

Action Statement

Flora and Fauna Guarantee Act 1988

No. 131

Shining Spyridium *Spyridium nitidum*

Description and distribution

Shining Spyridium *Spyridium nitidum* N. A. Wakef. is an erect, spindly shrub, reaching 2m in height. It is distinguished from other *Spyridium* species by shining leaf surfaces due to silky appressed hairs. Willis (1972) originally affiliated *S. nitidum* with *Spyridium spathulatum*, however the latter differs in having stem leaves that are more or less glabrous above, with a thick prominent leaf margin (Walsh 1999). For a full description of Shining Spyridium see Walsh (1999).

Shining Spyridium is extremely rare in Victoria, with only one known location containing a single plant. It occurs in Western Victoria at Telopea Downs, near the South Australian border. Herbarium specimens indicate that in the late 1800s, it was recorded from other sites in Western Victoria, however extensive searches in these areas indicate these populations no longer exist or were incorrectly located. Since the 1950s, the Telopea Downs site contained the only known population of this species, with approximately 20 plants present (Walsh *pers. comm.*). Numbers at this site have significantly declined over the last 50 years to the present day status of an individual plant. Stable populations of Shining Spyridium occur in South Australia (Canning 1986).

Habitat

Shining Spyridium occurs in closed shrubland with occasional emergent Yellow Mallee *Eucalyptus incrassata*. The habitat is characterised by low rainfall and deep sandy soils derived from sandstone.

The sole remaining site is located along a narrow, linear roadside strip and therefore is prone to weed invasion, mechanical and chemical



Shining Spyridium *Spyridium nitidum*
(Photo: John Eichler)



Distribution in Victoria (DSE 2004a)

disturbance. It is surrounded by agricultural land and hence is susceptible to trampling and grazing during stock movement, in addition to risks associated with fire escaping from the burning of stubble in adjacent farmland.

Life history and ecology

Spyridium species are obligate seed regenerators, with poor dispersal capabilities (Coates & Kirkpatrick 1999). Regeneration is from soil stored seed that require some form of disturbance to induce germination (Coates 1991). Flowering occurs in early spring, with some *Spyridium* species setting seed six weeks after flowering, dropping seeds to the soil. Other *Spyridium* species take 12 months for the seeds to develop on the plant. Seedlings develop over winter, when moisture levels are high and temperatures are not too hot (Coates *pers. comm.*). The specific reproductive requirements of Shining *Spyridium*, as well as its existence in a fragmented and disturbed environment, limit its recruitment, with the potential for extinction of this species in Victoria.

Soil samples have been taken from beneath the remaining shrub, in the hope that soil stored seed was present and could be germinated. Unfortunately, seed germination trials thus far have failed (Walsh *pers. comm.*). It is unknown whether Shining *Spyridium* seeds were present in the soil sample. Coates (1996) found that Heath *Spyridium* *Spyridium eriocephalum* has 100% germination success when seeds are subjected to temperatures of 80 C for five minutes. Heath *Spyridium* occurs in similar habitats to Shining *Spyridium*, on sandy soils in the west of Victoria.

The woody nature of Shining *Spyridium* makes it amenable to propagation from cuttings. Cuttings of new growth are most preferable for the successful striking of this species. Staff from the National Herbarium of Victoria have taken limited cuttings from the field for propagation, however none of them survived in the glasshouse (Walsh *pers. comm.*). It is however thought to be a process worthy of perseverance.

Given the limitations of relying on one plant to re-establish the Victorian population, direct translocation of entire plants from one site to another may also be a viable option for the ongoing status of this species in Victoria. Selection of plants from the nearest South Australian population and translocation to the remaining site may prove fruitful if resources are given to hand-watering until the plants re-establish (Walsh *pers. comm.*).

Conservation status

Australia..... Rare (ANZECC)

VictoriaEndangered (DSE 2004b)

Shining *Spyridium* is listed as threatened under the **Flora and Fauna Guarantee Act 1988**.

Decline and threats

The decline in Shining *Spyridium* has resulted from alterations to the use and management of its restricted shrubland habitat. Development of Shining *Spyridium* habitat into agricultural land or roads have posed the largest threats to Shining *Spyridium*. A lack of natural disturbance such as fire may also be limiting the recruitment of new individuals from soil stored seed.

Shining *Spyridium* occurs on a roadside verge, with various maintenance works potentially influencing the site. The control of weeds in the area has been negligible, however it must be ensured that no chemical weed control takes place within close proximity to this site. The removal of broombush around this site may also pose a threat if the broombush cutter is unaware of the significance and location of this plant. Movement of stock up and down the road verge also poses a threat to the plant through grazing and trampling pressure (Walsh *pers. comm.*).

Periodic controlled burning of sites to reduce biomass and to allow regeneration of native species is no longer undertaken. Hence, a lack of fire results in dense stands of shrubs swamping other smaller native plants, leaving no vacant space for individuals to recruit. Walsh (*pers. comm.*) suggests that a light burn in close proximity to the Shining *Spyridium* may induce soil-stored seed to germinate. Coates (*pers. comm.*) suggests a more intense fire as soil stored seed require soils temperatures to be elevated sufficiently to crack the seed coat to induce germination. However there are significant risks associated with this practice, as Shining *Spyridium* does not regenerate from rootstock, so if the only remaining plant is burnt in the fire and no seedlings germinate from the soil stored seed, then no individuals will remain in the State of Victoria. Coates (*pers. comm.*) suggests collecting seed from the plant prior to burning and germinating seed in the laboratory for transplantation at a later stage.

Spyridium species tend to be relatively short-lived (Coates *pers. comm.*). Therefore if the site is not actively managed with fire or mechanical disturbance of the soil, then this species will be lost from Victoria. Seed predation can also pose a threat to this species (Coates *pers. comm.*).

Management of adjoining agricultural land can pose a threat to Shining *Spyridium*. Each year, wheat stubble is burnt in the paddock adjoining the Shining *Spyridium* site (Walsh *pers. comm.*). There is the potential for the fire to escape and

burn the Shining Spyridium, which would be fatal to the sole remaining plant if seedling recruitment did not occur.

A lack of fencing and signposts around the site also pose a threat, as there is no indication that there is a significant plant in the area and hence people are unaware of the precautions that need to be taken in the area (Sutter *pers. comm.*).

Existing conservation measures

- Monitored sporadically by Herbarium Staff, Field Naturalists and DSE.
- Broombush and other dense shrubs have been cut to prevent competition for light, water and nutrients.
- propagation from soil-stored seed and cuttings have been attempted by Royal Botanic Gardens Melbourne staff. Attempts to date have been unsuccessful.

Conservation objectives

Objectives of this Action Statement

- protect, enhance and monitor the known population of Shining Spyridium
- protect the shrubland habitat of Shining Spyridium
- determine the recruitment requirements of Shining Spyridium

Long term objective

To ensure that the Shining Spyridium survives, flourishes and retains its potential for evolutionary development in the wild by:

- protecting and monitoring populations
- maintaining, enhancing and restoring the integrity of its habitat to promote growth and recruitment

Intended management actions

Information Dissemination

1. Provide land managers and contractors with a site map and a detailed site description.

Responsibility: DSE (SW Region)

2. Prepare management guidelines and highlight responsibilities to land managers and contractors for the protection and ongoing viability of the sole remaining site of Shining Spyridium.

Responsibility: DSE (SW Region)

Site Protection

3. Clearly delineate the boundary of the site with fences and signposts.

Responsibility: DSE (SW Region)

Site Management

4. Develop and implement a plan for management of weed species at this site.

Responsibility: DSE (SW Region)

5. Trial a burning regime to maintain the shrubland and the Shining Spyridium population, in consultation with adjoining landholders, the local Shire and the CFA. Monitor for floristic and structural changes at the site pre- and post-fire.

Responsibility: DSE (Biodiversity & Natural Resources Division, SW Region)

Population reinforcement and re-introduction

6. Collect material for propagation and reinforcement of the existing population.

Responsibility: Royal Botanic Gardens

7. If population reinforcement proceeds, actively water and maintain transplanted material.

Responsibility: DSE (SW Region)

8. Identify a suitable secure site in the vicinity to establish a second population.

Responsibility: DSE (SW Region)

Research

9. Encourage, facilitate and support research into Shining Spyridium, including recruitment requirements, pollination biology and environmental correlates.

Responsibility: DSE (Biodiversity & Natural Resources Division)

References

- ANZECC (1999) *Threatened Australian Flora*. ANZECC Endangered Flora Network Secretariat, Environment Australia, Canberra.
- Canning, E. M. (1986) Rhamnaceae. In: *Flora of South Australia*. Vol 2. *Leguminosae to Rubiaceae*. (eds. Jessop, J. P. & Toelken, H. R.). p. 817. South Australian Government Printing Division, Adelaide.
- Coates, F. & Kirkpatrick, J. B. (1999) Is Geographic Range Correlated with Climatic Range in Australian Spyridium Taxa? *Aust. J. Bot.* **47**: 755-767.
- Coates, F. (1991) *The Conservation Ecology and Management of Five Rare Species in the Rhamnaceae Family*. Wildlife Scientific Report 91/3. Department of Parks, Wildlife and Heritage, Tasmania.
- Coates, F. (1996) *Ecological and biogeographical correlates of rarity in two narrow endemics in Tasmania: Spyridium microphyllum and Spyridium obcordatum*. Ph.D. Thesis, University of Tasmania.

- DSE (2004a) *Flora Information System (electronic flora database)*. Department of Sustainability and Environment: Melbourne.
- DSE (2004b) *Advisory List of Rare or Threatened Plants in Victoria - 2003*. Department of Sustainability and Environment: East Melbourne.
- EPBCA (1999) The Commonwealth Environment Protection and Biodiversity Conservation Act. *List of Threatened Species*. Environment Australia, Department of the Environment and Heritage.
- Walsh, N. G. (1999) Rhamnaceae. In: *Flora of Victoria*. Vol. 4: *Dicotyledons Cornaceae to Asteraceae*, (eds N.G. Walsh & T.J. Entwisle) p120. Inkata Press, Melbourne.
- Willis, J. H. (1972) *A Handbook to Plants in Victoria*. Vol. II *Dicotyledons*. p. 370. Melbourne University Press: Carlton.

Compiled by Michelle Tumino, Flora Ecology Research, Arthur Rylah Institute, Department of Sustainability and Environment.

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>

This Action Statement was prepared under section 19 of the Flora and Fauna Guarantee Act 1988 under delegation from Chloe Munro, Secretary, Department of Natural Resources and Environment, December 2001.

© The State of Victoria, Department of Sustainability and Environment, 2003

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

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

ISSN 1448-9902