

NSW SCIENTIFIC COMMITTEE

Swainsona sericea (A.T. Lee) J.M. Black ex H. Eichler (Fabaceae-Faboideae)

Review of Current Information in NSW

June 2008

Current status:

Swainsona sericea (Silky Swainson-pea) is currently listed as Threatened in Victoria under the *Flora & Fauna Guarantee Act 1988* (FFG Act) and Endangered in South Australia under the *National Parks and Wildlife Act 1972* (NPW Act), but is not listed under Commonwealth legislation. The NSW Scientific Committee recently determined that *Swainsona sericea* meets criteria for listing as Vulnerable in NSW under the *Threatened Species Conservation Act 1995* (TSC Act), based on information contained in this report and other information available for the species.

Species description:

Thompson and James (2002, p. 604) describe *Swainsona sericea* as follows: "Prostrate or low-growing perennial to about 10 cm high; stems densely pubescent with medifixed hairs, hairs appressed or with both ends raised. Leaves mostly 2-7 cm long; leaflets 5-13, narrow-elliptic, lateral leaflets mostly 5-15 mm long, 1-3 mm wide; terminal leaflets distinctly longer than laterals, apex acute, both surfaces \pm pubescent; stipules 3-7 mm long. Racemes mostly 2-8-flowered; flowers 7-11 mm long. Calyx pubescent often with dark hairs, teeth \pm equal to the tube. Corolla purple; keel apex obtuse with swellings behind tip, slightly twisted. Style tip geniculate. Pod obovate, usually 10-17 mm long, pubescent; style 6-7 mm long; stipe minute."

Taxonomy:

Swainsona sericea was originally described as *Swainsona oroboides* F. Muell. ex Benth. subsp. *sericea* A.T. Lee (Eichler 1965). The taxon is now recognised as a true species in all the taxonomic literature. It is sometimes confused with *S. oroboides* and *S. reticulata* and but can be distinguished by the presence of medifixed hairs. Other key characters include the geniculate style-tip and acuminate-deltoid calyx lobes equal to or shorter than the tube (Thompson 1993). The specific epithet describes the silky-hairy stems and leaves of the plant.

Distribution and number of populations:

Swainsona sericea has a wide-ranging distribution throughout Tablelands, Western Slopes and Western Plains Botanical Subdivisions of NSW, while also found in South Australia, Victoria and Queensland. Its national distribution is represented by over 220 herbarium and atlas records, centred on the Monaro Tableland in southern NSW. It is also common in western slopes regions of NSW, with isolated collections from the far north-west in Sturt National Park and from near Pooncarie in the far south-west. At least 80 geographically distinct populations are represented in NSW, with the actual number likely to be in the vicinity of 100 or more (NSW Herbarium Records, PlantNET NSW, Atlas of NSW Wildlife, Australia's Virtual Herbarium).

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Ecology:

Key habitat requirements

Swainsona sericea grows in grassland and eucalypt woodland communities in a variety of habitats including riverine plains, sandhills and rocky outcrops. On the Monaro the species is found in natural temperate grassland and Snow Gum woodland. At Southern Tablelands and South Western Slopes sites it is found in Box-Gum woodlands and grazed grassland communities. Populations are recorded from the Central Western Slopes growing on gentle slopes in White Box grassy woodlands and on a flat granite hillcrest with White Box, White Cypress Pine and Dwyer's Red Gum.

Associated species in grassland habitats include *Austrodanthonia duttoniana*, *A. caespitosa*, *Enteropogon acicularis*, *Austrostipa nodosa*, *Homopholis proluta*, *Chrysocephalum apiculatum*, *Pycnosorus globosus*, *Calotis scabiosifolia*, *Microseris lanceolata*, *Swainsona murrayana*, *S. plagiotropis*, *S. procumbens* and *Maireana aphylla*. Associates at woodland sites include *Eucalyptus albens*, *E. melliodora*, *E. dwyeri*, *E. dalrympleana*, *E. pauciflora*, *Callitris glaucophylla*, *Acacia doratoxylon*, *Brachychiton populneus*, *Corymbia terminalis*, *Acacia tetragonophylla*, *Swainsona formosa* and *Themeda australis* (NSW Herbarium Records).

Life history

Swainsona sericea flowers from September to November, with the species making most of its growth in the cooler months. *Swainsona* species are largely renascent perennials, resprouting in suitable conditions from a persistent rootstock. Vegetative reproduction appears to be the most common method of reproduction in *Swainsona sericea*, at least in mallee populations in Victoria (Earl *et al.* 2003). Copious flowers and abundant quantities of seed can be also produced under favourable conditions. Little is known of its reproductive biology, however the species is believed to regenerate from seed after fire. Fire is likely to play an essential role in seedling regeneration by breaking the dormancy of the hard-coated seed. Light grazing may also reduce grass cover, maintaining an open sward as it does for *S. plagiotropis*, allowing sufficient inter-tussock space for germination and establishment (Appleby *et al.* 1991; Earl *et al.* 2003). *Swainsona* species are well known as a cause of stock-poisoning, due to the presence of the poisoning principle swainsonine which affects the nervous system (Thompson 1993).

Number of mature individuals:

Recorded data on population size for the 80 estimated populations of *Swainsona sericea* are highly variable. Plant abundance is generally described as locally occasional to frequent and common, with counts ranging from five to 2 000 plants made at various sites in NSW (Table 1). Information suggests populations are relatively abundant in optimal seasons. Small numbers appear to represent incidental records, with potential populations likely to be much larger. Population sizes can be significant - a count of 500 plants was made along a roadside reserve near Cudal and another of 2 000 plants at Michelago on the Southern Tablelands. Total number of mature individuals is likely to be in the range of 18 000 to 40 000 plants, assuming a conservative

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estimate of 200 to 500 individuals per population. This range could be much higher, considering the potential for thousands of plants per population. In Victoria, over 29 populations comprising an estimated total of 18 000 individuals are recorded for grassland habitats in the Northern and Wimmera Plains and unstable dunes in the Hattah-Kulkyne area, averaging 620 plants per population (Earl *et al.* 2003). Up to 50 000 individuals of *Swainsona sericea* could occur within the 80 estimated populations in NSW if these Victorian averages are considered.

Table 1. Location of *Swainsona sericea* sites in NSW with data or comments recorded on population size and plant abundance (31 records ordered chronologically by most recent collection date) (NSW Herbarium Records, Atlas of NSW Wildlife).

Location	Date of Record	Population Size /Description	No. Plants
Billy's Lookout, NNE West Wyalong (CWS)	October 2004	One small population only, possibly 80 plants	80
Morundah area (SWP)	September 2004	128 co-ordinates for individual plants	128
Eugowra Rd, W of Cudal (CWS)	September 2004	Large population, possibly 500 plants present along 300 m of road reserve	500
Bredbo (ST)	October 2003	26 plants (seedlings), population area 1 ha	26
Lot 10, Michelago Rd (ST)	August 2003	At least 200 plants scattered over 30 ha area	200
North Cooma (ST)	July 2003	20 plants	20
Lot 6, Michelago Rd, W of Booroomba Ck (ST)	November 2002	30 plants	30
Lot 6, Michelago Rd, (E side Quarry pits) (ST)	November 2002	30 plants	30
Monaro Highway (ST)	February 2002	Clump of about 20 shoots, could be one plant	20
SE of Monaro Highway Bridge (ST)	December 2001	Five plants in a 0.4 ha patch	5
Valley View N of Bredbo (ST)	December 2001	Locally frequent	-
N of Bredbo (ST)	November 2001	100 plants	100
N of Bredbo (ST)	November 2001	200 plants scattered over a 150 ha area	200

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N of Bredbo (ST)	November 2001	40 plants scattered over a 5 ha area	40
NW of Bredbo (ST)	November 2001	100 plants scattered over a 100 ha area	100
Michelago (ST)	October 2001	Approx. 2 000 plants spread across 70 ha	2000
Monaro Hwy, Michelago area (ST)	October 2001	Five spreading plants	5
“Royalla” subdivision, Monaro Highway (ST)	November 2000	More than 20 mature seedlings over 0.5 ha area	20+
W of Narrandera (SWP)	October 2000	1, 4, 10, 12, 14 & 23 plants	64
Woodstock Cemetery (CWS)	October 2000	Locally occasional	-
Past Killaloe, near Cumnock (CWS)	September 1999	Scattered/localised	-
Smiths Rd SSE of Tharwa (ST)	October 1995	Frequent	-
Oban River, SW of Amos Park (NT)	November 1993	Occasional	-
Curtin paddock, Jerilderie-Conargo Rd (SWP)	September 1993	Common along E fence	-
Dead Horse Gully, Sturt NP (NFWP)	September 1989	Rare	-
Googong Dam (ST)	November 1986	Locally common	-
Midway between Gulgong and Ulan (CWS)	September 1983	Occasional herb	-
Broula, SW of Cowra (CWS)	September 1973	Sparingly distributed	-
N of Deniliquin (SWP)	October 1963	Common	-
Western shores of Lake Cargelligo (SWP)	August 1962	Frequent in open spaces	-
Wingello (CT)	December 1913	Growing in masses	-

Threats:

Information suggests that *Swainsona sericea* is not as uncommon as previously thought. Clearing of habitat has been responsible for past declines with the development of agricultural landscapes, particularly in Victoria (Earl *et al.* 2003). Populations are also sensitive to grazing pressure and

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weed invasion. A number of remaining sites occurring on roadsides in NSW are susceptible to the disturbances associated with road maintenance and widening. The species may also be vulnerable to trampling and pugging effects by stock when the clay soils are wet. Heavy grazing in the flowering and fruiting season may influence the soil seed bank and hence the future abundance of plants in populations. Another concern is security of tenure for the populations found on travelling stock routes and roadside reserves, which could be subject to clearing or altered management (expert advice). 'Clearing of native vegetation' is listed as a Key Threatening Process under the TSC Act in NSW.

Extreme fluctuations:

Swainsona sericea is a seasonal perennial, responding to winter-spring rainfall and possibly fire events, resulting in population numbers and abundances that appear to be relatively unstable from year to year. Populations may also persist unseen during adverse conditions as soil-stored seed, requiring cool-season rains or a fire event to release dormancy. Any variation in counts within single populations over the years may simply reflect this seasonal variability, flowering frequency or other environmental cycles. It is likely that populations are reasonably stable, given that dormant and non-flowering plants are relatively difficult to detect. The species has a wide area of distribution throughout south-western NSW, with disjunct outlying populations in the far north-west and Northern Tablelands. This suggests that the species has been under-collected or overlooked in the past, with populations likely to be discovered during favourable seasons with targeted survey in areas of suitable habitat.

Population reduction and continuing declines:

There is currently no hard evidence of population reductions of *Swainsona sericea* across its range of distribution, with many new and substantial populations documented in recent years. It is likely that some populations have been reduced in areas that have been cleared or overgrazed, but there are no data available to substantiate this. Climate change may also have reduced populations during the recent drought, as the conditions necessary for flowering and germination have not been met in many parts of NSW particularly in the central west and Riverina. Given the number of potential threats to the species however, it is reasonable to infer a projected decline in the future unless vulnerable sites are protected.

Extent of Occurrence (EOO) & Area of Occupancy (AOO):

National EOO for *Swainsona sericea* is calculated at well over 1 million km², incorporating the Victorian and disjunct South Australian records (Figure 1). EOO of the species in NSW alone covers an area of about 670 000 km² (based on a geographic range of 580 km from the Victorian border to the NFWP locality, and a longitudinal distribution of 1 155 km across western NSW to tablelands localities (Figure 2). It is difficult to quantify the AOO of *Swainsona sericea* given the seasonal nature of the species. Large fluctuations in population size and area of occupancy are natural responses to variable seasonal conditions. It is reasonable to assume the potential AOO is

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relatively large, in the order of hundreds of km² given the extensive habitat areas. Using a minimum coverage of 4 km² or 400 ha per population results in an AOO of 320 km² for the estimated 80 populations. This figure is likely to be conservative, considering the large areas of potential habitat and probability of more large populations. An upper bound estimate may be as high as 600 km² if these factors are considered.

Severe fragmentation:

Given that large areas of the grassland habitats occupied by *Swainsona sericea* have been cleared for agriculture or degraded with continuing grazing pressures, it is reasonable to assume that populations have been fragmented to some degree. However as a seasonally opportunistic species, populations can be widespread and common under favourable conditions, even in disturbed areas or small remnant habitats surrounded by cleared areas. The numerous records in its core area of distribution are relatively continuous, suggesting some level of habitat stability. There is currently insufficient evidence to infer that populations of *Swainsona sericea* have undergone severe fragmentation and genetic isolation. Phylogenetic studies would be useful to get a better understanding of the genetic integrity and diversity of existing populations and the extent of genetic interaction.

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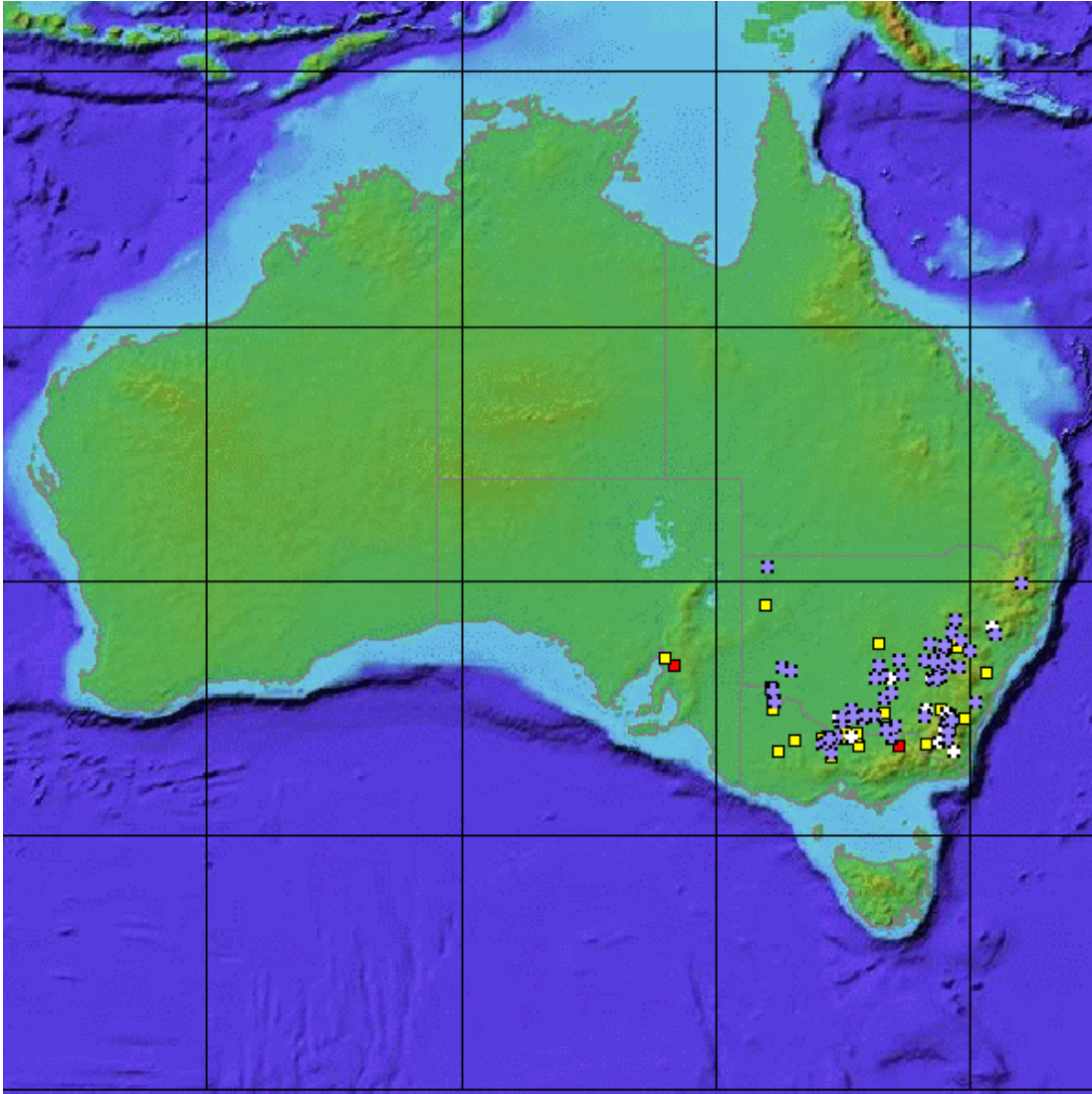


Figure 1. National distribution of *Swainsona sericea* based on 190 mapped records from various herbaria (Australia's Virtual Herbarium 2008).

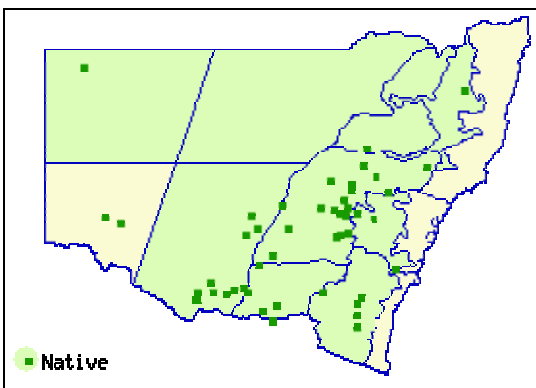


Figure 2. Distribution of *Swainsona sericea* in New South Wales, showing locations of known records (PlantNET NSW 2008).

ESTABLISHED UNDER THE THREATENED SPECIES CONSERVATION ACT 1995

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Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: www.environment.nsw.gov.au .

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

NSW Scientific Committee (2008) *Swainsona sericea* Review of current information in NSW. June 2008. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.