

Action Statement

Flora and Fauna Guarantee Act 1988

No. 76

Smooth Darling Pea *Swainsona galegifolia*

Description and Distribution

Smooth Darling Pea *Swainsona galegifolia* (Andr.) R. Br. is a renascent perennial which varies from a compact plant to 60 cm high to a more robust shrub to 2 m, with many trailing or erect stems. Plants emerge from rootstock every autumn, flower and seed in late spring and early summer, and die back to the ground in late summer. The rhizomatous nature of the rootstock appear to be the primary means of spread.

Leaves are pinnately divided, 5-12 cm long, and consist of 21-25 closely spaced leaflets. Leaflets are characteristically notched at the tip. Flowers are 12-16 mm long and have the characteristic pea-family shape. They occur in dense terminal racemes about 20 cm long, on a slender stalk and a glabrous calyx. Throughout the range of the species, the flower colour varies from pink to shades of mauve, and many shades of red to maroon or yellow (Cunningham *et al.* 1981). In Victoria, flowers are mostly coppery red. Fruits are hairless, leathery, bladder-like, lime-green pods. Over summer, pods on dry stems ripen and release up to 30 small (2-4 mm) brown seeds.

The Smooth Darling Pea occurs in south-eastern Queensland; throughout New South Wales in highly variable habitats including River Red Gum (*Eucalyptus camaldulensis*) and Black Box (*E. largiflorens*) communities; and in north-eastern Victoria (Cunningham *et al.* 1981, Scarlett 1987 & Harden 1991). There is an unconfirmed record for South Australia (Black 1963).

In Victoria the species is known only from two populations, in the Indigo Creek and Felltimber Creek catchments, 12 and 8 km respectively west of Wodonga. In the 1980s only one small population of 100 plants was known, on 0.5 ha adjoining Felltimber Creek (CNR 1985, Scarlett

1987). However, surveys in 1993 found that this population comprises four stands (about 10,000 plants over 20 ha) within a 2 km long, 65 ha area of forested habitat on land managed by the Albury Wodonga Development Corporation (AWDC). Less than 5% of this population overlaps into an adjoining road reserve managed by the Wodonga Rural City Council (WRCC). The Indigo Creek population (10,000 plants, 30 ha) was discovered in late 1993 in a 72 ha Bushland Reserve. A population of about 100 plants seen as recently as 1985 on a roadside in the Indigo Creek catchment, about 6 km to the south-west, is now extinct.

The Felltimber Creek population, first documented by naturalist Bruce Kirkwood of Chiltern in 1984, occurs on steep (up to 35°), heavily timbered, south-facing slopes. Grassy Dry Forest (NRE 1996) dominates this site. Characteristic species include Red Stringybark (*Eucalyptus macrorhyncha*) and Red Box (*E. polyanthemos*) on drier upper slopes, but Apple Box (*E. bridgesiana*) and, to a lesser degree, Long-leaf Box (*E. goniocalyx*) are more prominent on lower slopes and in gullies. In the densely timbered, steeper slopes, Smooth Darling Pea is the dominant feature of the ground flora. The associated vegetation is restricted to Rock Fern (*Cheilanthes austrotenuifolia*), low sparse grasses, including wallaby-grasses (*Danthonia spp.*), and various herbs. In more open and disturbed sites, introduced grasses and broad-leaf weeds dominate and Smooth Darling Pea is less prominent. A second population in this vicinity was reportedly destroyed by road works (Scarlett 1987).

The Indigo Creek population occurs on drier northerly aspects on hill tops, slopes and gullies dominated by Granite Hill Woodlands (NRE 1996). Blakely's Red Gum (*E. blakelyi*) and Drooping Sheoke (*Allocasuarina verticillata*) and, to a lesser degree, White Box (*E. albens*) and Lightwood (*Acacia implexa*) are prominent within this section of the Bushland Reserve.

Conservation Status

Current Status

CNR (1994) Vulnerable in Victoria

SAC (1992) Threatened

Smooth Darling Pea has been listed as a threatened taxon on Schedule 2 of the Flora and Fauna Guarantee Act 1988.

Reasons for Conservation Status

Although the Smooth Darling Pea was first recorded in Victoria in 1980, it seems to have once been widespread in the upper watershed of the Indigo Creek and throughout Felltimber Creek catchment. According to locals it was common before World War 2, especially on tailing heaps left after mining (Scarlett 1987).

The initial decline of the species in Victoria is attributed to clearing and subsequent cultivation and grazing after European settlement of north-eastern Victoria in the mid 1800s. The use of aerial application of superphosphate on steep hill country — the last stronghold of the species — after World War 2 has been linked to the subsequent decline of Smooth Darling Pea in the Indigo Creek and Felltimber Creek catchments (Coyle *pers. comm.*). Competition from improved pasture species, the associated increase in domestic and feral grazing pressure, and added competition from weeds has significantly reduced the distribution and abundance of the species in Victoria.

Although the AWDC land has been recommended to be transferred to crown land, no formal agreement exists regarding its conservation and the land still subject to grazing.

Threats to the species include competition from weeds, grazing, soil erosion, and compaction and associated trail formation by domestic stock and other animals.

Major Conservation Objectives

The major conservation objectives are to:

- protect all populations of Smooth Darling Pea from threatening processes and encourage natural regeneration and expansion;
- re-establish the species in former habitats where the factors responsible for its decline are no longer present; and

- increase the number of wild plants from 20,000 to 25,000 by 2006.

Management Issues

Ecological Issues Specific to the Taxon

Flower production, pollination and production of quantities of viable seed appear to occur annually. The results of propagation trials suggest that Smooth Darling Pea, like other Fabaceae (Pea family) members, may be fire-adapted. That is, fire stimulates regeneration of soil-stored seed, and is usually required to induce significant seed germination events. The rootstock also probably resprouts after fire.

Past clearing and alteration of the surrounding land may have resulted in the remaining Victorian populations now only occupying marginal habitat (e.g. steep, heavily forested slopes) rather than the more fertile river flats. Furthermore, these relatively small remnants persist in a highly fragmented environment, surrounded by large expanses of relatively cleared farming land and subject to associated edge effects.

St. John's Wort (*Hypericum perforatum*), another renescent perennial, is a dominant or codominant species in the more open, previously disturbed sections, particularly in the Felltimber Creek population. Although established plants appear able to withstand such competition, Smooth Darling Pea germination and seedling recruitment may be inhibited.

Where the plants occur together, St. John's Wort tends to intertwine with stems of Smooth Darling Pea, making conventional weed control difficult. However, inaction could lead to a decline in Smooth Darling Pea in the more open sections of habitat.

Three biological control agents for St. John's Wort are present in the area, although they appear to have had little influence on its distribution and abundance. Chrysomela beetles (*C. hyperici* and *C. quadrigema*) were first released in the district in the 1940s but provide only minor suppression of growth in the more open areas and are virtually absent in heavily forested sites. A gall midge (*Zeuxidiplosis giardi*) released in the 1950s is even less significant. The most promising agent is the French Mite (*Aculus hyperici*), which reputedly exerts a significant impact in shaded areas such as those present in the Smooth Darling Pea habitat.

Competition from other weed species — Spear Thistle (*Cirsium vulgare*), Cat's Ear (*Hypochoeris radicata*), Toowoomba Canary-grass (*Phalaris aquatica*) and a host of annual grasses including Large Quaking-grass (*Briza maxima*), Yorkshire Fog

(*Holcus lanatus*) and Wild Oat (*Avena fatua*) — also threaten the long-term viability of Smooth Darling Pea in more disturbed areas, particularly roadsides.

Road widening and maintenance works threaten roadside habitat, particularly that below the level of the road formation, by clearing or smothering plants, disturbing associated native vegetation, and helping the spread of weeds.

The extent to which domestic stock graze Smooth Darling Pea appears to depend on factors such as seasonal influences, stocking intensity, and amount and quality of alternative feed. Allen (1949) notes that in south-western Queensland it is often well-grazed. Everist (1974) refers to stock developing a craving for the plant, however, Cunningham et al (1981) state that it is not readily grazed. Scarlett (1987) cites a report from a farmer in north-eastern Victoria indicating that Smooth Darling Pea would reshoot after being grazed by sheep but eventually died out under cattle grazing.

The Felltimber Creek habitat is grazed periodically by up to 70 Merino wethers. However, the relatively poor feed-value of the area, local observations that stock tend to avoid Smooth Darling Pea (Coyle *pers. comm.*), and the comparatively low stocking regime suggest that current grazing regimes have little direct impact on the species. However, indirect effects of soil compaction and associated weed spread by stock are considerable on steeper slopes.

Eastern Grey Kangaroos (*Macropus giganteus*), utilise Smooth Darling Pea habitat, but their impact on the pea is not known. A mob of about 40 periodically uses the Felltimber Creek area (Coyle *pers. comm.*).

In recent years the number of Rabbits (*Oryctolagus cuniculus*) appears to have been low, and they have therefore had little impact on the pea. However, in 1983 rabbit grazing was reported to have had a significant effect on a small, now extinct, population in Indigo Creek (Scarlett 1987).

Illegal trail bike riding within the road and adjoining creek reserve is a recent threat, causing trail formation, disturbance to native vegetation, and the spread of weeds in the vicinity of Smooth Darling Peas.

Wider Conservation Issues

Achieving the conservation objectives will help protect steep, erosion prone, forested land that is acknowledged by the Land Conservation Council (LCC 1986) to be important for land protection and landscape enhancement within the immediate vicinity of Albury-Wodonga. It will also help protect remnant Grassy Dry Forest and Granite Hill Woodlands vegetation that provides habitat and a movement corridor for a range of wildlife,

including the regionally significant Sand Goanna (*Varanus gouldii*). Controlling St. John's Wort will promote the regeneration and re-establishment of less competitive native ground flora and provide habitat for dependent ground fauna, including Burton's Snake-lizard (*Lialis burtonis*), which is also regionally significant.

Protecting and signposting roadside habitat will promote greater community awareness of roadside conservation.

Social and Economic Issues

Achieving the conservation objectives will have few adverse social and economic effects, and some positive social outcomes are expected.

Protection of roadside habitat is compatible with objectives of the local municipality and will enhance the roadside landscape. Increased visitation may result in wildflower collection pressure, although this is likely to be restricted to the roadside stand and not the vast majority of the population which is difficult to access. However, illegal collection may be minimised by signposting and public education.

Improved community awareness and participation in threatened species monitoring management is expected due to the close proximity of a roadside occurrence of the species to a large rural centre.

Opportunity costs associated with forgone stock grazing of the Felltimber Creek population are likely to be low, since the carrying capacity of the land is low. Conversely, there is evidence for a potential economic benefit from preventing domestic stock from grazing Smooth Darling Pea. Whittet (1958) and Everist (1974) refer to stock becoming 'pea-struck' or 'loco', a disease in sheep, cattle and horses which have developed a craving for the plant to the point of addiction. Everist (1974) notes that Smooth Darling Pea is quite nutritious, but that the pea-struck state results in a loss of condition and alertness and stock become unsteady and clumsy. According to Cunningham *et al.* (1981), the pea is poisonous to stock. The AWDC and current lessees support measures to protect the species.

Species of *Swainsona*, and Smooth Darling Pea specifically, have a moderate horticultural and nursery trade potential and have been used successfully as garden ornamentals. The propagation of the Victorian colour form can be achieved without adversely affecting the species' conservation, and would contribute positively to the maintenance of its gene pool, allowing the re-establishment or replenishment of wild stands in the event of a local extinction or decline.

Previous Management Action

In 1985, La Trobe University submitted locality information and informed the LCC of the significance of the species. In recognition of the species significance the Department of Conservation, Forests and Lands (CFL) enlisted the cooperation of the AWDC to exclude domestic stock from a 0.25 ha section of the population (approximately half the known area at that time) adjoining the road reserve, through the erection of a stock-proof fence. Anecdotal evidence suggests there has been a slight increase in the cover-abundance of the species both inside and outside the enclosure since that time.

The LCC's Final Recommendations for the North Eastern Area (Benalla - Upper Murray Review), published in 1986, included all the Smooth Darling Pea habitat and associated steep sloping forested land acquired by the AWDC in a 'Revegetation' category (i.e. land that was to become public owned and to be managed by CFL).

In 1989, Road-widening works by the Rural City of Wodonga smothered roadside Smooth Darling Pea and result in weed spread. This area was outside the species' then known distribution.

The Department of Conservation and Environment (DCE) undertook a detailed flora survey of the area known to support Smooth Darling Pea in 1990. A survey of the roadside at Long Gully failed to find any specimens. The department also liaised with the AWDC to re-affirmed its recognition of the site's significance, and to determine the current land tenure and lease arrangements, and determined past and present species distribution information and grazing management details through discussions with the lessee. Thistles were removed in recently disturbed sections of roadside habitat, and St John's Wort was hand-pulled the 0.25 ha stock enclosure and south of the road by prisoners involved in the Victorian Prison Industries Commission scheme. This precluded seeding for that season but resulted in only a short-term reduction in the abundance of these weeds.

Further surveys in 1991 expanded the known distribution and abundance of the species from 0.5 ha supporting 100 plants to two main stands of 15 ha with over 9000 plants. Combined botanical surveys were undertaken with the Botany Group of the North East Field Naturalist Inc. (NEFN). In 1992 another two stands totalling 5 ha were discovered more than 1 km east of the main stands. French Mite were released to control of St. John's Wort near the roadside stand. Moderate populations of the Chrysomela beetle, a biological control agent for St. John's Wort, were found.

The Indigo Creek catchment population discovered in 1993. Liaison commenced with Indigo Valley Landcare Group (IVLG) and a St. John's Wort control program initiated at this site. Propagation trials were successfully undertaken between 1994 and 1996, and tubestock seedlings were made available to IVLG members.

A study (incorporating Felltimber Creek site) of St. John's Wort in remnant forest has commenced. The National Botanic Gardens (ACT) has been given a permit for Smooth Darling Pea collection for taxonomic studies and flower colour coding.

On-site inspections have been undertaken with the local municipality regarding roadside site protection. The AWDC, LCC and NRE have discussed the delineation of key conservation zones from 'Revegetation' land originally recommended by the LCC to be transferred to public land status. Two parcels (81 and 134.5 ha respectively) supporting Felltimber Creek populations have been included in parcels delineated.

Intended Management Actions

As well as the Department of Natural Resources and Environment, North East Region (NRE), responsibility for implementing the management actions rests with the following organisations, which have been consulted in the development of the actions:

The following organisations are prepared to assist in implementing the actions:

- Albury-Wodonga Development Corporation (AWDC)
- Roadside Conservation Advisory Committee (RCAC)
- Wodonga Rural City Council (WRCC)
- Albury-Wodonga Field Naturalist Club (AWFNC)
- Indigo Valley Landcare Group Inc. (IVLG)
- La Trobe University — Wodonga Campus (LTU)
- North East Field Naturalists Inc. — Botany Group (NEFN)
- Royal Botanic Gardens, Melbourne (RBGM)
- Society for Growing Australian Plants — Albury Wodonga Chapter (SGAP)

Monitoring

NRE, NEFN, AWFNC, IVLG

1. Monitor populations annually and enter the results onto the Victorian Rare or Threatened Plant Population (VROTPop) database. Establish permanent photo points and corresponding flora survey quadrats in each main stands, and map the distribution and abundance of key species.

Survey

NRE, NEFN, AWFNC, IVLG

2. Undertake surveys to ascertain the presence and abundance of Smooth Darling Pea in potential habitat in forested remnants within 10 km of the existing populations.

Land Transfer

NRE, AWDC, lessee

3. Facilitate the transfer of the two recommended land parcels supporting the Felltimber Creek populations to NRE, to be managed for nature conservation.

Management Planning/Domestic Stock

Management

NRE, AWDC, lessee

4. Prepare a management plan to protect the natural features of the two land parcels when they have been transferred to NRE. Maintain existing domestic stock grazing regimes until the land transfer is completed. Investigate, if applicable, interim grazing arrangements beyond the transfer date, including delineation of areas where grazing would be permitted.

Pest Plants and Animals

NRE, IVLG

5. Assess the status and, where required, establish viable populations of the French Mite throughout the known distribution of Smooth Darling Pea. Monitor weeds and rabbits and implement control programs when required.

Significant Roadside Area (SRA) Sign

NRE, RCAC, WRCC

6. Negotiate a Significant Roadside Area sign agreement delineating cooperative planning of road and roadside reserve works, including the erection of SRA signs at the Felltimber Creek site. Consider formalising this a Public Authority Management Agreement under the *Flora and Fauna Guarantee Act* (1988).

Planting

NRE, IVLG, SGAP, NEFN, AWFNC

7. Establish clear guidelines, consistent with prescriptions being developed by NRE, for the collection, recording of provenance, propagation, and re-introduction of Smooth Darling Pea. One prerequisite for re-introductions will be the identification of the factors that have caused the species' decline at each site and an assurance that these or other

factors are no longer operating or can be remedied.

8. Re-introduce Smooth Darling Pea into identified high priority sites.

Liaison

NRE, community groups

9. Maintain liaison with community groups and adjoining landholders, encourage their participation in conservation works, Landcare activities, and promote the Land For Wildlife scheme.

Other Desirable Management Actions

Ecological Burn

NRE, LTU

10. Undertake a small-scale controlled burn to investigate the response of Smooth Darling Pea (regrowth from existing plants and seed germination) to fire. If results indicate benefits, delineate possible future ecological burn prescriptions.

Legislative Powers Operating

Legislation

Catchment and Land Protection Act 1994 — provides for the integrated management and protection of catchments; participation of the community and a system of controls for noxious weeds and pest animals.

Conservation Forests and Lands Act 1987 — provides for the management of public land under the Act, the coordination of legislation administered by NRE and for the preparation of codes of practice.

Country Fire Authority Act 1958 — provides for fire protection and suppression in country areas and requires that authorities take practical steps for the prevention of fires.

Crown Land (Reserves) Act 1978 — provides for reserving areas as public land and for making a specific reservation status for existing public land.

Fences Act 1968 — provides guidelines for the control, maintenance and repair of dividing fences for landholders.

Flora and Fauna Guarantee Act 1988 — provides for the protection of flora and fauna in Victoria through a range of mechanisms including controls over the handling or protected flora and listed fish.

Forests Act 1978 — provides for the management of forests, and includes controls over the taking of forest produce.

Local Government Act 1958 — provides for local council by-laws and conservation regulations (e.g. permit requirement for land clearing).

Planning and Environment Act 1987 — provides for land use controls and possible follow-up to Interim Conservation Order controls, and the establishment of covenants with local landholders and local governments.

Licence/Permit Conditions

Permits to collect Smooth Darling Pea will be issued only for activities which are in accordance with the conservation objectives and prescribed intended management actions.

Consultation and Community Participation

The following agencies and community groups have and will continue to be involved in the conservation of Smooth Darling Pea: AWDC, WRCC, RCAC, IVLG, NEFN, AWFNC, SGAP, Friends of Chiltern Park Inc. Local landholders and the general public, through media awareness campaigns, will also be involved in this process.

The North-East Catchment and Land Protection Board will be kept informed of progress with the implementation of this Action Statement.

Implementation, Evaluation and Review

This Action Statement sets out the program to protect and enhance Smooth Darling Pea habitat over the next 10 years. The Regional Manager, NRE North East Region, will be responsible for coordinating its implementation and annual review.

Contacts

Management

Flora and Fauna Coordinator, NRE Wodonga
Chief Ranger, NRE Murray Parks Management Area
Flora and Fauna Branch, NRE Melbourne

Biology

Neville Scarlett, Botany Department, La Trobe University
Bob Parsons, Botany Department, La Trobe University
Flora and Fauna Coordinator, NRE Wodonga

References

- Allen, G.H. (1949) Notes on the Plants of South-Western Queensland. Mimeo.
- Black, J.M. (1963) Flora of South Australia, Part II (2nd edn). SA Government Printer: Adelaide.
- CNR (1985) Report on preserving rare species. Department of Conservation and Natural Resources, Wodonga, Victoria (unpubl.).

CNR (1994) Victorian Flora Species List. Department of Conservation and Natural Resources, Victoria.

Cunningham, G.M., Mulham, W.E., Milthorpe, P.L. and Leigh, J.H. (1981) Plants of Western New South Wales. NSW Government Printer: Sydney.

Everist, S.L. (1974) Poisonous Plants of Australia. Angus & Robertson: Sydney.

Gullan, P.K., Cheal, D.C. and Walsh, N.G. (1990) Rare or Threatened Plants in Victoria. Department of Conservation & Environment: East Melbourne.

Harden, G.J. (ed.) (1991) Flora of New South Wales (Vol 2). NSW University Press: Kensington, NSW.

Land Conservation Council (1986) Final Recommendations, Benalla - Upper Murray Area (Review). VGPO: Melbourne.

SAC (1992) Final recommendation on a nomination for listing: Smooth Darling Pea *Swainsona galegifolia* (Nomination No. 236). Scientific Advisory Committee, Flora and Fauna Guarantee. Department of Conservation and Environment: East Melbourne.

Scarlett, N.H. (1987) *Swainsona galegifolia*. In Register of Rare or Endangered Native Plants in Victoria. Department of Botany, La Trobe University: Bundoora, Victoria.

Whittet, J.N. (1958) The Farmer's Handbook Series: Weeds. NSW Department of Agriculture: Sydney.

Compiled by Glen Johnson, 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 first published in 1997 and remains current. This version has been prepared for web publication. It retains the original text of the action statement, although contact information, the distribution map and the illustration may have been updated.

© The State of Victoria, Department of Sustainability and Environment, 2004

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