

# THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

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The Minister's delegate approved this conservation advice on 01/10/2015

## Conservation Advice

### *Philotheca basistyla*

white-flowered philotheca

#### Conservation Status

*Philotheca basistyla* (white-flowered philotheca) is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing as Endangered 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 main factors that are the cause of the species being eligible for listing in the Endangered category are a suspected population size reduction of over 90% over a 10 year period prior to its ranking as Critically Endangered in 1998. The 2004 Interim Recovery Plan for this species attributes the population size reduction during this period to a decline in the quality of habitat. In addition to population size reduction, range and fragmentation of populations was also considered to determine the listing of this species, which has an extent of occurrence estimated to be less than 100 km<sup>2</sup> and area of occupancy less than 10 km<sup>2</sup>. The 2004 Interim Recovery Plan noted this population was severely fragmented with just two populations known and a continuing decline observed in the quality of its habitat between 1998 and 2004. Population size for the white-flowered philotheca is estimated to number fewer than 250 mature individuals, 90% of which are limited to one population.

#### Description

The white-flowered philotheca is a 'free standing' shrub that grows to be 1 m tall and 80 cm across, typically with glossy or waxy dark green leaves. The leaves, up to 9 mm long and 1 to 1.5 mm wide, are thickened, and are upward pointing. If cut in half, a leaf from the white-flowered philotheca would resemble a circular prism. Numerous solitary white flowers can be found at the ends of the branchlets (Brown et al., 1998).

#### Distribution

The white-flowered philotheca is endemic to Western Australia where it is restricted to a geographic range of a few kilometres between Trayning and Kellerberrin. It grows in deep yellow sand in dense scrub heath vegetation (Brown et al., 1998). There were two populations recorded in 1997 (population 1 and 2). A subpopulation at the site of population 2 (now 2A) was recorded in 2003 (population 2B). Counts conducted in 2010 and 2011 revealed no mature plants at the site of population 1.

#### Threats

The main threats are road, track and firebreak maintenance, pipeline maintenance, poor regeneration, weed invasion, rabbits (*Oryctolagus cuniculus*), stock movement and inappropriate fire regimes (Bettink et al., 2004). The following table lists key threat factors with supporting evidence:

Threat factor	Threat type	Threat status	Evidence base
Weed invasion	known	current	Weed invasion is major threat to both populations. Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also exacerbate grazing pressure and increase the fire hazard due to the easy ignition of high fuel loads, which are produced annually by many weed species
Road, track and firebreak maintenance	known	current	Road, track and firebreak maintenance threaten both populations. Threats include grading, chemical spraying, construction of drainage channels and the mowing of roadside vegetation. Several of these actions also encourage weed invasion.
Poor regeneration	known	current	Poor regeneration threatens both populations
Pipeline maintenance	potential		Pipeline maintenance is a potential threat to population 1; assuming regeneration occurs at the site, the pipeline has the potential to damage plants and encourage weed growth.
European Rabbits ( <i>Oryctolagus cuniculus</i> )	known	current	Rabbits ( <i>Oryctolagus cuniculus</i> ) are present in the area of both populations and although there is no evidence that the white-flowered philotheca is being browsed, rabbits are impacting on the habitat by causing soil disturbance through warren construction.
Stock movement	suspected	current	Stock (sheep) may trample or opportunistically graze the plants while being moved along the roads.
Inappropriate fire regimes	potential	future	It is not known what the fire response of the species is but frequent fire may kill plants before they reach maturity and replenish the soil seed bank.

## **Conservation Actions**

### **Conservation and Management Actions**

The Merredin District Threatened Flora Recovery Team coordinated the implementation of recovery actions at least up until 2004, and includes information on progress in their annual report to CALM (now the Western Australian Department of Environment and Conservation).

#### **Invasive species (including threats from grazing, trampling, predation) and domestic stock**

- Undertake weed control in consultation with the land managers, which may involve hand weeding or localised application of herbicide. All applications of weed control should be followed by a report on the method, timing and success of the treatment against weeds, and the effect on the white-flowered philotheca and associated native plant species.
- Undertake rabbit baiting in and around the area of both populations, either annually or twice annually. See the threat abatement plan for competition and land degradation by rabbits (Department of the Environment 2008)
- Rabbit-proof fencing works are likely to increase the efficacy of control measures.
- Conduct liaison with farmers in the area to ensure stock are moved rapidly along the road and kept out of the reserve.

#### **Habitat loss disturbance and modifications**

##### Road, track and firebreak maintenance

- Assess impact on any on ground action (clearing, firebreaks, roadwork etc) in the immediate vicinity of the species. On-ground works should not be approved unless the proponents of any such development can demonstrate that they will not have a negative impact on the species, its habitat or potential habitat or on the local surface hydrology such that drainage in the habitat of the species would be altered.

#### Pipeline Maintenance

- Conduct ongoing liaison with the Water Corporation to ensure that maintenance of their water pipeline will not damage or destroy the species.

#### Fire

- As the response of the white-flowered philotheca to fire is not known, except where it is being used as a recovery tool, fire will be prevented, where possible, from entering the area of populations. A fire management strategy will be developed to determine fire control measures and fire frequency.

#### Translocation

- As the species only occurs on highly vulnerable roadsides, translocation to new, safe-sites within a substantial reserve system is a priority. Habitat matching (edaphic, vegetation, topography) should be undertaken in planning a translocation. Relevant policies should be referred to for guidance for undertaking translocations (e.g. CALM 1995; Vallee et al., 2004).

#### Ex situ conservation

Preservation of germplasm is essential to guard against extinction if wild populations are lost. The propagation of plants, as well as the collection of seeds, in readiness for translocation is particularly important in this case as both known wild populations of the white-flowered philotheca are under threat:

- Collect seed from both populations to maximise the genetic diversity of *ex situ* collections (where such action is supported by any findings on genetic structure and diversity— See research priority 4 below).
- Obtain cuttings to establish a living collection at the Botanic Garden and Parks Authority (BGPA).
- The many threats to the wild populations of this species are indicative of the need for the development of a monitored translocation proposal.
- District to identify habitats suitable for translocation and pursue land acquisition for at least one of these locations.<sup>1</sup>
- Fire may be effective in stimulating the germination of soil-stored seed. Trials of burning, smokewater and soil disturbance could be conducted around existing populations and in areas where the white-flowered philotheca was known to previously occur, but should only be implemented as a last resort, where all other means of regeneration have been tested and found to be unsuccessful, and where all necessary factors have been taken into account, including weed management and fire timing considerations.

#### Stakeholder Management:

- Identify and seek input from any Indigenous groups that have an active interest in areas that are habitat for the taxon.
- Ways and means of improving the security of populations and their habitat will be investigated; this could include conservation covenants for populations that occur on private property.
- Encourage formal links with local naturalist groups and interested individuals.

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<sup>1</sup> 2011 review of the interim recovery plan, citing Natasha Moore, Flora and Fauna Conservation Officer, Department of Environment and Conservation.

- Promote the importance of biodiversity conservation and the need for the long-term protection of wild populations of this species through appropriate media, which could include:
  - An information sheet that includes a description of the plant, its habitat, threats, recovery actions and photos.
  - A number of community education activities, including (but not limited to) rare flora training, community information session and production of rare flora newsletters, to raise awareness of DRF in the Central Wheatbelt District.

### **Survey and Monitoring priorities**

- Conduct further surveys for the species during its flowering period (August to October) in appropriate habitat, and on private lands wherever possible.
- Determine areas considered suitable for translocation.
- Encourage the participation of volunteers from the local community, wildflower societies and naturalist clubs.
- Annual monitoring of factors such as habitat degradation (including weed invasion and plant diseases), population stability (expansion or decline), pollination activity, seed production, recruitment, longevity and predation is essential.
- Inspect all populations annually with special attention given to any impacts from salinity.

### **Information and research priorities**

Improved knowledge of the biology and ecology of the white-flowered philotheca provides a better scientific basis for management of the wild populations. An understanding of the following is particularly necessary for effective management:

1. Soil seed bank dynamics and the effect of various disturbances (including fire), competition, rainfall and grazing on germination and recruitment.
2. The pollination biology of the species, and the requirements of pollinators.
3. The reproductive strategies, phenology and seasonal growth of the species.
4. The population genetic structure, levels of genetic diversity and minimum viable population size.
5. The impact of salinity on the white-flowered philotheca and its habitat.
6. The relationship between the white-flowered philotheca and *Camponotus postcornutus* (an ant) frequently associated with this species (see Moore 2009).

### **References cited in the advice**

- Bettink K, Luu R, Brunt K and Brown A. (2004) White-flowered philotheca (*Philotheca basistyla*) Interim Recovery Plan 2004 – 2009', Western Australia: Department of Conservation and Land Management
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Vallee L, Hogbin T, Monks L, Makinson B, Matthes B and Rossetto M (2004). *Guidelines for the translocation of threatened plants in Australia*. Second Edition. Canberra, ACT: Australian Network for Plant Conservation.