

State Herbarium of South Australia

Botanic Gardens and State Herbarium

Department for Environment and Water

Milestone Report

**Regional Landscape Surveillance for
New Weed Threats Project**

2019-2020

**Milestone: Annual report on new plant
naturalisations in South Australia**

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August 2020



Government
of South Australia



State Herbarium
of South Australia

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Summary

In 2019-20, **17** new weeds have been added to the South Australian Plant Census as naturalised or questionably naturalised in the State, mainly through the work of the State Herbarium of South Australia's Weeds Botanist Chris Brodie and Senior Botanist Peter Lang.

This comprises **eleven** taxa collected in South Australia for the first time, and **six** taxa for which herbarium collections had been made in previous years but have now been more thoroughly investigated and assessed as weedy in South Australia. Detailed descriptions are given for each of these plant species.

In addition, **38** updates were made to existing Census weed records involving either a change to the scientific name, a change to its regional occurrence or a change to the establishment status.

During the last year, the Weeds Botanist undertook **29** days of fieldwork in **seven** of the State's eight NRM regions, and took part in **13** separate community engagement activities, in **five** of the State's NRM regions. During these field trips over **360** specimens were collected for the State Herbarium of South Australia.

1. Activities and outcomes for the 2019/2020 financial year

This report summarises the work carried out by the State Herbarium of South Australia for the project *Regional Landscape Surveillance for New Weed Threats*.

Funding

Funding for the project was received from a number of sources, namely: the State Natural Resource Management Program, Department for Environment and Water, South Australia (DEW); Biosecurity SA, Department of Primary Industries and Regions, South Australia (PIRSA); Natural Resources Adelaide and Mt Lofty Ranges (NR AMLR). Their support is gratefully acknowledged.

Additional funds were secured for the provision of plant identification services for a PIRSA/SARDI biosecurity research project and Natural Resources Eyre Peninsula (NR EP) project, and for running a series of workshops in the South East on new and emerging weed threats, organised and supported by Natural Resources South East (NR SE).

This funding covered the salary of a Weeds Botanist (Chris Brodie), based at the State Herbarium, and partially defrayed the cost of undertaking fieldwork and plant sample processing.

The State Herbarium of South Australia's staff and Honorary Research Associates provided considerable in-kind support for the project. They assisted with identifications, taxonomic and nomenclatural expertise, analysis and reporting, project management, plant sample processing, and data generation (on selected specimens and species¹).

¹ Available online via the *Electronic Flora of South Australia*, eFloraSA, and the *Census of South Australian Plants, Algae and Fungi*, Census (<http://flora.sa.gov.au>).

Activities

A major focus of the work of the Weeds Botanist was discovery and collection of new weed records, with **29** days of fieldwork carried out in seven of the State's eight Natural Resources Management (NRM) regions, namely:

- Adelaide Mount Lofty Ranges; (AMLR)
- Alinytjara Wilurara (AW)
- Eyre Peninsula (EP)
- Northern and York (N&Y)
- South Australian Arid Lands (SAAL)
- South Australian Murray-Darling Basin (SAMDB)
- South East (SE).

Fieldwork was done in conjunction with PIRSA staff, DEW staff and volunteers (see Appendix 1, Table 3). During these field trips, over **360** specimens were collected for the State Herbarium of South Australia.

The Weeds Botanist undertook **13** community and staff engagement activities during the year (see Appendix 1, Table 4). Community and staff engagement activities (e.g. Fig. 1) help to increase awareness of the weeds themselves, the value of their early detection and the processes required to contribute scientifically valid specimens and records to the State Herbarium.

Support for the Weeds Botanist position also provided an essential point of contact for regional staff and communities to gain precise plant identifications and associated information including distribution, taxonomic status and establishment status of weeds.



Fig. 1. Members of the Blinman 4WD Club, with Weeds Botanist Chris Brodie (far right) and PIRSA's Shannon Robertson and Troy Bowman (1st and 3rd from left), following a community presentation on feral cacti, 3 Sep. 2019.

Outcomes and progress of weeds monitoring

The State Herbarium defines all naturalised (established,*) and questionably or sparingly naturalised (questionably established, ?e) taxa as weeds or potential weeds. These are non-native species that have at some level established naturally in the wild, being either self-sustaining or showing some degree of self-propagation.

This year we have recorded **17** new weeds for the State (see Section 2).

Since the project began in 2009, a total of **236** new naturalised or questionably naturalised plants have been recorded through field collections and research at the Herbarium. These records have subsequently been added to the online *Census of South Australian plants, algae and fungi* (<http://flora.sa.gov.au/census.shtml>).

An overview of the numbers of weeds reported through this project (Figs 2 & 3) shows that beyond the initial rapid detection of new weeds at the start of the program, significant numbers of new weeds still continue to be detected each year in South Australia.

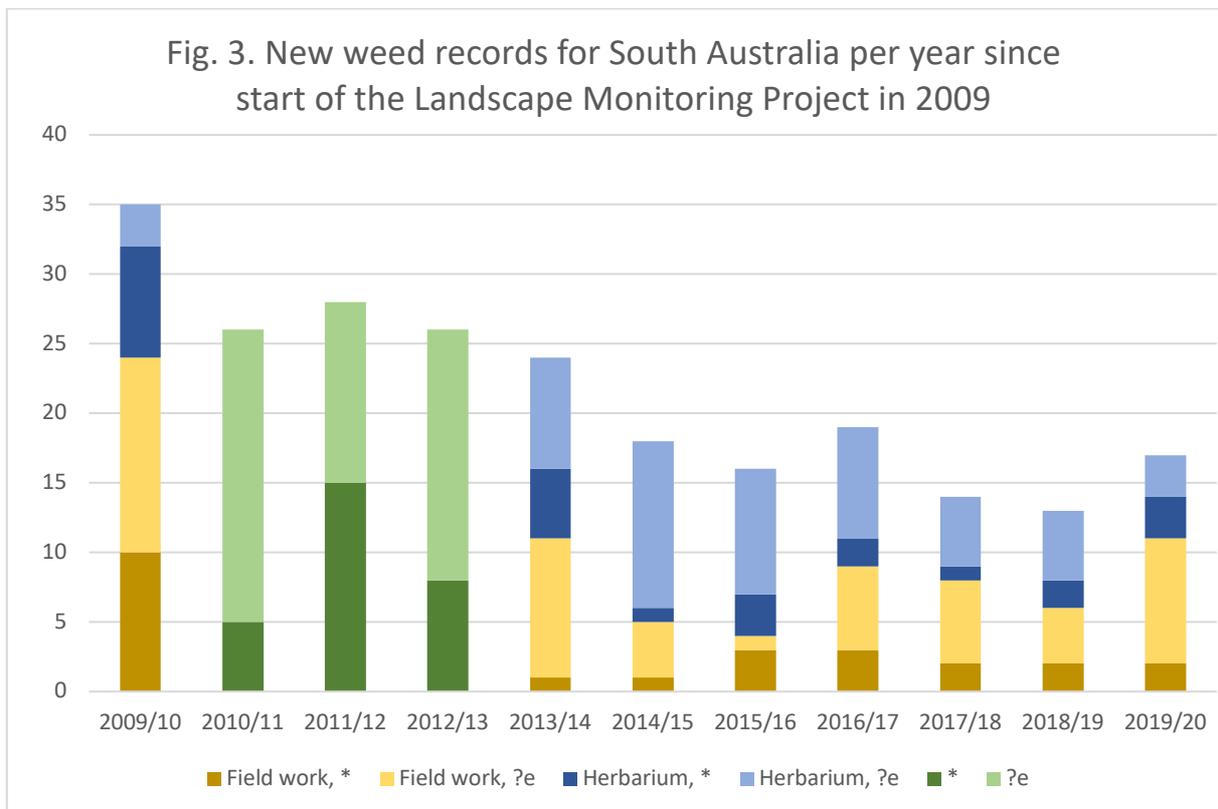
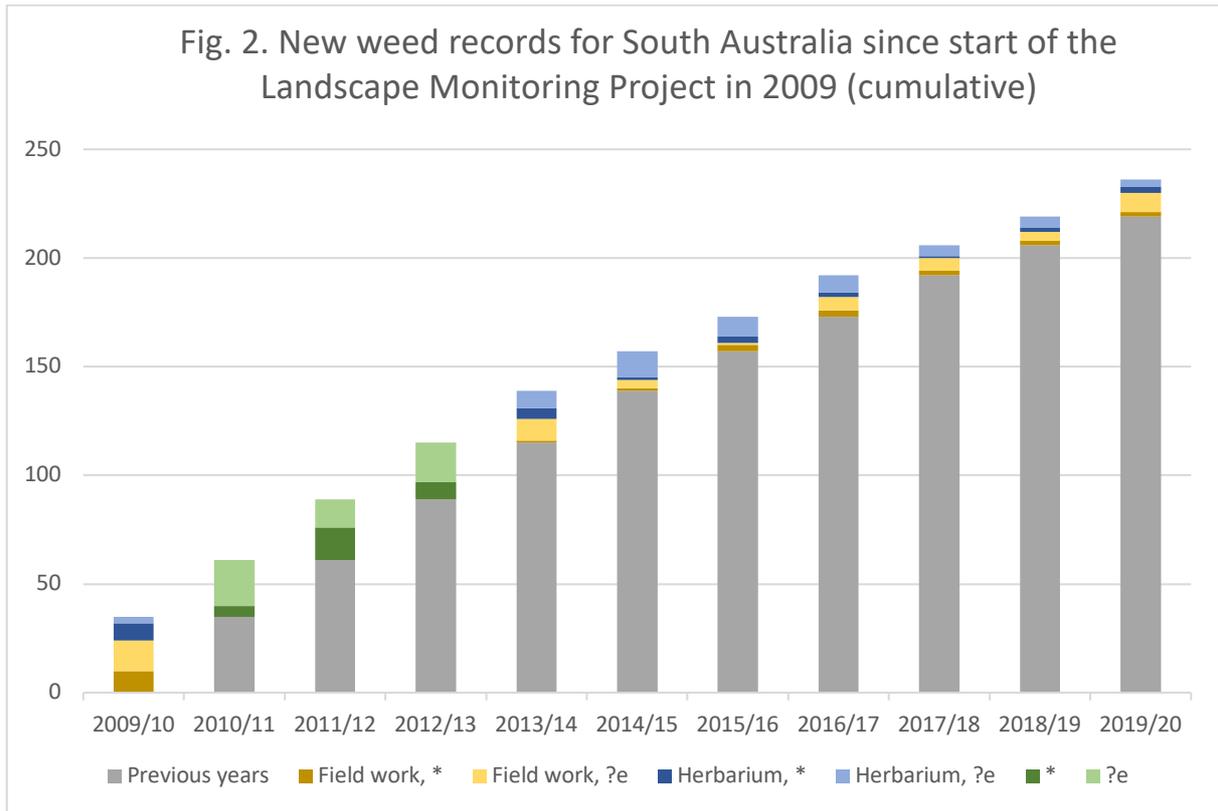
Eleven of the new weed records are discoveries resulting from recent collections that were made for the first time by the Weeds Botanist, regional staff, and collaborators.

Six of the new weeds records were of species that had existing (historical) herbarium collections. Two of these were fieldwork-detected species that had existing State Herbarium collections but data on their occurrences in the State or taxonomic status was inadequate for assessment. The recent field observations and collections enabled their addition to the Census for the first time as naturalised or questionably naturalised. Four of these new species records were discovered when existing State Herbarium collections were re-examined and/or re-identified during the past year enabling their addition to the Census as naturalised or questionably naturalised.

It should be noted that the Monarto plantings continue to be the source of alien tree species, with four reported here. In the 1970's the Monarto site, located an hour's drive from Adelaide, was the South Australian government's proposed location for a new city. Planning and preliminary design proceeded from 1972 to 1975, but Adelaide's proposed satellite city was never developed. However, the planting of trees and shrubs from around Australia over many hectares on various plots as part of a scientific trial did. The aim was to find species best suited as amenity plantings for the tough conditions of the site. Many of these plants persist today without care or management, and in some cases are self-propagating and establishing.

The Census provides the South Australian community with information on the State's native and naturalised (weedy) plants occurring in the wild, listing their current name and synonyms (previous names), as well as their regional distribution and conservation status. This information underpins our knowledge on plant species identity and occurrence, and as such forms an official reference point for any legislative action relating to native and naturalised plants growing wild.

Data obtained from researchers and botanists within and outside SA, new collections, and ongoing taxonomic research in the Herbarium all contribute to assessments included in the Census. Maintaining the Census involves monitoring and reviewing work published by botanists worldwide that affects the taxonomy and/or nomenclature of species occurring in South Australia.



Data in **Figs 2 & 3** from the yearly *Regional Landscape Surveillance* reports, specifying new weeds recorded as established (*) or questionably established (?e) through **Field work** or existing **Herbarium** collections. The distinction between Fieldwork and Herbarium sources was not reported in the years 2010/11 to 2012/13 (green bars).

2. New naturalised or questionably naturalised records of plants in South Australia.

At the moment, there are **5134** vascular plant taxa recognised in South Australia, of which **1611** alien plants that are established or questionably established in the wild, i.e. about one third of South Australia's plant taxa are weeds. Over the previous year (14 May 2019–13 May 2020) a total of **17** new species records of naturalised or questionably naturalised plants were added to the Census, based on collections deposited and accessioned in the State Herbarium (see **Table 1** and Section 3 of this report).

These fall into three categories:

- **Eleven** fieldwork-detected species, i.e. collected recently for the first time and added to the Census for the first time in the past year. There is definitive evidence of these being established or questionably established in the wild:

- ?e *Arum palaestinum* Black calla lily
- ?e *Eucalyptus brockwayi* Dundas mahogany
- ?e *Eucalyptus gardneri* subsp. *gardneri* Blue mallet
- * *Eucalyptus salubris* Gimlet
- ?e *Eucalyptus torquata* × *E. woodwardii* Torwood hybrid
- ?e *Juncus vaginatus* Clustered rush
- ?e *Lophocereus marginatus* Mexican fencepost cactus
- ?e *Populus* × *canescens* Grey poplar
- ?e *Rhaphiolepis umbellata* Japanese hawthorn
- * *Tephrocactus articulatus* Pine-cone cactus
- ?e *Thuja plicata* Western red cedar

- **Two** fieldwork-detected species that had existing State Herbarium collections, but data on their distribution in the State or taxonomic status was inadequate for assessment. The recent field observations and collections enabled their addition to the Census:

- ?e *Gasteria obliqua* Lawyer's tongue
- * *Isopogon latifolius* Drumsticks

- **Four** new species records were discovered when existing State Herbarium collections were re-examined and/or re-identified:

- ?e *Eucalyptus ravida* Silver-topped gimlet
- ?e *Gasteria carinata* var. *verrucosa* Keeled gasteria
- * *Hedera algeriensis* Algerian ivy
- * *Hedera hibernica* Irish ivy

* = established/naturalised in the wild; ?e = questionably established.

Table 1: The 17 new South Australian weed records added to the Census, based on recent collections and knowledge newly generated.

* = established/naturalised in the wild; ?e = questionably established.

For **regional distribution**, see map of Herbarium regions in Appendix 2 (Fig. 21).

New Taxon	Common Name	Family	Naturalised /established	Regional distribution
<i>Arum palaestinum</i>	Black calla lily	Araceae	?e	SL
<i>Eucalyptus brockwayi</i>	Dundas mahogany	Myrtaceae	?e	MU
<i>Eucalyptus gardneri</i> subsp. <i>gardneri</i>	Blue mallet	Myrtaceae	?e	MU
<i>Eucalyptus ravidata</i>	Silver-topped gimlet	Myrtaceae	?e	FR
<i>Eucalyptus salubris</i>	Gimlet	Myrtaceae	*	MU
<i>Eucalyptus torquata</i> × <i>Eucalyptus woodwardii</i>	Torwood hybrid	Myrtaceae	?e	MU
<i>Gasteria carinata</i> var. <i>verrucosa</i>	Keeled gasteria	Liliaceae	?e	SL
<i>Gasteria obliqua</i>	Lawyer's tongue	Liliaceae	?e	NL
<i>Hedera algeriensis</i>	Algerian ivy	Araliaceae	*	SL
<i>Hedera hibernica</i>	Irish ivy	Araliaceae	*	FR, NL, SL, SE
<i>Isopogon latifolius</i>	Drumsticks	Proteaceae	*	SL
<i>Juncus vaginatus</i>	Clustered rush	Juncaceae	?e	SL
<i>Lophocereus marginatus</i>	Mexican fencepost cactus	Cactaceae	?e	NL
<i>Opuntia articulata</i>	Pine-cone cactus	Cactaceae	*	FR, NL
<i>Populus</i> × <i>canescens</i>	Grey poplar	Salicaceae	?e	SE
<i>Rhaphiolepis umbellata</i>	Japanese hawthorn	Rosaceae	?e	SL
<i>Thuja plicata</i>	Western red cedar	Cupressaceae	?e	SL

3. Descriptions of newly recognised weeds in South Australia

Taxa listed in alphabetical order.

Family: **Araceae**

Arum palaestinum Boiss.

Common name: Black calla lily; black arum lily.

Description: A low growing soft herbaceous plant with a perennial underground stem. Leaves and flowers emerge in winter, with leaves dying back to ground level in early summer, and ripe fruiting stem dying back later. The leaf-stem is 150–210 mm long, supporting a large shiny deep green arrow-shaped leaf, 150–360 × 100–250 mm. The flowering stem is sometimes stained purple especially towards the base and supports the typical Arum-like inflorescence, which is black and has an unpleasant smell of carrion or rotting fruit for the first few days. The black spadix is a cylindrical inflorescence of many crowded tiny flowers on a thickened axis, 70–190 × 4–7 mm, partially surrounded by a spathe, a petal-like structure, black on in the inner surface and green-cream on the outer. The fruiting spike is oblong, 30–50 × 20–30 mm, with numerous fleshy berries, green at first, ripening red. **Fig. 4.**

Native to: Western Asia (Israel, Western Syria, Lebanon and Jordan).

Worldwide: Known to have naturalised in California and sparingly naturalised in New Zealand.

Distribution in Australia: Occasionally planted as an ornamental in cool and temperate to semi-arid climates. Not known to have naturalised elsewhere in Australia.

Collections in SA: A single collection, made on 20 Sep. 2019, from two plants growing on a weedy roadside verge, Waterfall Gully Road, Waterfall Gully, SA 5066.

Status in SA: A new questionably naturalised record (?e) for SA and the AMLR NRM region. Added to the Census for SA and the Southern Lofty (SL) herbarium region based on *C.J. Brodie (CJB) 8756* & *D. Blewett (DB)*, identified by CJB.

References: Spencer (2005); POWO (2020).



Fig. 4. *Arum palaestinum* flower and leaves, Waterfall Gully Road (*CJB 8756*). Images: DB.

Eucalyptus brockwayi C.A.Gardner

Common name: Dundas mahogany.

Description: A fast growing medium-sized tree, lacking a lignotuber, 8–15 m tall, with a rounded to oval crown. Normally with a single trunk sometimes branching low to the ground, bark smooth and seasonally variable in colour from pale grey to pink-orange with the bark shedding in flakes. Leaves dark green, narrowly lance-shaped, 70–150 × 8–18 mm. Buds, flowers or fruits are spaced along stems in groups of 7–15 on round stalks. Buds cylindrical, constricted towards the apex. Flowers white and inconspicuous. Fruits are round, 4–7 mm wide with a constricted apex. **Fig. 5.**

Native to: Western Australia, restricted to the southern goldfields, where it occurs within a 30 km radius of Norseman. It grows naturally on slight rises or level areas, in greyish loams to red clay-loams in open woodlands.

Worldwide: Not known to be widely cultivated around the world. However, a few specialist nurseries offer this species for sale. Recorded as naturalised in Ecuador (Randall 2017) and South Africa (POWO 2020).

Distribution in Australia: Widely cultivated in southern parts of Australia as an ornamental tree. Usually grown in larger parks and gardens, and as a street tree on larger road-reserves. Not known to have naturalised elsewhere in Australia.

Collections in SA: A single collection, made 11 Sep. 2019, at the Monarto plantings; plot RV2. Collected from a 7-metre tall sapling that was one of six self-sown individuals by a planted parent tree. Several other mature planted *Eucalyptus brockwayi* each had 1-2 self-sown progeny close-by.

Status in SA: A new questionably naturalised record (?e) for SA and the SA Murray-Darling Basin (SAMDB) NRM region. Added to the Census for SA and the Murray (MU) herbarium region based on: *P.J.Lang (PJJ) 3423 & CJB*, identified by PJJ.

References: Nicolle (2016a); POWO (2020); Randall (2017); Slee *et al.* (2015).



Fig. 5. *Eucalyptus brockwayi* at the Monarto plantings (*PJJ 3423*). Images: CJB.

Eucalyptus gardneri* Maiden subsp. *gardneri

Common name: Blue mallet.

Description: A fast growing medium-sized tree, lacking a lignotuber, 8–15 m tall, with a funnel-shaped crown. The single trunk normally branches close to the ground and has smooth silvery-grey to cream to tan bark, with smaller darker attached plates shedding in curly tan flakes giving a scruffy appearance. Larger limbs smooth, silver-grey to cream with purplish tinge. Leaves lance-shaped, 50–110 × 10–25 mm, leaf blade dull blue-green to grey-green, base tapering to stalk. Buds, flowers or fruits are spaced about 10 mm apart along stems in groups of 7–11 on flattened stalks. Buds are long and thin to a 27 mm long, and 3–4 mm at widest point, including the bud cap (operculum) which is extremely tapered and sometimes hooked. Flowers yellow to pale cream-yellow, in autumn to spring. Fruits woody, funnel to cylinder-shaped. **Fig. 6.**

Native to: Western Australia, restricted to the wheatbelt area in the south-west.

Worldwide: Not known to be widely planted. Not recorded as naturalised outside Australia.

Distribution in Australia: Cultivated in southern Australia as a fast-growing amenity or screen tree on seasonally dry sites. Not known to have naturalised elsewhere in Australia.

Collections in SA: A single collection made on 11 Sep. 2019 from the Monarto plantings, plot RV4. Collected from a 9 m tall sapling that was one of ten self-sown plants within 6 m of the parent tree.

Status in SA: A new questionably naturalised record (?e) for SA and the SAMDB NRM region. Added to the Census for SA and the MU herbarium region based on collection *CJB 8725B & PJJ*, identified by PJJ.

References: Nicolle (2016a); POWO (2020); Slee *et al.* (2015).



Fig. 6. *Eucalyptus gardneri* subsp. *gardneri* at the Monarto plantings (*CJB 8725B*). Images: PJJ.

Eucalyptus ravida L.A.S.Johnson & K.D.Hill

Synonym: *Eucalyptus salubris* F.Muell. var. *glauca* Maiden

Common name: Silver-topped gimlet.

Description: A medium-sized tree, lacking a lignotuber, 6–12 m tall, with a rounded to funnel-shaped crown restricted to the end of the branches. A single trunk irregularly fluted, bark smooth and shiny, clean looking, greyish green to coppery to red-brown. Branches are smooth throughout with twigs copiously white waxy. Leaves lance-shaped, 60–130 × 10–23 mm, initially dull but soon becoming shiny. Flowering inflorescence unbranched, peduncles flattened, 5–14 mm long, buds in groups of 7 on short stems (pedicels), 0–0.2 cm long. Mature buds egg-shaped to cylindrical-oval, cap (operculum) conical, flowers white. The woody fruits are cup-shaped to funnel-shaped, 6–10 mm wide. **Fig. 7.**

Native to: Western Australia, restricted to the wheatbelt area in the south-west.

Worldwide: Not known to be widely planted. Not recorded as naturalised outside Australia.

Distribution in Australia: Widely planted in the drier areas of southern Australia. However, it is unclear if this species has naturalised in NSW, based on AVH data, and not known to have naturalised elsewhere in Australia.

Collections in SA: Two historical collections made in July 1995 and Dec. 1997, both collected south-east of Port Augusta, one from Wellington and the other just south of Melrose.

Status in SA: A new questionably naturalised record (?e) for SA and the Northern and Yorke (N&Y) NRM region. Added to the Census for SA and the Flinders Ranges (FR) herbarium region based on collection *R.J. Bates (RJB) 49334*, supported by *RJB 41726*, re-determination by PJJ.

References: Nicolle (2016b); POWO (2020); Slee *et al.* (2015).



Fig. 7. *Eucalyptus ravida*, pressed specimen (*D.D. Cunningham 1238*). Images: CJB.

Eucalyptus salubris F.Muell.

Common name: Gimlet.

Description: A medium to large tree, lacking a lignotuber, 8–16 (rarely to 20) m tall, with a rounded to funnel-shaped crown restricted to the end of the branches. Trunk single, or several-trunked, noticeably irregularly fluted. Bark smooth and shiny, clean looking as are the branches and twigs, all coloured and varying seasonally from yellow-green to coppery red-brown to reddish; shedding in thin strips. Adult leaves lance-shaped, 65–105 × 7–18 mm. Buds and fruits in groups of seven, buds egg-shaped. Flowers white, appearing in summer/autumn. Fruits rounded, wide, cup-shaped. **Fig. 8.**

Native to: Western Australia, widespread and common in south-western WA throughout the wheatbelt area and eastwards to the goldfields and towards the Great Victoria Desert.

Worldwide: Not known to be widely planted. Not recorded as naturalised outside Australia.

Distribution in Australia: Widely planted across the drier parts of southern Australia. Not known to have naturalised elsewhere in Australia.

Collections in SA: A single recent collection made on 26 Apr. 2018 from the Monarto plantings, plot RV2. Collected from a self-sown 7 m tall sapling. Many planted parent trees with 10–20 saplings per parent tree, but up to 50 saplings surrounding some parent trees. In total over 1000 self-sown plants.

Status in SA: A new naturalised record (?e) for SA and the SAMDB NRM region. Added to the Census for SA and the MU herbarium region based on collection *CJB 8273B* & *PJL*, identified by *PJL*.

References: Nicolle (2016a); POWO (2020); Slee *et al.* (2015).



Fig. 8. *Eucalyptus salubris* at the Monarto plantings (*CJB 8273A* & *8273B*). Images: L. Jensen.

Eucalyptus torquata Luehm. × *Eucalyptus woodwardii* Maiden

Common name: Torwood hybrid.

Description: A medium-sized tree, eventually with oval to round canopy; features variable and falling between those of the parent species. The hybrid usually has some non-shedding rough bark at the base and more erect branches than *Eucalyptus woodwardii*; typically the flowers are yellow to apricot. Buds and fruits are normally intermediate between the parent species in size and shape with variable ribbing. Nicolle (2016b) states there is a lot a variability among individuals with some trees having features more similar to *E. woodwardii*, while others tend to be more like *E. torquata*. **Fig. 9.**

Native to: This artificial hybrid is not known in the wild, as the two species do not naturally occur together. *Eucalyptus torquata* naturally occurs in the central and southern goldfield of WA and *E. woodwardii* is restricted to the western fringe of the Great Victorian Desert in WA.

Worldwide: Not known to be widely cultivated outside Australia.

Distribution in Australia: This artificial hybrid is common in cultivation. Not known to have naturalised elsewhere in Australia

Collections in SA: A single recent collection made on 26 Apr. 2018 from the Monarto plantings; plot RV2. Collected from a 4 m tall sapling within a metre of the suspected *Eucalyptus woodwardii* parent, and within eight metres of the suspected *E. torquata* parent.

Status in SA: A new questionably naturalised record (?e) for SA and the SAMDB NRM region. Added to the Census for SA and the MU herbarium region based on collection *CJB 8276 & PJJ*, identified by PJJ.

References: Nicolle (2016b); Slee *et al.* (2015).



Fig. 9. *Eucalyptus torquata* × *E. woodwardii* at Monarto plantings (*CJB 8276*). Images: PJJ.

***Gasteria carinata* (Mill.) Duval var. *verrucosa* (Mill.) van Jaarsv**

Common name: Keeled gasteria.

Description: A small stemless evergreen succulent plant, proliferating from the base to form small dense groups, 150–600 (–800) mm in diameter. Leaves are two-ranked or rosetted, 70–130 mm, sometimes to 180 mm long, 15–30 mm wide, dull-green to grey-green, with the tip tapering to a point, densely covered with many conspicuous white tuberculate rough bulging dots and blotches. The flowering stem is held 150–700 mm above the leaves and have 50 to 100 or more single flowers. Each flower is 16–27 mm long, slightly swollen at the base by more than half of the flower length and then constricted to a tube. The swollen portion is pink, 6–8 mm in diameter, and the tube is white with green stripes for 3–5 mm in diameter. Fruiting capsule 19–23 mm long, oblong, 7 mm broad. Seeds 3–4 mm long and 2 mm wide. **Fig. 10.**

Native to: South Africa in the Cape Provinces.

Worldwide: Recorded as naturalised in Italy and a few other European countries. Planted as an ornamental in temperate and arid climates, and in and found in succulent collections around the world.

Distribution in Australia: Planted as an ornamental. Naturalised in NSW, where it was collected from a single location in the Bega Valley on the southern NSW coast (AVH 2020), but not known to have naturalised elsewhere in Australia.

Collections in SA: A historical collection made on 4 Nov. 2006 from Port Elliot at Horseshoe Bay, near the caravan park, growing amongst many established weedy species.

Status in SA: A new questionably naturalised record (?e) for SA and the AMLR NRM region. Added to the Census for SA and the SL herbarium region based on collection *D.E. Murfet 5482*, originally identified by Dean Cunningham.

References: AVH (2020); Longo (2015); POWO (2020); Spencer (2005); Van Jaarsveld (2007).



Fig. 10. *Gasteria carinata* var. *verrucosa*. Images: LHS by Hippocampus (Wikipedia, CC BY-SA 2.5); RHS from Step *et al.* (1897).

Gasteria obliqua (Aiton) Duval

Common name: Lawyer's tongue.

Description: A small variable stemless succulent evergreen plant, mostly reaching 300 mm tall, sometimes to 600 mm, with two-ranked or rosetted leaves producing multiple stems. The succulent leaves, 150–400 × 15–40 mm, have a sharp point at the tip and are densely covered in bands of many white mottled spots. The inflorescence is a long spike (reported to reach a height of 1.5 m) with up to 60–100 or more tubular bell-shaped flowers with a tubular apex. The flowers are 20 mm long, pink to red at the swollen stem-end, and then pale green on the tube at the apex, and occasionally pale cream to white in the middle. **Fig. 11.**

Native to: South Africa to the Eastern Cape region.

Worldwide: Known to have naturalised in Mexico. Used as an ornamental in warmer temperate and arid climates, and found in succulent collections around the world.

Distribution in Australia: Planted as an ornamental. Not known in to have naturalised elsewhere in Australia.

Collections in SA: Two collections: the most recent, *C.J.Brodie 8439*, was made in Oct. 2018, north of Adelaide at Port Parham, opposite 19 Driscoll Terrace, on the roadside. A historical collection was made on 11 Sep. 2006 on the outskirts of Owen, a small town about 80 km north of Adelaide. Both collections are likely to have originated from dumped garden refuse.

Status in SA: A new questionably naturalised record (?e) for SA and the N&Y NRM region. Added to the Census for SA and the NL herbarium region based on collections *CJB 8439* & *W. Barnes*, supported by *R.J. Chinnock 10072*, identified by Bob Chinnock and CJB.

References: POWO (2020); Van Jaarsveld (2007).



Fig. 11. *Gasteria obliqua* at Port Parham (*CJB 8439*). Images: CJB.

Hedera algeriensis Hibberd**Common name:** Algerian ivy.

Description: A vigorous large evergreen climber, self-clinging by aerial roots. The reddish to green stems are soft at first but become stiff and woody with age. The young stems and alternate developing leaves have minute scales hairs, like a spider mite, 0.2–0.3 mm wide, tinged orange to reddish, with 12–16 rays (arms) that are totally flat, only just visible to the naked eye. Fully expanded juvenile leaves are simple, shiny green, triangular-ovate and shallowly 3-lobed, 70–150 × 50–80 mm. Some horticultural varieties are variegated in colour. As with other *Hedera* species, the adult fertile branches have stiff erect stems. The adult leaves are 50–120 mm long and usually triangular, having fewer lobes than the juvenile leaves. The inflorescence of this species is superficially identical to that of other *Hedera* species, with pale yellow flowers and black berries. **Fig. 12.**

Native to: Northern Africa, in Algeria and Tunisia.**Worldwide:** Widely cultivated in cool and temperate areas of the world, and used as a houseplant. Recorded as a casual garden escapee in the UK.**Distribution in Australia:** Not known to have naturalised elsewhere in Australia. However, due to cryptic characters required for *Hedera* identification (leaf hairs on developing leaves and stems), diversity of leaf-shapes of cultivated forms of *Hedera* species, historically inconsistent taxonomy, ivy can be difficult to identify. If *Hedera algeriensis* has naturalised elsewhere it could have been incorrectly identified and may be more widely naturalised in Australia and around the world.**Collections in SA:** Five historical *CJB* collections made between 2015–2016 in the Mount Lofty Ranges.**Status in SA:** A new naturalised record (*) for SA and the AMLR NRM region. Added to the Census for SA and the SL herbarium region based on collection *CJB 6510*, supported by four other *CJB* collections, identified by *CJB* and *PJL*.**References:** McAllister & Marshall (2017).**Fig. 12.** *Hedera algeriensis* at Mark Oliphant Conservation Park (*CJB 6510*). Images: *CJB*.

Hedera hibernica (G.Kirchn.) Carriere**Common name:** Irish ivy.

Description: A vigorous large evergreen climber, growing to 20–30 m high, self-clinging by aerial roots, with light green to purple stems, soft at first but becoming stiff and woody with age. The young stems and alternate developing leaves have small stellate hairs (like a star) that are white to orange-tinged, 0.3–0.8 mm wide with 4–12 flat to erect rays (arms) and visible to the naked eye as pale specks. Juvenile leaves 40–90 × 40–110 mm, usually palmate and ivy-shaped with 3 or 5 shallow to deep lobes, and can be as long as wide. Many garden varieties display a diversity of leaf shapes that differ in size and/or shape from the ‘wild-type’ species. As in other *Hedera* species, the adult fertile branches have stiff erect stems; adult leaves are 60–120 × 40–100 mm, usually triangular compared to the juvenile lobed leaves. The inflorescence of this species is superficially identical to other species of *Hedera*, and has pale yellow-green flowers and black berries. **Fig. 13.**

Native to: Northern and south-western Europe: Belgium, France, Great Britain, Ireland, Netherlands, Portugal and Spain.

Worldwide: Widely cultivated in cool and temperate areas of the world. Known to be naturalised in Hungary and widely naturalised in the United States of America.

Distribution in Australia: Commonly planted in temperate areas of Australia with many cultivars freely available. Not recorded as naturalised elsewhere in Australia. In SA, *Hedera hibernica* was incorrectly identified as English ivy (*H. helix*), probably due to cryptic characters required for identification (leaf hairs on developing juvenile leaves and stems), the huge diversity of leaf-shapes of cultivated forms of the different species, and historically inconsistent taxonomy. Duplicate specimens of *H. helix* from NSW, Vic. and Tas. have recently been examined by CJB and hairs appear to be closer to those of *H. hibernica*. It is possible that *H. hibernica* is more widely naturalised than current records indicate, both in Australia and around the world.

Collections in SA: Over 60 historical collections made between 1957 and 2018. Two duplicate collections sent to Edinburgh (*E.S. Booth 72 & 113*) were re-determined by ivy specialist, Hugh McAllister from *H. helix* (English Ivy). Subsequent re-determinations of the State Herbarium *Hedera* collections followed McAllister & Marshall (2017).

Status in SA: A new naturalised record (*) for SA and the AMLR & SE NRM regions. Added to the Census as naturalised for the SL Herbarium region based on collections *E.S. Booth 72 & 113*, and for the SE herbarium region based on *CJB 8286*. A new questionably naturalised (?e) record for the N&Y NRM region. Added to the Census as questionably naturalised (?e) for the FR herbarium region based on *RJB 9509*, and NL herbarium region based on *CJB 2318*, identified by CJB and PJJ.

References: McAllister & Marshall (2017).

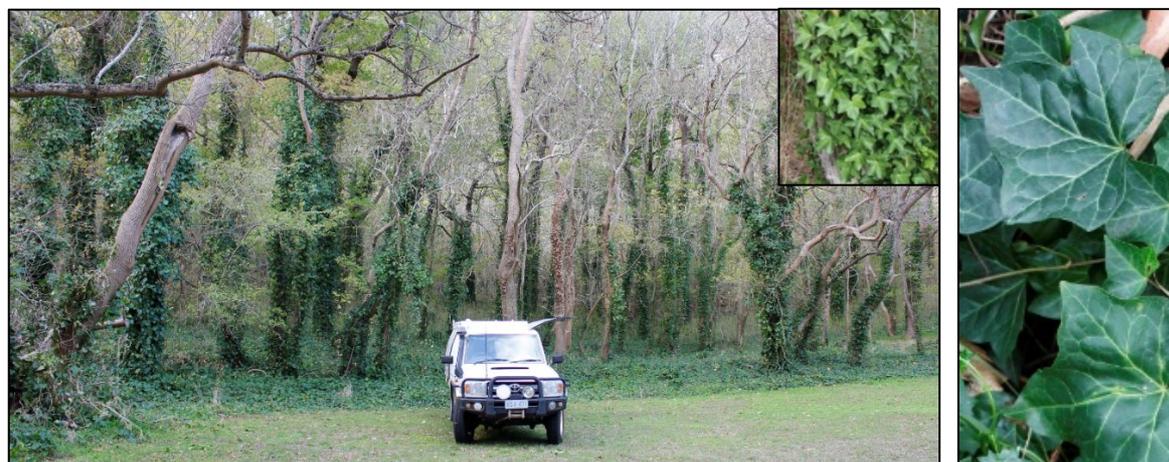


Fig. 13. *Hedera hibernica* at Leg of Mutton Lake, Mount Gambier (*CJB 8286*). Images: A. Laslett.

Isopogon latifolius R.Br

Common name: Drumsticks.

Description: A rounded to oval shrub, 2–3 m tall. Branchlets often-tinged reddish and hairs present at the very tips of the branches. The leathery alternate leaves are 10–25 mm apart on the stem and more densely crowded towards the tips. Leaves are thin oval-shaped (elliptical), 40–140 mm long, ending in a hard, sharp point. The large solitary globular flower clusters (inflorescence) occurring at the end of branches are 70–80 mm diameter and comprise several hundred pale pink to purplish-pink flowers, about 35 mm long. The fruiting cones are globular to hemispherical, to 45 mm diameter, and long-persistent on the plant. Nuts ovoid, beaked, about 3 mm long. The fruit-bearing receptacle often persists well after fruit has fallen, **Fig. 14**.

Native to: Western Australia, confined to the Stirling Ranges.

Worldwide: Not known to be commonly cultivated outside Australia or to have naturalised elsewhere in the world.

Distribution in Australia: Occasionally planted as an ornamental in cool temperate areas and in semi-arid climates. Not known to have naturalised elsewhere in Australia.

Collections in SA: Two collections, both from Kenneth Stirling Conservation Park (Filsell Hill Section) in the Adelaide Hills. The most recent collection made on 29 Oct. 2019 was from a mature flowering individual plant amongst a population of 100 or more self-sown plants. A historical collection was from 21 Oct. 2001.

Status in SA: A new naturalised record (*) for SA and the AMLR NRM region. Added to the Census for SA and the Southern Lofty (SL) herbarium region based on *CJB* 8849 & *K. Hill*, identified by *CJB*, supported by *E.L. Robertson 385*, identified by the collector.

References: Foreman (2020).



Fig. 14. *Isopogon latifolius* at Kenneth Stirling Conservation Park (*CJB* 8849). Images: *CJB*.

Juncus vaginatus R.Br.

Common name: Clustered rush.

Description: A tufted, large, perennial, clumping rush, 60–170 cm high, grass-like in appearance. Each stem is round, yellow-green, with 25–65 obvious striations. Stems 1.5–4.5 mm wide, with cobwebby but continuous pith inside. Inflorescence branching on stems with flowers aggregated into few to many sub-globular clusters, up to 10–14 mm across, held towards the end of the stems. Capsules golden brown. **Fig. 15.**

Native to: Eastern Australia: Qld, NSW, ACT, Vic. and Tas.

Worldwide: Recorded as naturalised in the UK.

Distribution in Australia: Not known to have naturalised elsewhere in Australia.

Collections in SA: A single recent collection made on 8 May 2019, 1 km north-west of Norton Summit in the Mount Lofty Ranges from a small patch 1–2 m² on flat by creek in revegetation area with *Eucalyptus viminalis* and *E. camaldulensis* over trees and shrubs.

Status in SA: A new questionably naturalised record (?e) for SA and the AMLR NRM region. Added to the Census for SA and the SL herbarium region based on collection *M. Pickett s.n.*, identified by PJJ.

References: POWO (2020).



Fig. 15. *Juncus vaginatus*, pressed specimen (*M. Pickett s.n.*). Images: CJB.

Lophocereus marginatus (DC.) S.Arias & Terrazas

Common name: Mexican fencepost cactus.

Description: A columnar multi-stemmed slow growing cactus to 4 m tall, recorded to 7 m tall in Mexico. The stems reach 100 mm in diameter with normally five, but up to seven ribs. Stem smooth and green, with the spines along the continuous grey ribs. Central spine up to 10 mm long, surrounded by 5–9 smaller spines. The flowers are small pink to greenish. **Fig. 16.**

Native to: North America, Mexico.

Worldwide: Commonly cultivated in central and Southern Mexico, commonly used as a hedging plant forming an impenetrable mass. Found in public and private cacti collections around the world. Grown as an ornamental in warmer and drier areas of the globe. Naturalised in Cambodia.

Distribution in Australia: Occasionally planted as a garden plant in Southern Australia, or as part of cacti collections. Not known to have naturalised elsewhere in Australia.

Collections in SA: A recent collection made on 2 Oct. 2018 at Port Parham in sandy soil with many other succulents and cacti, most likely establishing from dumped garden material.

Status in SA: A new questionably naturalised record (?e) for SA and the N&Y NRM region. Added to the Census for SA and the NL herbarium region based on collection *CJB 8437*, identified by CJB.

References: Britton & Rose (1963); POWO (2020).



Fig. 16. *Lophocereus marginatus* at Port Parham (*CJB 8437*). Images: CJB.

Populus ×canescens (Aiton) Sm.

Common name: Grey poplar.

Description: A medium to large vigorous tree to 20–25 m tall. A natural hybrid, believed to be *P. alba* × *P. tremula*, and of intermediate appearance with respect to its putative parents. Bark light grey, sometimes almost white and marked with horizontal stripes. Branches light grey-green; twigs covered with light felt-like hairs. Leaves triangular to egg-shaped, 50–120 mm × 40–90 mm. Margins lobed to roughly serrated, glossy green, underside covered in light grey felt-like hairs. Male and female flowers produced on separate catkins, male catkins 60–100 mm long, female catkins 10–40 mm long; fruit a catkin. Known to be fertile and known to spread via suckers. **Fig. 17.**

Native to: Europe, from northern, eastern, south-eastern and southwest Europe to Western Asia (Turkey), the Caucasus and Western China.

Worldwide: Widely cultivated in cool temperate areas of the world. Naturalised throughout Europe where not originally native. Also naturalised in southern Africa, the United States and Canada.

Distribution in Australia: Cultivated in cool-temperate areas of southern Australia. Only known to have naturalised in Vic.

Collections in SA: A recent collection made on 15 May 2018 at Mount Gambier, Leg of Mutton Lake valley base, in dry old lake bottom where it was slowly being removed.

Status in SA: A new questionably naturalised record (?e) for SA and the South East (SE) NRM region. Added to the Census for SA and the SE herbarium region based on collection *CJB 8287* & *A. Laslett*, identified by CJB.

References: Spencer (1997).



Fig. 17. *Populus ×canescens* at Leg of Mutton Lake, Mount Gambier (*CJB 8287*). Images: A. Laslett.

Rhaphiolepis umbellata (Thunb.) Makino

Common name: Yeddo hawthorn.

Description: An evergreen flowering shrub to 1.5–2.5 m tall and wide. Plants densely mounded. Leaves with oval to obovate (wide at the apex), 30–60 × 20–30 mm, leathery, glossy dark green, paler beneath, minutely serrated to varying degrees. Produces clusters of scented white or light pink flowers in early summer, which are about 20 mm across, sometimes tinged with pink. Fruit is bluish-black, about 20 mm diameter. **Fig. 18.**

Native to: Eastern Asia: China, Taiwan, Japan, and South Korea.

Worldwide: Cultivated in warmer to temperate areas of the world. Known to have naturalised in New Zealand.

Distribution in Australia: Cultivated in southern Australia as an ornamental and for amenity plantings. Known to have naturalised in NSW, doubtfully naturalised in Vic. and Norfolk Island.

Collections in SA: A recent collection made on 13 Mar. 2019 from a single plant in the Mount Lofty Ranges, in native vegetation about 40 metres from the road and c. 15 metres from the boundary of an old plant nursery at 108 Gores Road, Piccadilly.

Status in SA: A new questionably naturalised record (?e) for SA and the AMLR NRM region. Added to the Census for SA and the SL herbarium region based on collection *CJB 8570* & *D.J. Luscombe*, identified by John Conran (The University of Adelaide).

References: Spencer (2002).



Fig. 18. *Rhaphiolepis umbellata*, pressed specimen (*CJB 8570*). Images: CJB.

Tephrocactus articulatus (Pfeiff.) Backeb.Synonym: *Opuntia articulata* (Pfeiff.) D.R.Hunt**Common name:** Pine-cone cactus; paper-spine cactus.

Description: A variable low growing shrubby cactus with rounded to oval stem segments about 20–50 × 20–40 mm. Stem segments easily detached, growing on top of each other, forming stems to 400 mm long of up to 14 pads (seen in SA) or more, with 0–many shorter branches per stem. Stems growing mostly erect, some horizontal to partially erect. Segments pale pink-purple to dull greyish brown. Areoles (area where spines grow from) producing many long brown glochids, flat spines 10–30 mm long, sometimes up to 100 mm, white to bone-coloured to brown, sometimes tinged pink. Some plants have many spines, others have few to none. Flowers white to light yellow, 30–40 mm diameter. Fruit small, about 10–15 mm long, oval, sometimes retained, drying almost black. **Fig. 19.**

Native to: Argentina.

Worldwide: Cultivated worldwide in cacti collections and sometimes as a garden or amenity plant in arid areas. Known to have naturalised in South Africa and the Canary Islands

Distribution in Australia: Occasionally planted as a garden plant in arid areas, or part of cacti collections. Not known to have naturalised elsewhere in Australia.

Collections in SA: Two recent collections, the first from Leigh Creek on 20 Sep. 2019, collected from the largest of six patches, three in a drainage line and a further three smaller patches scattered on the dry Town Common. The second collection from the outskirts of Port Pirie, made on 17 Oct. 2019 from a 3 × 1 m patch with some outliers to 35 cm in diameter located to 2.5 m away. Both populations are likely to have originated from dumped garden waste.

Status in SA: A new naturalised record (*) for SA and the FR and N&Y NRM regions. Added to the Census for SA and the FR herbarium region based on *CJB 8703*, *S.J Robertson*, *M. Westover* & *T. Bowman*. Added to the Census for the YP herbarium region based on *CJB 8761* & *S.J Robertson*, identified by Bob Chinnock.

References: Britton & Rose (1963); POWO (2020).

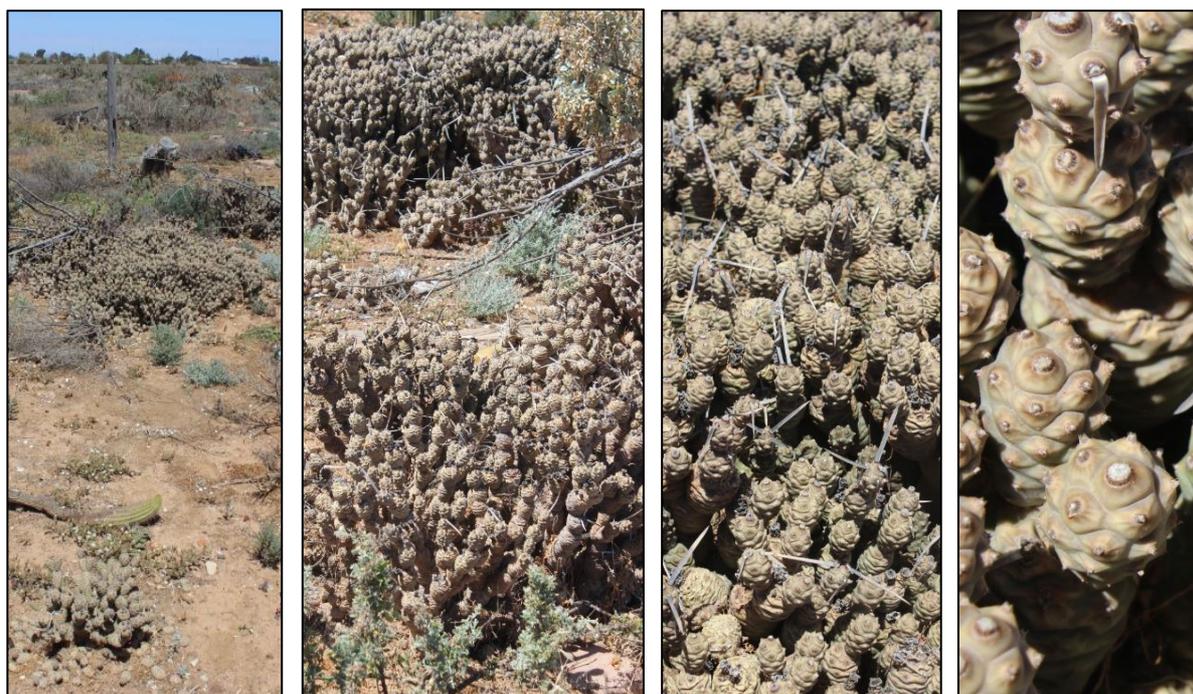


Fig. 19. *Tephrocactus articulatus* at Port Pirie (*CJB 8761*). Images: CJB.

Thuja plicata Donn ex D.Don

Common name: Western red cedar.

Description: Large coniferous evergreen tree, attaining a height of 50 m, although normally 15–25 m in cultivation, with partially buttressed base. Bark red-brown, fibrous with longitudinal fissures. Branchlets of flattened leaf-like foliage sprays, dark green above, paler below, and aromatic especially when crushed. Leaves are scale like, about 3–6 mm long with white bands below. Male cones 1–3 mm produced in abundance on the tips of the foliage-sprays, held on separate branches from female cones. Mature female cones are 10–15 mm long and about half as wide when dry and fully opened. Seeds are reddish brown, 8–14 per cone, 4–7.5 mm long (including wings). **Fig. 20.**

Native to: North-western United States and western Canada.

Worldwide: Cultivated worldwide in cold to cool-temperate areas. Naturalised in New Zealand and Europe (Austria, Denmark, Germany, Italy, Norway and, Portugal and the United Kingdom).

Distribution in Australia: Occasionally cultivated in cool temperate Australia. Questionably naturalised in Tasmania, with several [self-sown] saplings on the verge of a highway and side roads, (based on the collection notes: *M. Wapstra 2370*), and not known to have naturalised elsewhere in Australia.

Collections in SA: A recent collection was made on 10 July 2018 from a single plant in the Adelaide Hills, 350 m west of the old Mount Lofty Railway Station.

Status in SA: A new questionably naturalised record (?e) for SA and the AMLR NRM region. Added to the Census for SA and SL herbarium region based on *CJB 8393 & DB*; identified by CJB.

References: Spencer (1995).



Fig. 20. *Thuja plicata* at the old Mount Lofty Railway Station (*CJB 8393*). Images: DB.

4. Updates to weed distributions in South Australia, weed status and name changes

Updates to 38 taxa were made in the Census during the last year. These changes are to **distribution, names or status (Table 2)** of plant names already listed in the Census. Some taxa have multiple changes listed for one or more herbarium regions within SA.

A change in **distribution** indicates:

- addition of regions due to new collections, corrected or updated identifications, or reassignment of recorded locations to their correct regions
- deletions of regions due to corrected or updated identifications, or reassignment of recorded locations to their correct regions.

A **name change** could be:

- a change in genus, species or infra-specific name (subspecies, variety, form or cultivar)
- adding or removing an infra-specific name.

These changes may result from the application of new or recently accepted taxonomic classifications in South Australia, or merely through application of the rules of botanical nomenclature to existing taxonomy.

A change of **weed status** in one or more regions; this can be change from one to another of the following:

- naturalised / established in the wild (*)
- questionably established (?e)
- native (n)
- questionably native (?n).

Table 2: Updates to weed distribution, weed status, and name changes

Update type: **Name** = name change; **Distribution** = change in distribution, change in the regional distribution (new region indicated in **bold**, deleted region with ~~strike through~~); **Status** = change of weed status (region changed is underlined).

Weed status: * = naturalised (i.e. established in the wild), ?e = questionably naturalised / established, ⁿ = native, ?ⁿ = questionably native, ?^{id} = questionable identification.

Collector abbreviations: *CJB* = C.J. Brodie; *RJB* = R.J. Bates; *PJL* = P.J. Lang.

Taxon	Update type	Update / comment
<i>Aizoon pubescens</i> Eckl. & Zeyh. Coastal galenia	Distribution	LE* NU* FR* EP* NL* MU* YP* SL* KI ^{?e} SE ^{?e} Added KI as questionably naturalised based on <i>CJB</i> 8624, collected on 21 June 2019.
<i>Ailanthus altissima</i> (Mill.) Swingle Tree of heaven	Distribution	NL* MU ^{?e} SL* SE ^{?e} Added MU as questionably naturalised based on <i>L. Burdett</i> 2, 7 Feb. 2012.
<i>Asparagus officinalis</i> L. Edible asparagus	Distribution	EP ^{?e} NL ^{?e} MU* YP ^{?e} SL* KI ^{?e} SE* Added KI as questionably naturalised based on <i>CJB</i> 8620, 21 June 2019.
<i>Asparagus plumosus</i> Baker Ferny asparagus	Distribution	FR ^{?e} MU ^{?e} YP ^{?e} SL ^{?e} KI ^{?e} Added KI as questionably naturalised based on <i>CJB</i> 8600, 20 June 2019.
<i>Avellinia festucoides</i> (Link) Valdes & H.Scholz Avellinia.	Name	Changed from <i>Avellinia michelii</i> (Savi) Parl.
<i>Bryophyllum delagoense</i> (Eckl. & Zeyh.) Schinz Mother-of-millions	Status	<u>GT</u> ^{?e} EP* MU ^{?e} Changed for GT from naturalised to questionably naturalised based on collector's notes, <i>RJB</i> 17346.
<i>Cannabis sativa</i> L. Indian hemp	Distribution	GT ^{?e} EP ^{?e} MU ^{?e} SL ^{?e} Added GT as questionably naturalised based on a historical record, <i>RJB</i> 47474.
<i>Cortaderia selloana</i> (Schult. & Schult.f.) Asch. & Graebn. subsp. <i>selloana</i> Common pampus grass	Name	Subspecies added following Australian Plant Census (APC).
<i>Cylindropuntia fulgida</i> (Engelm.) F.M.Knuth var. <i>mamillata</i> (A.Schott) Backeb. Coral cactus	Distribution	GT* FR* EA* EP* YP ^{?e} Added YP as questionably naturalised based on <i>CJB</i> 8763, 17 Oct. 2019.
<i>Cylindropuntia imbricata</i> (Haw.) F.M.Knuth Devil's rope	Distribution	GT* FR* EP* NL* MU* YP ^{?e} SL* Added YP as questionably naturalised based on <i>CJB</i> 8762, 17 Oct. 2019.
<i>Cyrtomium falcatum</i> (L.f.) C.Presl Holly fern	Distribution	MU * SL* SE* Added MU as naturalised based on historical record, <i>E.B. Sims s.n.</i> , 29 Jul. 1967, and two other collections.

Taxon	Update type	Update / comment
<i>Echinopsis huascha</i> (F.A.C.Weber) H.Friedrich & G.D.Rowley Red torch cactus	Distribution	EP ^{?e} YP ^{?e} Added YP as questionably naturalised based on <i>CJB 8760</i> , 17 Oct. 2019.
<i>Eragrostis barrelieri</i> Daveau Pitted love-grass	Distribution	NW* LE* GT* FR* EA* EP* NL* MU* YP* SL* KI ^{?e} SE* Added KI as questionably naturalised based on <i>CJB 8610</i> , 21 Jun. 2019.
<i>Eruca sativa</i> Mill. Rocket	Distribution	FR ^{?e} EP* NL* MU* SL* KI* SE* Added NL as naturalised based on historical record, <i>RJB 53867</i> , Sep. 1999.
<i>Eucalyptus dundasii</i> Maiden Dundas blackbutt	Distribution	NL ^{?e} MU ^{?e} Added MU as questionably naturalised based on <i>CJB 8278</i> , 11 Sep. 2019.
<i>Eucalyptus spathulata</i> Hook. subsp. <i>spathulata</i> Swamp mallet	Distribution	NL ^{?e} MU ^{?e} Added MU as questionably naturalised based on <i>CJB 8274</i> , 11 Sep. 2019.
<i>Eucalyptus stricklandii</i> Maiden Goldfields yellow flowering gum	Distribution	NL ^{?e} MU ^{?e} Added MU as questionably naturalised based on <i>PJL 3424</i> , 11 Sep. 2019.
<i>Eucalyptus woodwardii</i> Maiden Lemon-flowered Gum	Distribution	NL ^{?e} MU ^{?e} Added MU as questionably naturalised based on <i>CJB 8275B</i> , 26 Apr. 2018.
<i>Euphorbia dendroides</i> L. Tree spurge	Distribution	FR* EP* MU* YP* SL* KI* SE ^{?e} Added SE as questionably naturalised based on historical record, <i>RJB 52131</i> , 6 July 1999.
<i>Galium spurium</i> L. Bedstraw	Distribution	GT* FR* EA* EP* NL* MU* YP* SL* SE* Added SL as naturalised based on recent identification of historical collection, <i>C.R. Alcock 3810B</i> , 31 Oct. 1971.
<i>Hedera helix</i> L. English Ivy	Distribution	FR ^{?e} NL ^{?e} MU ^{?e} SL* KI ^{?e} SE* Added KI as questionably naturalised based on <i>CJB 7957</i> , 15 June 2017. Removed from NL, as questionably naturalised based on a re- determination as <i>Hedera hibernica</i> : <i>CJB 2318</i> , 20 Jan. 2011.
<i>Hordeum vulgare</i> L. Barley.	Name	Changed from <i>Hordeum vulgare</i> L. subsp. <i>vulgare</i> and <i>H. vulgare</i> var. <i>hexastichon</i> (L.) Asch. based on recent taxonomic advice.
<i>Isotoma petraea</i> F.Muell. Rock isotome	Distribution	NW ⁿ , LE ⁿ , GT ⁿ , FR ⁿ , EA ⁿ , EP ⁿ , NL ⁿ , MU ⁿ SL ^{?e} Added SL as questionably naturalised based on <i>M. Pickett s.n.</i> , Nov. 2016.
<i>Juglans regia</i> L. Common walnut	Distribution	NL ^{?e} MU* SL* Added NL as naturalised based on historical record, <i>CJB 2352</i> , 21 Jan. 2011.
<i>Lepidium africanum</i> (Burm.f.) DC. Common peppercress	Distribution	NW * NU* FR* EA* EP* NL* MU* YP* SL* KI* SE* Removed as naturalised from NW, as no collection exists in the State Herbarium, or AVH (2020).

Taxon	Update type	Update / comment
<i>Lepidium strictum</i> (S.Watson) Rattan Matted Peppergrass	Distribution Status	NL* ?id MU* Removed as naturalised in MU as no collection exists in the State Herbarium collection, or AVH. A questionable identification for the NL specimen.
<i>Mirabilis jalapa</i> L. Marvel-of-Peru	Status	FR* NL ^{2e} SL* SE* Changed status for NL from naturalised to questionably naturalised based on collector's notes, <i>RJB 40900</i> .
<i>Oncosiphon suffruticosum</i> (L.) Kallersjo Calomba daisy	Distribution	LE* GT* FR* EP* NL* MU* YP* SL* SE* Removed as naturalised from FR, YP and SE as no collections exists in the State Herbarium or any database. Added GT as naturalised based on <i>CJB 7347</i> , 16 Oct. 2016.
<i>Orbea variegata</i> (L.) Haw. Carrion flower	Distribution	EP* YP ^{2e} SL* Added GT as questionably naturalised based on <i>CJB 8767</i> , 17 Oct. 2019.
<i>Panicum hillmanii</i> Chase Witch-grass	Distribution	FR* EP* NL* MU* YP* SL* KI* SE* Added YP as naturalised based on historical record <i>CJB 5461</i> , 18 Apr. 2014.
<i>Panicum simile</i> Domin Two-colour panic	Status	FR ^{2e} ?n Changed status for FR from native to questionably native & questionably naturalised, as indigenous status of species is uncertain.
<i>Pimelea ferruginea</i> Labill. Pink Rice-flower	Distribution	EP* SL* Added SL as naturalised based on <i>CJB 8887</i> , 26 Nov. 2019.
<i>Stellaria media</i> (L.) Vill. Chickweed	Distribution	FR* EA* EP* NL* MU* YP* SL* KI* SE* Added EA as naturalised based on historical record held at Canberra (CANB), <i>M.D. Crisp 547</i> . Removed KI as naturalised based on a specimen record that was incorrectly identified, now identified as <i>S. pallida</i> .
<i>Styphelia adscendens</i> R.Br. Golden heath	Status	SL ^{2e} SE ⁿ Changed status for SL from naturalised to questionably naturalised based on collector's notes stating "it is a localized occurrence in a "scrub garden" situation", <i>RJB 46531</i> .

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Appendix 1: Activities of the Weeds Botanist

Surveillance based on field observations and collections

Table 3: Summary of field surveys and collections

Activities of the Weeds Botanist, Chris Brodie (CJB), State Herbarium of South Australia (SHSA), with other participants listed individually. **No.** = Number of collections.

Date(s)	NRM Region	Participants	No.	General Location	Significant weed collections
05/08/19	AMLR	CJB	5	Adelaide Botanic Garden	General weeds collected from First Creek and the garden.
2–6/09/19	SAAL	CJB, T. Bowman (TB), S. Robertson (SR) (PIRSA), & M. Westover, (NR SAAL)	80	Flinders Ranges	Collected new weed record for Australia: <i>Tephrocactus articulatus</i> .
11/09/19	SAMDB	CJB, P.J. Lang (PJL) and L. Jansen (SHSA Volunteer)	15	Monarto plantings and Kinchina Conservation Park (CP)	Collected two new weed records for South Australia, both <i>Eucalyptus</i> species.
12/09/19	AMLR	CJB, C. Austin & S. Cole (NR AMLR)	4	Morialta CP & Black Hill CP	Collected new weed record for Morialta CP: <i>Noltea africana</i> . Identified <i>Pandorea pandorana</i> & <i>Calostemma purpureum</i> .
20/09/19	AMLR	CJB & D. Blewett (DB) (WMSSA)	18	AMLR & peri-urban suburbs	Collected new weed record for Australia: <i>Arum palaestinum</i> .
17/10/19	N&Y	CJB & SR (PIRSA)	12	Port Pirie	Collected new regional records for <i>Cylindropuntia fulgida</i> , <i>Cylindropuntia imbricata</i> , <i>Echinopsis huascha</i> , <i>Orbea variegata</i> and <i>Tephrocactus articulatus</i> .
21–25/10/19	EP / AW	CJB & SR (PIRSA)	74	Ceduna, Nullarbor, Streaky Bay	Collected taxa under-represented in the SHSA from EP & AW regions.
29/10/19	AMLR	CJB, K. Hill & A. Vent (NR AMLR), Allara Taylor-Wilkins (SA NPWS)	4	Kenneth Stirling CP, Filsell Hill section	Collected four Australian weedy native plants that are growing in native vegetation the park, <i>Isopogon latifolius</i> is new weed record for Australia.
05/11/19	SAMDB	CJB, PJL and L. Jansen (SHSA Volunteer)	18	Monarto plantings and Kinchina CP	Collected plants that are self-seeding within the Monarto plantings area.
08/11/19	AMLR	CJB & DB (WMSSA)	10	Norton Summit to Carey Gully	Noted several populations of <i>Myriophyllum aquaticum</i> , informing NR AMLR District Officer.

Date(s)	NRM Region	Participants	No.	General Location	Significant weed collections
22/11/19	AMLR	CJB & A. Watt (NR AMLR)	3	Port Adelaide transport hubs	Collected and confirmed identity of garden weed <i>Ailanthus altissima</i> (tree of heaven), <i>Cenchrus ciliaris</i> (buffel grass).
26/11/19	AMLR	CJB & C. Jackson (NR AMLR)	8	Fleurieu Peninsula – Lady Bay & Myponga areas.	Collected new weed record for AMLR area: <i>Pimelea ferruginea</i> .
2–6/12/19	SE	CJB, SR (PIRSA), & various NR SE	77	Keith, Naracoorte, Mount Gambier & Millicent.	Collection of PIRSA ALERT weed <i>Nassella trichotoma</i> at Naracoorte Caves in a garden bed.
21/02/20	AMLR	CJB, Matt Endacott (NR AMLR), Kerri Bartley (Onkaparinga City Council)	13	Moana Sands and Kingston Park	Coastal Weeds.
13/03/20	AMLR	CJB, Tonia Brown (Adelaide Hills Council)	5	Bridgewater area	Suspected new <i>Lilium</i> record for South Australia.
19/03/20	AMLR	CJB & PJJ	11	Adelaide Botanic Garden creekline	Garden escapees and weedy species.
3/06/20	AMLR	CJB	5	Linear Park Lockleys	New and emerging weeds.

Community Engagement

Table 4: Summary of community engagement activities.

Weeds Botanist, Chris Brodie (CJB), State Herbarium of South Australia (SHSA), with other participants as listed; Adelaide and Mount Lofty Ranges (AMLR); Natural Resources (NR); Primary Industries and Regions South Australia (PIRSA),

Date(s)	Other participants	Location	Presentation title / subject	Audience / Society	# of Att.
03/07/19	NR and PIRSA staff	Waite Campus	Weed Risk Assessment meeting to review: <i>Robinia pseudoacacia</i> & <i>Ornithogalum thyrsoides</i>	Expert panel	5
03/09/19 am	PIRSA staff, T. Bowman (TB) & S. Robertson (SR)	Nepabunna (Nantawarra IPA)	New and emerging weeds and how to collect plants for identification	Nepabunna community and staff	15
03/09/19 pm	TB & SR (PIRSA)	Blinman	As above (03/09/19 am)	Blinman 4WD club members	25
04/09/19	TB & SR (PIRSA)	Leigh Creek	As above (03/09/19 am)	Community members	8
03/10/19	NR AMLR staff	Willunga District NRM office	New plant naturalisations (weed records) for South Australia 2018/19	NR regional staff	10
22/10/19	SR (PIRSA)	Head of Bight	New and emerging weeds and how to collect plants for identification	Head of Bight staff	2
23/10/19	SR (PIRSA)	Yalata community	As above (22/10/19)	Yalata CEO Dave White and staff	3
18/11/19	NR AMLR staff	Black Hill District NRM office	As above (03/10/19)	NR regional staff	8
03/12/19	SR (PIRSA)	Mount Gambier	New and emerging invasive weed species that could threaten the South East's agricultural and natural areas	SE community and NR staff	8
04/12/19	SR (PIRSA)	Millicent	As above (03/12/19)	NR SE & Drainage Board staff	20
05/12/19	SR (PIRSA)	Naracoorte	As above (03/12/19)	SE community and NR staff	15
17/03/20	NR AMLR, and DEW staff	Somerton Surf Life Saving Club	New and emerging [coastal] weeds	DEW coastal & councils staff	25
09/04/20	David Hughes (NR AMLR) & SR (PIRSA)	Online [Zoom] presentation	New and emerging weeds	Online community	9

Appendix 2: Herbarium regions

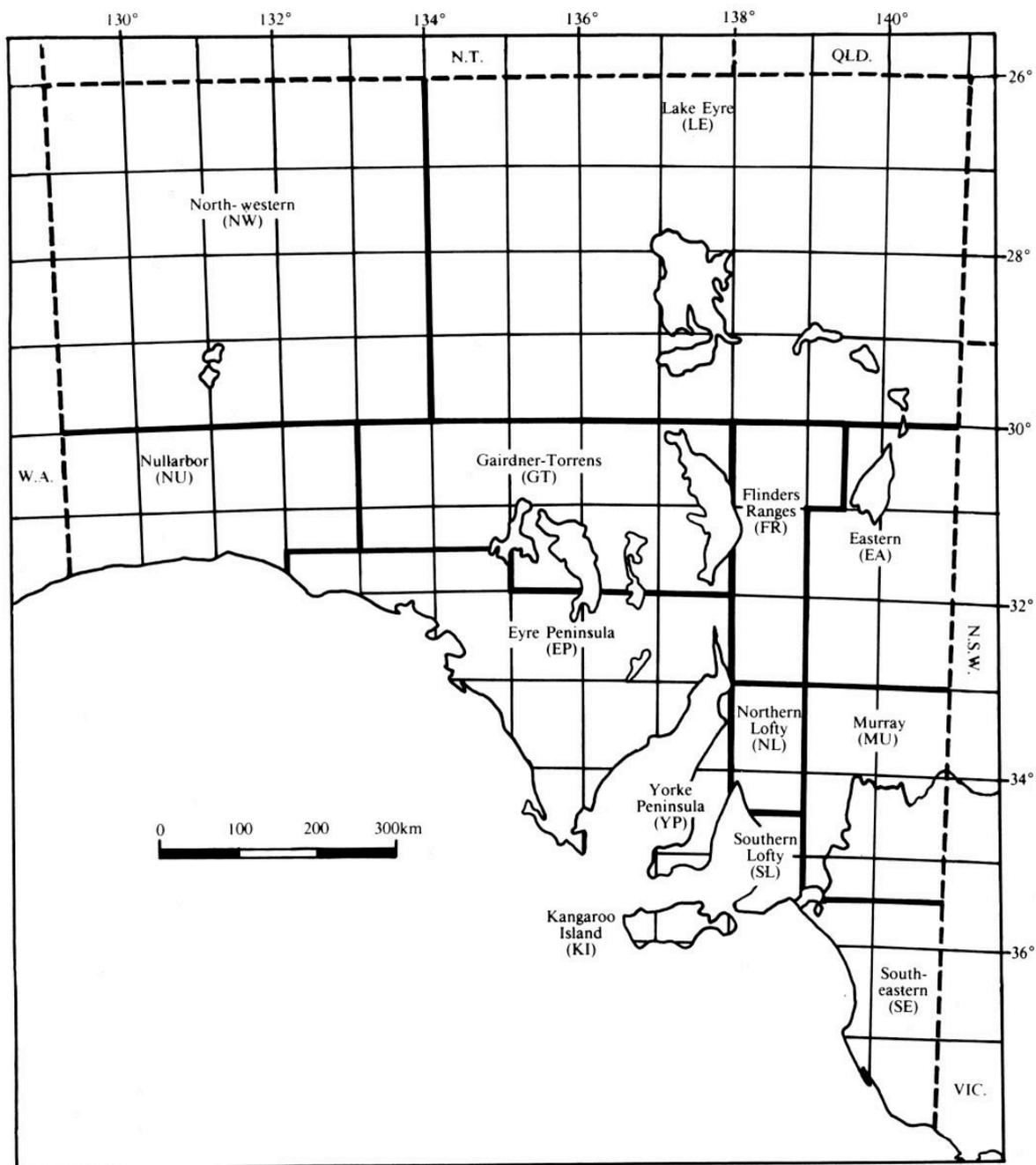


Fig. 21. State Herbarium regions for South Australia. Map from J.P. Jessop & H.R. Toelken, *Flora of South Australia* (1986), endpapers.

