / competitive species

This species appears to have a fixed tolerance to salinisation, and where soils are less saline its abundance may be limited by competition from associated species including the grasses *Austrostipa* spp. and *Hordeum* spp.

#### Salination

Salination due to irrigation (for horticulture, stock and domestic water supply), lake drainage and tree removal have contributed to the decline of the species.

#### Gypsum mining

At least one site (Banu-Bonyit Channel) is owned by a Gypsum mining company, with mining proceeding near the site. It is unknown whether an annual species such as *T. baracchianum* may be able to recolonise areas laid bare by mining.

#### Cropping

Cropping occurs close (<10 m) to some sites. Any expansion of these cropping areas and/or expansion of irrigation associated with cropping may threaten populations.

#### Dam works

Any physical disturbance (such as by heavy machinery) to the edges of dams severely threatens populations. It is unknown how long those dams have existed and whether there are plans to alter them.

### Previous management action

- Known locations have been surveyed to determine the extent of populations.
- Potential habitat has been surveyed using historical records, leading to the discovery of the Oliver's Lake population.
- Seed has been collected and sent to the Royal Botanic Gardens for storage.
- DSE has liaised with local and interstate agencies to co-ordinate recovery and exchange knowledge.

### Long term objective

To ensure that Dwarf Gnephosis can survive, flourish and retain its potential for evolutionary development in the wild.

### Specific objectives, actions and targets

*The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.*

#### Objective I To increase knowledge of biology, ecology and management requirements

Action	Targets	Responsible
1. Acquire baseline population data. Conduct detailed field and desk top surveys including identification of the area and extent of the population; estimates of the number, size and structure of the population; and inference or estimation of population change.	<ul style="list-style-type: none"> <li>▪ Conservation status for inclusion on state and national threatened species lists assessed.</li> <li>▪ Updated records on all state databases (Flora Information System, VROTPop and Herbaria).</li> <li>▪ Target populations accurately mapped.</li> </ul>	DSE
2. Assess habitat characteristics and/or condition. Accurately survey known habitat, and collect and analyse floristic and environmental information relevant to community ecology and condition.	<ul style="list-style-type: none"> <li>▪ Requirements for essential life history stages, recruitment and dispersal identified at known sites.</li> <li>▪ Core habitat mapped.</li> </ul>	DSE
3. Conduct survey to locate suitable habitat. Identify and survey potential / historical habitat, using ecological and bioclimatic information that may indicate habitat preference.	<ul style="list-style-type: none"> <li>▪ Sites of potential habitat identified and surveyed.</li> </ul>	DSE
4. Identify disturbance regimes to maintain habitat or promote regeneration and recruitment.	<ul style="list-style-type: none"> <li>▪ Management prescriptions prepared for grazing, or other appropriate process, within a portion of one site.</li> </ul>	DSE
5. Undertake research to identify key biological functions. Evaluate current reproductive/regenerative status, seed bank status and longevity, fecundity, and recruitment levels. Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli.	<ul style="list-style-type: none"> <li>▪ Seed bank/regenerative potential quantified for target populations.</li> <li>▪ Stimuli for recruitment/regeneration identified.</li> <li>▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival.</li> </ul>	DSE
6. Analyse population trends. Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Collate, analyse and report on census data and compare with management histories.	<ul style="list-style-type: none"> <li>▪ Techniques for monitoring developed and implemented.</li> <li>▪ Population growth rates determined.</li> <li>▪ Population Viability Analysis completed for targeted populations.</li> </ul>	DSE

**Objective II To secure populations or habitat from potentially incompatible land use or catastrophic loss.**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
7. Negotiate a co-operative management agreement with private landholders. Initiate private land management agreements in consultation with private land owners under the <i>Victorian Conservation Trust Act 1972</i> , the <i>Conservation, Forests and Lands Act 1987</i> and the <i>Wildlife Act 1975</i> at key sites.	<ul style="list-style-type: none"> <li>Private land populations protected at Lake Wich-I-pei, Banu-Bonyit Channel, West Road and Tullyvea East Channel.</li> </ul>	DSE
8. Erect/maintain structures to restrict or discourage access. Control threats from pest animals by fencing sites or caging plants.	<ul style="list-style-type: none"> <li>Structures erected where appropriate.</li> <li>Saline shrubland containing <i>T. baracchianum</i> fenced from cropped paddock at Tullyvea East Channel to arrest reversion of cropped paddock to grazing.</li> </ul>	DSE
9. Establish cultivated plants <i>ex situ</i> to safeguard from the unforeseen destruction of the wild population.	<ul style="list-style-type: none"> <li>Development of effective propagation and cultivation techniques.</li> <li>At least 100 mature plants in cultivation.</li> </ul>	DSE, Royal Botanic Gardens
10. Liaise with private landholders. Ensure that information and advice about the recovery of Dwarf Gnephosis has been provided to private land managers and landholders,	<ul style="list-style-type: none"> <li>All relevant private land managers are aware of the species and its management needs.</li> </ul>	DSE
11. Liaise with government agencies. Ensure that information and advice about the recovery of Dwarf Gnephosis has been provided to public land managers, local government authorities and Catchment Management Authorities	<ul style="list-style-type: none"> <li>All relevant authorities and public land managers are aware of the species and its management needs.</li> </ul>	DSE

**Objective III To improve the condition of habitat**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
12. Manage environmental weeds. Control threats from pest plants using careful hand removal of weeds (but only if deemed necessary).	<ul style="list-style-type: none"> <li>Trial hand spraying of competitive exotic grasses completed.</li> <li>Measurable reduction in cover-abundance of weeds where treated.</li> </ul>	DSE

**Objective IV To increase the number of populations or individuals**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
13. Store reproductive material. Establish a seed bank.	<ul style="list-style-type: none"> <li>Seed from target populations in long term storage.</li> </ul>	Royal Botanic Gardens, DSE
14. Determine seed viability.	<ul style="list-style-type: none"> <li>Seed viability determined.</li> </ul>	Royal Botanic Gardens, DSE

**Objective V To increase community awareness and support**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
15. Involve community groups and volunteers in recovery activities.	<ul style="list-style-type: none"> <li>Opportunities for involvement identified, promoted and supported.</li> </ul>	DSE

## References

- Blackburn, G. Bond, R.D. & Clarke, A.R.P. (1967) *Soil development in relation to stranded beach ridges of County Lowan, Victoria*, Soil Publication No. 24, CSIRO, Melbourne.
- Department of Natural Resources and Environment (DNRE) (2001) *DNRE Flora Information System 2001*, Department of Natural Resources and Environment.
- DSE (2005) *Advisory List of Rare or Threatened Vascular Plants in Victoria - 2005*. Department of Sustainability and Environment, East Melbourne, Victoria.
- Short, P.S. (1990) A revision of *Trichanthodium* Sond. & F. Muell. ex Sond. (Asteraceae: Gnaphaliinae), *Muelleria*, 7(2): 213-224.
- Walsh, N.G. & Entwisle, T.J. (1999) *Flora of Victoria, Vol 4: Dicotyledons: Cornaceae to Asteraceae*, Inkata Press, Melbourne.

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