

Action Statement

Flora and Fauna Guarantee Act 1988 No. 171 (Revised in 2009)

Turnip Copperburr *Sclerolaena napiformis*

This revised Action Statement is based on the Recovery Plan prepared for this species by DSE under contract to the Commonwealth Department of the Environment, Water, Heritage and the Arts.

Description

The Turnip Copperburr (formerly Turnip Bassia; *Sclerolaena napiformis*) is a small, procumbent¹ to erect perennial saltbush (family Chenopodiaceae), which grows to approximately 30 cm in height. Covered in short erect or curled hairs, its slender branches arise from a thick and long perennial taproot. The leaves are linear, 5 - 15 mm long and covered with appressed hairs.

The flowers are green, tiny, solitary and occur in the leaf axils. The distinctive fruits have 5 - 6 spines and are sparsely to moderately pubescent. Flowering commences in November and fruits fall to the ground in autumn (until May) (description from George 1984a). For a further description of the species see George (1984a, b), Harden (1990) and Walsh and Entwisle (1996).

Distribution

S. napiformis is known from 23 populations in Victoria (although there is likely to be more), scattered across the Wimmera and the northern Riverina plains and at several sites in the southern Riverina of NSW, around Jerilderie and Moama. The species was first described by Paul G. Wilson in 1984 (as part of the Flora of Australia project; George 1984a) and there is little historical information on its former distribution. The location and habitat of existing populations suggest that the species was likely to have occurred in grasslands across northern Victoria and in parts of the Southern Riverina Plains in NSW. These areas have been largely cleared for agriculture or grazing (Cook 1997).



Turnip Copperburr (*Sclerolaena napiformis*)
Photo: John Eichler



Distribution in Victoria
(source: Flora Information System, DSE 2004)

¹ Having stems that trail or spread along the ground without putting down roots.

In Victoria, *S. napiformis* is now restricted to remnants of native grassland and grassy woodland on fertile clay loam soils. Sites supporting this species on the northern plains may have also supported Saltbush Shrubland prior to European settlement (Foreman, in Kirkpatrick and McDougall 1994).

Abundance

In Victoria there are fewer than 23,000 plants remaining in approximately 23 known wild populations. However, the species is likely to occur in many other undisturbed grasslands (sites that have managed to avoid a high level of or frequent soil disturbance) or Buloke woodlands on roadsides and private property in the Wimmera. At least half of the estimated population occurs at a private property in Avon Plains, making this the single most important *S. napiformis* population in Australia. In NSW, no reliable estimate of population size is available; however current evidence suggests that less than 1000 plants remain in the wild in NSW.

Important populations

Populations important to the long term survival and recovery of *S. napiformis* occur in the following locations. Data from surveys have been largely recorded in VROTPop, the population monitoring database for Victorian Rare or Threatened Species.

Reserves

Avon Plains Swamp Nature Conservation Reserve, Avon Plains

- Monitoring in 1997 estimated that 200 individuals were present at the site. A January 2004 survey failed to locate any individuals; in February 2008, six individuals were located.

Creswick's Well Wildlife Reserve, Avon Plains

- Site monitoring in 1985 observed 20 individuals at the site.
- In 1997, an estimated 370 individuals were recorded. Approximately 150 individuals were estimated in January 2004 and a survey of the reserve in February 2008 found approximately 624 plants.
- A monitoring plot was established at this site in 1997 and 18 plants were tagged. In 1999, all tagged plants were located, in addition to 15 new plants present in the plot. The number of plants within the plot has fluctuated over the past several years but, overall, has remained constant.

Wanurp Nature Conservation Reserve (NCR)

- A new population of *S. napiformis* has been established in the Wanurp NCR, 15 km west of Mitiamo in the Victorian Riverina. Seedlings were translocated into the reserve in May 2006

and June 2007. In March 2008, there were 98 healthy mature plants at the site.

Private Land

Private Property - Avon Plains (Shire of Buloke and Northern Grampians Shire)

- A 2001 survey located three stands of *S. napiformis*, comprising a total population of approximately 14 900 individuals. This is the largest known population of *S. napiformis*.

Private Property - Marnoo (Northern Grampians Shire)

- This site was surveyed in January 2007 as part of a BushTender assessment. Approximately 2000 plants were found in an 18 ha area of intact Buloke woodland.

Private Property - Grays Bridge (Northern Grampians Shire)

- In March 2008, surveys conducted as part of a Bush Broker assessment estimated that approximately 1000 plants occurred at this site.

Roadsides

Anderson's Road, Echuca (Campaspe Shire)

- Site monitoring in 1997 estimated the population consisted of 400 individuals (380 mature individuals and 20 seedlings). The population numbered approximately 200 individuals in 1999.
- A subsequent survey in January 2004 reported that population size was difficult to determine due to considerable length of the roadside reserve. A rough estimate of approximately 100 - 200 individuals was made. Based on the high weed cover and suggestions from land managers of increased land degradation (e.g. increased weed cover, disturbance and dumping of soil and garden waste), it is likely that fewer than 200 individuals now exist at this site.

Avon Plains Road (Northern Grampians Shire)

- Approximately 40 plants were observed at the site in 1994; in 2005 the population was estimated at 250 individuals.

Donald-Avon Plains Road, Avon Plains (Northern Grampians Shire)

- In 1997, this population numbered approximately 1800 individuals. A monitoring plot was established in 1997 and contained 17 tagged plants. Later surveys of the plot suggested that the number of plants was stable.
- Subsequent surveys estimated more than 1000 plants (in 1999 and 2000) and between 700 and 1500 plants (in 2004).

Donald-Stawell Rd, South of Donald (Shire of Buloke)

- Site monitoring in 2000 estimated the population contained more than 1000 individuals.

Echuca-Serpentine Road, Mitiamo (Campaspe Shire)

- In 1997, an estimated 730 plants occurred at this site; approximately 400 - 600 plants were found in 2003.

McKinley Road, Avon Plains (Northern Grampians Shire)

- The site was monitored in 1997, at which time 2430 individuals were estimated.
- In 1999, the population was estimated to have decreased to a number over 1000; in 2000 the number was about 1000. However, the estimate made in the latter survey was likely a rough approximation and the suggested decline may in part be due to differences in survey techniques. A subsequent survey in 2004 estimated the population to number approximately 1500 - 2500 individuals.

O'Deas Road, Koyunga (Campaspe Shire)

- This population was estimated to comprise 100 plants in 1997, while surveys in 2004 located 200 - 500 individuals.

Trevaskis Road, Wyuna (Campaspe Shire)

- In 1997, this site supported an estimated 570 plants. At this time, individuals occurred on both sides of the road and were fenced for protection. However, between 1999 and 2004, the western fence had been removed and the site cleared and ploughed, leaving little chance of plants surviving there. Plants remain on the eastern side but are inadequately fenced.
- Surveys in 1999 and February 2004 (the latter of the fenced plot) found 500 - 1000 and 615 plants respectively. A site visit in January 2008 found 17 plants on the west side (previously ploughed section) and 175 plants on the eastern side.

Other

Echuca Aerodrome, Echuca (Shire of Campaspe)

- Site monitoring in 1997 revealed an estimated 454 plants.
- In 2004, the population was estimated at 1000 - 2000 plants.

Other sites to be visited

Flora Information System records exist for a number of sites that potentially support *S. napiformis* but have not yet been investigated in detail due to limited resources. The following sites require further surveys to better ascertain the conservation status of the species. The records date mainly from 199 - 2000.

- Boyle Rd, Marnoo East (Northern Grampians Shire) Visited in February 2008; more than 200 plants estimated.
- South of O'Brees Rd, Remlaw, Horsham (Rural City of Horsham)
- Longerenong Rd, East of Longerenong (Shire of Yarriambiack)
- East and southeast of the township of Banyera, near the Richardson River (Northern Grampians Shire)/ (Shire of Yarriambiack)
- Pimpinio Rd, Rupanyup (Shire of Yarriambiack)
- Raynes Rd, Grey's Bridge (Northern Grampians Shire). Visited in February 2008; more than 200 plants estimated.
- Stawell-Warracknabeal Rd, south of Rupanyup, (Shire of Yarriambiack)
- Tennis Rd, Watchem West (Shire of Buloke) Visited on two separate occasions during the 2006/2007 summer; no *S. napiformis* plants were found.

Habitat

In Victoria, *S. napiformis* is located in scattered patches of remnant native grassland and Box or Buloke Woodland. Within northern Victoria, the species grows on fertile red clay to red loam soils and is largely restricted to weedy roadsides and relatively undisturbed plains (i.e. uncultivated or infrequently grazed grasslands).

Associated species include Common Wallaby-grass (*Austrodanthonia caespitosa*), Rough Spear-Grass (*Austrostipa scabra*), Spurred Spear-Grass (*A. gibbosa*), Common Everlasting (*Chrysocephalum apiculatum* s.l), various Bluebush (*Maireana*) species and Buloke (*Allocasuarina luehmannii*). Anecdotal evidence suggests that *S. napiformis* can tolerate water-logging in the spring and all remaining populations are located close to a water course or swamp (Cook 1997, Alexander 2002).

It is evident from current habitat descriptions that vegetation structure plays an important role in the distribution of *S. napiformis*. Grassland and grassy woodland communities on low-lying fertile clay substrates once occurred widely across western and northern Victoria and southern NSW, and *S. napiformis* is thought to have once been widespread across this region. The majority of this habitat was cleared for agriculture and *S. napiformis* is now restricted to small roadside populations, travelling stock reserves and infrequently grazed sites on freehold land. Of the 23 Victorian sites, only two are naturally located in conservation reserves.

Historical overuse of roadsides for stock droving may have been responsible for further declines in the species' distribution, which is apparently

randomly restricted to small discrete sites in which remnant suitable habitat exists.

Life history and ecology

There is little specific ecological information available for the *S. napiformis*. The species has been the subject of only two studies (Cook 1997 and Carta and Parsons 2005).

Current knowledge suggests *S. napiformis* flowers and fruits over summer, dying back to a thick taproot in late autumn, and resprouting in late spring (Cook 1997). Rupture or breakdown of the woody outer fruit wall may be required to end dormancy, with almost 100% germination occurring when seeds were removed from the dispersal unit (fruit wall) compared to almost no germination when dispersal units were not removed (Carta and Parsons 2005). Viability of seed remained high (80%) after two years of storage (Carta and Parsons 2005), suggesting that seeds may form a viable seed bank in the soil during unfavourable conditions (e.g. drought). Germination could potentially occur when sufficient moisture becomes available. Further research is required to examine this possibility. Seeds appear to germinate successfully in temperatures ranging from 12 °C to 30 °C, the process may take significantly longer when temperatures exceed 20 °C (Carta and Parsons 2005). This suggests that germination may occur in different seasons when rainfall is sufficient, but may be inhibited by hot, dry conditions.

Most known populations of *S. napiformis* are composed entirely of mature specimens, and observations of seedlings have only been documented in more recent years. While more information on the age and condition of reproductive plants is needed, *S. napiformis* has been observed to reach maturity and flower within six months (Carta and Parsons 2005). Clearing or grazing of plants prior to this stage may thereby reduce the recruitment of future populations. As germination may be an uncommon event, there is a danger that populations may become senescent.

S. napiformis is often observed growing around ant nests. In other *Sclerolaena* species, a pad of moist tissue on the underside of fruiting bodies attracts several species of ant, which carry the fruits to their nest mound, consume the food mass and discard the intact fruit and seed outside their nest (Davidson & Morton 1981). *S. napiformis* also has a fleshy pad located on the underside of the fruit (Carta and Parsons 2005), suggesting ants may be similarly involved in dispersal of its seeds.

Additionally, the seed harvesting ant (*Monomorium whitei*) is known to carry *Sclerolaena* seeds back to a nest, where the fruit is cut open and the seeds placed in storage chambers (Davison 1982; Carta

and Parsons 2005). It is interesting to note that *S. napiformis* is not exclusively associated with ant mounds, as are some other *Sclerolaena* species. Further study is required to establish if either of the described plant-ant interactions are a possible mechanism of dispersal for *Sclerolaena napiformis*.

Conservation status

National conservation status

Sclerolaena napiformis is listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

Victorian conservation status

Sclerolaena napiformis is listed as threatened under the *Flora and Fauna Guarantee Act 1988*.

Sclerolaena napiformis is currently considered endangered in Victoria according to the Department of Sustainability and Environment's *Advisory List of Rare or Threatened Plants in Victoria* - 2005 (DSE 2005).

Decline and threats

S. napiformis was only described in 1984 and so its previous distribution and abundance are unknown. However, judging from current distribution and habitat preferences, it is likely that the species was once distributed across a wide area of the Murray-Darling Basin in New South Wales and Victoria, in grassland and grassy woodland communities. These habitats are now largely cleared for agriculture or grazed by domestic stock, and are highly threatened, with less than 1% of their original cover remaining (Lunt *et al.* 1998).

Consequently, *S. napiformis* has almost certainly suffered a substantial decline in abundance and probably distribution. Remaining populations are now largely restricted to roadsides and occasionally on private land in paddocks that are lightly grazed but have not been ploughed or cropped. The fact that the species is found only in small discrete patches throughout its range suggests it has either always been restricted to particular specialised habitats, or has suffered significant decline even under the relative protection afforded by roadsides and similar reserves. Only two known populations occur naturally in conservation reserves, and even one of these has declined and may be extinct. All surviving populations are at risk from a range of threats including habitat loss and degradation, grazing, road works and weed invasion. Many *S. napiformis* populations, especially along roadsides, are apparently still in decline and several appear to have become extinct in recent years. The small population sizes at some sites means that some populations could be eliminated by a single event, such as clearing with large machinery.

Major current threats are discussed in further detail below. An indication of the degree of threat is also given.

Weed invasion: Moderate.

Weed invasion is considered a major threat, as weeds comprise a large component of the surrounding vegetation at the majority of sites. Serious weeds include Wild Oats (*Avena* species), Pattersons Curse (*Echium plantagineum*), Annual Beard-grass (*Polypogon monspeliensis*) and various introduced pasture grasses.

Habitat degradation/destruction: High.

Destruction of habitat and also direct removal of *S. napiformis* plants is a major threat to populations on roadsides and on private land. Many populations are still subject to habitat degradation or destruction through activities such as plowing, drainage practices, road maintenance, vehicle movement, utilities installation and maintenance and firebreak construction and maintenance. Together with land clearing for agriculture, these activities can cause extensive and detrimental reductions in biomass or direct physical damage to/removal of *S. napiformis* plants.

Several populations have been damaged by road works and plowing, including one during tree planting on a road reserve. Those that are not fenced or lack trees due to the composition and structure of the plant community are particularly vulnerable.

Lack of biomass reduction: High.

Lack of biomass reduction can potentially reduce the extent of habitat available to *S. napiformis*. Vegetation control may be necessary to reduce interspecific competition for resources such as space, light and moisture, and to maintain population size and vigour. Seedling establishment may be hindered by over-abundant vegetation. Less frequent biomass reduction is also linked in part to weed control, as weeds form large components of the surrounding vegetation at the majority of sites.

Altered fire regimes: Moderate.

The native grassland habitat of *S. napiformis* was likely to have experienced periodic fires that reduced the amount of biomass, opening up the grassland habitat and making conditions more suitable for germination and growth. In the absence of fire, some sites have developed thick swards of native and introduced grasses, and *S. napiformis* populations have apparently declined or become extinct at these sites.

Grazing: Moderate.

S. napiformis is probably palatable to stock, and is apparently absent from sites subject to heavy and/or long-term grazing. Grazing by stock also causes other problems such as trampling, soil compaction and altered drainage. However, in some circumstances, light grazing may be beneficial to the species, as it would remove some plant biomass to retain an open sward, mimicking the effects of fire. Light grazing, at a non-sensitive time of the year, could be used as a management tool to maintain or enhance some *S. napiformis* populations.

Increasing soil salinity.

Several *S. napiformis* populations occur within irrigation districts (e.g. Echuca, and Moama, NSW) where nearby land has been degraded by elevated soil salinity. The risk of this is not known but requires assessment.

Previous Management action

General

- Monitoring of many known sites was conducted in 1997 (Cook 1997), and in a number of VROTPop surveys were conducted between 1999 and 2008. Monitoring data has been entered into the VROTPop database.
- Surveys to locate additional *S. napiformis* populations have commenced in several regions.
- Research has been undertaken into the species' ecology and conservation management (particularly the effects of disturbance regimes) (Cook 1997, Carta and Parsons 2005).
- *S. napiformis* is also considered under the Northern Plains Community recovery plan. Under the associated Working Group, seedlings have been translocated to Warnurp Nature Conservation Reserve, resulting in a new population of healthy, mature plants.
- A Threatened Species Officer has been employed to implement actions aimed at reducing the decline of this species (2000).
- Signage has been erected at a number of sites notifying land users of the presence of significant native vegetation.
- A Grassland Factsheet has been produced and distributed to Landcare, relevant shires and Parks Victoria offices.
- Other community awareness initiatives include a field day for locals to discuss the significance of roadside populations of threatened species.

Specific actions

Andersons Rd, Echuca

- The Campaspe Shire and VLine (the manager of most intrastate Victorian railways and

associated land) are aware of the significance of the site and the location of *S. napiformis* within the site.

- Weeds have been controlled.

Avon Plains Road, Avon Plains

- Seeds were collected from the site for later propagation and planting of seedlings.
- Many sites suitable for re-introduction were identified in the area in 2004/2005.
- In 2008/2009, a threat assessment identified weed invasion and proximity to the road as issues impacting this population. Site location has been incorporated into plans for local councils.

Avon Plains Swamp Wildlife Reserve, Avon Plains

- Site is fenced off from road.

Creswick Swamp Wildlife Reserve, Avon Plains

- Parks Victoria is aware of the significance of the site.
- Ecological burns of the reserve were conducted in autumn 2008. Pre- and post-fire monitoring was conducted.
- Seed was collected from the site during the 2007/2008 summer for later establishment and translocation of seedlings.

Donald-Stawell Rd

- The Buloke Roadside Management Plan 2003-2007 has been prepared.
- The Shire of Buloke is aware of the significance of *S. napiformis* and relevant populations.
- Liaison with the local Landcare coordinator regarding management guidelines conducive to *S. napiformis* conservation.

Echuca Aerodrome, Echuca

- The Campaspe Shire is aware of the significance of the site and location of the species within the site.

- The location of plants within the site was mapped in 2006/2007.

Echuca-Serpentine Road, Mitiamo

- The Campaspe Shire is aware of the significance of the site.

McKinley Road, Marnoo

- Northern Grampians Shire is aware of the significance of the site.

O'Deas Rd, Koyunga

- The stand of *S. napiformis* is fenced.
- The Campaspe Shire is aware of the significance of the site.
- Searches of the area successfully identified sites suitable for potential reintroduction of the species.

Property-Private, Avon Plains

- The grassland in which *S. napiformis* occurs is grazed but rested during spring/summer; the area has never been cultivated.

Trevaskis Road, Wyuna

- The majority of the population has been fenced.
- The Campaspe Shire is aware of the significance of the site.

Conservation Objectives and Intended Management Actions

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.

Long term objective

To ensure that the Turnip Copperburr (*Sclerolaena napiformis*) can survive, flourish and retain its potential for evolutionary development in the wild.

Specific Objectives, Targets and Actions

Objective I To increase knowledge of biology, ecology or management requirements.

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
1. Acquire baseline population data by conducting detailed field and electronic/archive surveys including (a)	<ul style="list-style-type: none"> ▪ Baseline data is collected. ▪ Conservation status is reassessed. 	DSE

<p>identification of the area and extent of populations; (b) estimates of the number, size and structure of populations and (c) inference or estimation of population change. Sites recorded on the Flora Information System with limited or no information on population size, condition or habitat form a focus; these include roadsides in Yarriambiack Shire, Northern Grampians Shire, Shire of Buloke and the Rural City of Horsham.</p>	<ul style="list-style-type: none"> ▪ Populations are accurately mapped.
<p>2. Assess habitat characteristics and/or condition. Accurately survey known habitat and collect floristic and environmental information relevant to community ecology and condition.</p>	<ul style="list-style-type: none"> ▪ Habitat data is collected and analysed ▪ Important habitat is mapped <p style="text-align: right;">DSE</p>
<p>3. Continue surveys to identify and map additional <i>S. napiformis</i> populations in likely areas of occurrence.</p>	<ul style="list-style-type: none"> ▪ All additional populations in areas likely to still support the species are identified and mapped.
<p>4. Conduct surveys to identify and search suitable habitat. Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference.</p>	<ul style="list-style-type: none"> ▪ Three-chain roads are surveyed around and through the private property on the Avon Plains and other suitable nearby areas for other <i>S. napiformis</i> populations. ▪ Predictive model for potential habitat is developed and tested. ▪ Potential habitat is searched. <p style="text-align: right;">DSE</p>
<p>5. Undertake research to identify key biological functions. These aspects include life history stages and timing, age of plants at reproduction, stimuli for germination, rates of recruitment, and seed bank ecology.</p>	<ul style="list-style-type: none"> ▪ Critical life history stages are identified. ▪ Recruitment and dispersal are identified at known sites. ▪ Evaluate reproductive status to determine age at reproductive maturity. ▪ Seed bank/regenerative potential quantified for each/target population. ▪ Stimuli for recruitment/regeneration identified. <p style="text-align: right;">DSE</p>
<p>6. Undertake detailed population monitoring and collect demographic information</p>	<ul style="list-style-type: none"> ▪ Techniques for monitoring are developed and established. ▪ Census data for target populations is collected. <p style="text-align: right;">DSE</p>
<p>7. Analyse population trends. Collate, analyse and report on census data and compare with management histories.</p>	<ul style="list-style-type: none"> ▪ Population growth rates determined and Population Viability Analysis completed for target populations. <p style="text-align: right;">DSE</p>

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

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
<p>8. Negotiate management agreement with public land manager(s).</p>	<ul style="list-style-type: none"> ▪ All known public land sites are identified and protected by agreement. 	<p style="text-align: right;">DSE Campaspe, Buloke and Northern Grampians Shire</p>

		Councils
9. Protect roadside populations. Where possible, remove immediate threats of destruction to all known wild populations of <i>S. napiformis</i> .	<ul style="list-style-type: none"> Protection measures (fencing and/or signposting) completed for all important roadside populations. Liaison with Shires and local landholders regarding threats to species and associated management prescriptions undertaken. Threat abatement is achieved where possible. 	Campaspe, Buloke and Northern Grampians Shire Councils
10. Negotiate voluntary management agreements with private landholders.	<ul style="list-style-type: none"> Negotiations undertaken with all landholders. All known private land sites are protected through planning processes and/or agreements. 	DSE
11. Incorporate actions in relevant park or reserve management plan.	<ul style="list-style-type: none"> Park management plans identify species and provide for its protection and active management. 	Parks Victoria
12. Provide information and advice on the locations and management requirements of <i>S. napiformis</i> to local government authorities for inclusion in planning processes.	<ul style="list-style-type: none"> All known sites are identified and protected through planning processes. 	DSE
13. Collect and store reproductive material as a safeguard against catastrophic loss.	<ul style="list-style-type: none"> Reproductive material from multiple target populations is collected and securely stored. Seed viability is tested for multiple populations. 	Royal Botanic Gardens
14. Use collected seed to propagate seedlings and establish new populations at sites identified as suitable for reintroductions.	<ul style="list-style-type: none"> New, viable populations are established in the wild. 	DSE

Objective III To improve the extent and/or condition of habitat

Action	Targets	Responsible
15. Identify disturbance regimes to maintain habitat.	<ul style="list-style-type: none"> Preparation of management prescriptions for ecological burning/grazing at target sites. 	DSE
16. Manage biomass accumulation.	<ul style="list-style-type: none"> Management guidelines prepared regarding on-site biomass reduction where dense vegetation may threaten <i>S. napiformis</i>. Biomass reduction implemented where necessary, once appropriate guidelines have been established. 	Relevant land managers
17. Manage environmental weeds to improve both condition and extent of habitat by increasing the amount of available habitat suitable for <i>S. napiformis</i> .	<ul style="list-style-type: none"> Significant measurable reductions of weed cover are achieved annually (site specific targets to be identified for individual sites). Important populations are fenced so that grazing pressures can be appropriately managed. Some grazing may be acceptable, particularly where competition with grasses and weeds is a problem. Stock presence monitored at the Creswick Swamp site. Population fenced off if stock grazing becomes a regular occurrence. 	Relevant land managers

Objective IV To increase community awareness and support

Action	Targets	Responsible
18. Involve community groups and volunteers in recovery activities, e.g. in conducting searches for additional populations. Promote the species under the broader banner of grasslands, remnant vegetation and threatened species.	<ul style="list-style-type: none">▪ Opportunities for involvement identified, promoted and supported. Increased community awareness and a sense of ownership are fostered.▪ Current Grasslands Fact Sheet is distributed where appropriate.	DSE Shire Councils North Central and Wimmera Catchment Management Authorities

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This Action Statement has been prepared under section 19 of the Flora and Fauna Guarantee Act 1988 under delegation from Mr Peter Harris, Secretary, Department of Sustainability and Environment, July 2009.

Published by the Victorian Government Department of Sustainability and Environment
Melbourne, July 2009

Further information can be obtained from
Department of Sustainability and Environment
Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website: <http://www.dse.vic.gov.au>

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Published by the Department of Sustainability and Environment, Victoria. 8 Nicholson Street, East Melbourne, Victoria 3002 Australia

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ISSN 1448-9902