



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

2022–2023

Milestone: Annual report on new plant naturalisations in South Australia

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May 2024



Government
of South Australia



State Herbarium
of South Australia

Contents

Summary	3
1. Activities and outcomes for 2021/2022 financial year	3
Funding	3
Activities	4
Outcomes and progress of weeds monitoring	5
2. New naturalised or questionably naturalised records of plants in South Australia.	7
3. Descriptions of newly recognised weeds in South Australia.....	9
4. Updates to weed distributions in South Australia, weed status and name changes.....	24
References.....	28
Appendix 1: Activities of the Weeds Botanist.....	30
Surveillance based on field observations and collections.....	30
Community engagement	33
Appendix 2: Herbarium regions.....	35



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Summary

In 2022–23, **fifteen** new weeds were added to the *Census of South Australian Plants, Algae and Fungi* (Census) as questionably naturalised in the State, mainly through the work of the State Herbarium of South Australia Weeds Botanist Chris Brodie and Senior Botanist Peter Lang.

The total comprises **eight** taxa recently collected in South Australia for the first time, **six** taxa that had existing State Herbarium collections with recent [wild] collections made, and **one** taxon that was discovered when existing State Herbarium collections were re-examined. The establishment status of all fifteen taxa was assessed as questionably naturalised (questionably weedy) in South Australia. Detailed descriptions and collection information are given for each of these plant taxa.

In addition, **24** weed taxa had updates applied to the Census, involving either a change to the scientific name, a change to its regional distribution, or a change to its establishment status.

During the last year, the Weeds Botanist undertook **31** fieldwork trips totalling **40.5** days. Fieldwork ranged from a week, to full or partial days. **Six** of the State's nine Landscape SA regions were visited during these fieldtrips, with **531** plant specimens collected for the State Herbarium of South Australia. The Weeds Botanist also took part in **10** separate community and professional engagement activities, and responded to at least **95** enquires from regional staff and community members that required over **55** hours to address.

1. Activities and outcomes for 2022/2023 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

Since 2020, the Department for Environment and Water, South Australia (DEW) has supported the program through base funding to the State Herbarium of South Australia (0.6 FTE to support the Weeds Botanist). Additional contributions have been received this financial year from Biosecurity SA in the Department of Primary Industries and Regions, South Australia (PIRSA), and Green Adelaide. In addition, the provision of plant identification services from Landscape SA Eyre Peninsula assisted in specific task cost recovery.

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 species, available online via eFloraSA¹, the Census², and the AVH³).

¹ *Electronic Flora of South Australia* (available online at <http://www.flora.sa.gov.au>).

² *Census of South Australian Plants, Algae and Fungi* (current edition available online at <http://flora.sa.gov.au/census.shtml>).

³ *Australasia's Virtual Herbarium* (available online at <https://avh.chah.org.au>).

Activities

A major focus of the work of the Weeds Botanist was the identification and collection of new weed records within South Australia. Between 1 July 2022 and 30 June 2023, Weeds Botanist Chris Brodie undertook **31** fieldwork trips totalling **40.5** days. Field trips ranged from a week, to full or partial days and were conducted in six of the nine Landscape SA regions: Green Adelaide, Hills & Fleurieu, Murraylands & Riverlands, Northern & Yorke, South Australian Arid Lands and Kangaroo Island.

Fieldwork was generally completed in partnership with staff from PIRSA, regional Landscape SA Boards, the South Australian Seed Conservation Centre, State or Local Governments or with other stakeholders or community members. Several targeted local fieldwork trips involved only the Weeds Botanist (see Appendix 1, Table 3). During these fieldwork trips, **531** plant specimens were collected for the State Herbarium of South Australia.

The Weeds Botanist undertook **10** community and professional engagement activities during the year (see Appendix 1, Table 4). These events (e.g. Fig. 1) help to increase awareness of the weeds themselves, the value of their early detection and the processes required to secure scientifically valid specimens and records for the State Herbarium.

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

During this reporting period the Weeds Botanist received at least **95** enquires and spent over **55** hours to respond. The majority of enquires entailed two or more interactions and can be separated into the following categories:

- **70** enquires were requests for precise plant identifications of suspected weeds via photographs or specimens submitted with or without data
- **25** enquires were requests for associated information regarding weeds, including distribution, taxonomic status and establishment status of weeds

Of the 70 requests for precise plant identifications, over **30** specimens have been submitted and retained by the State Herbarium.



Fig 1. Weeds Botanist Chris Brodie (right) informing on weeds in the production of a video titled, ‘*The impact and spread of garden escapees*’ (Image: Amy Park).

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 taxa 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 **fifteen (15)** new potential weeds for the State (see Section 2 & 3). In addition **24** weed taxa had updates applied to the Census, involving either a change to the scientific name, a change to its regional distribution or a change to its establishment status (see Section 4). Census changes were made over the period 4 June 2022–12 May 2023.

Since the project began in 2009, a total of **267** new naturalised or questionably naturalised plants have been recorded through field collections and research at the State Herbarium. These records have subsequently been added to the online *Census of South Australian plants, algae and fungi* (Census).

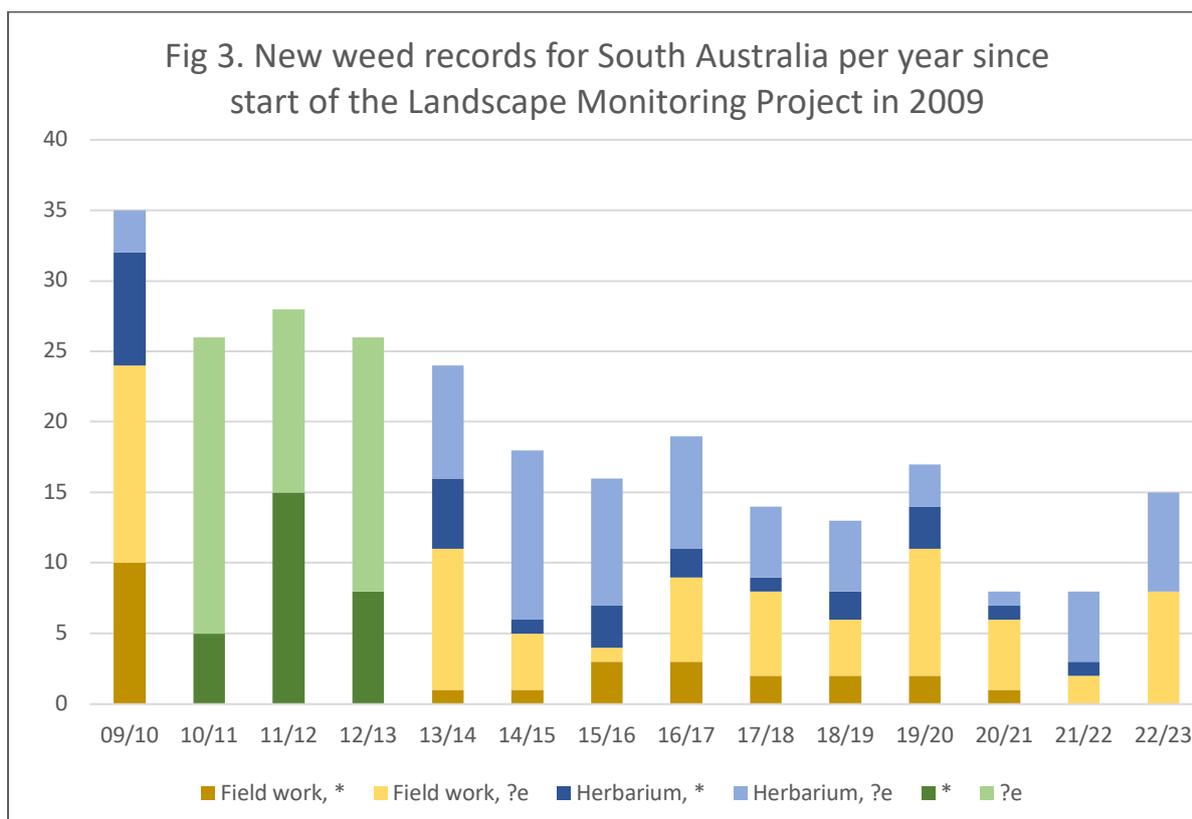
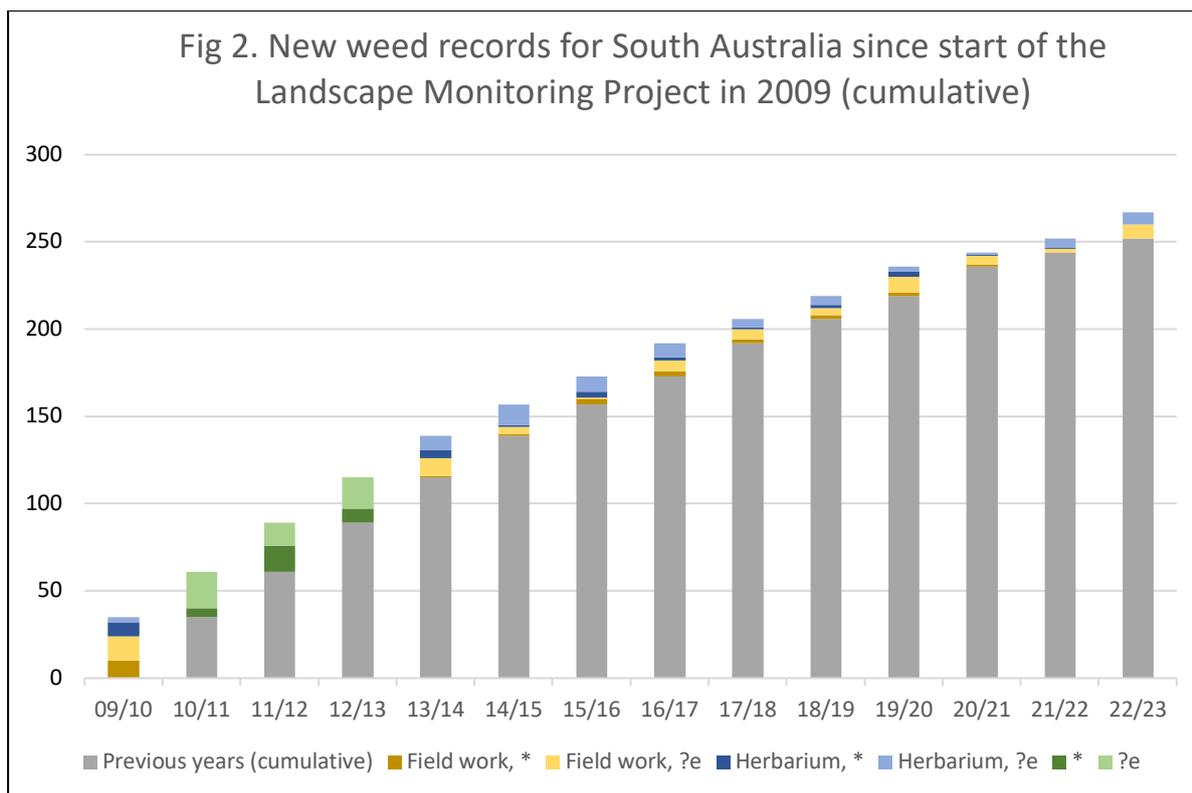
An overview of the numbers of weeds reported through this project (Figs 2 & 3) shows that, beyond the initial rapid detection of new weeds at the start of the program, significant numbers of new weeds still continue to be detected each year in South Australia.

Eight of the new weed records are discoveries resulting from recent collections that were made for the first time by the Weeds Botanist or regional staff and collaborators and added to the Census for the first time as questionably naturalised.

Seven of the new weeds records were of taxa that had existing (historical) State Herbarium collections. Six of these taxa had existing collections with limited data on their occurrence, which had been inadequate for establishment status assessment. Recent additional collections and field observations allowed the establishment status to be re-assessed, and these were subsequently identified as questionably naturalised enabling their addition to the Census for the first time. One of these newly identified questionably naturalised taxa was discovered when existing State Herbarium collections were re-examined and re-accessed during the past year, resulting in its addition to the Census for the first time as questionably naturalised.

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 taxa 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 throughout Australia and globally, 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 taxa 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.

Currently, there are **5170** naturally occurring vascular plant taxa recognised in South Australia, and of these **1714** have occurrences as alien plants that are considered to have become either established or questionably established in the wild. In other words, about one third of South Australia's plant taxa occur as alien weeds. For this year's reporting period on census changes (4 June 2022 – 12 May 2023) a total of fifteen (**15**) new species that are questionably naturalised plants in SA 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:

- Eight (**8**) fieldwork-detected taxa, collected for the first time from the wild, have been reviewed and added to the Census. There is evidence of these being questionably established, as wild (non-planted) occurrences:
 - ?e *Anisodonteia scabrosa* Rough-leaf African Mallow
 - ?e *Convolvulus sabatius* subsp. *mauritanicus* Mauritian Bindweed
 - ?e *Dietes grandiflora* Large Wild Iris
 - ?e *Maytenus boaria* Mayten
 - ?e *Protea cynaroides* King Protea
 - ?e *Protea neriifolia* Oleander-leaf Protea
 - ?e *Vincetoxicum barbatum* Bearded Tylophora
 - ?e *Washingtonia robusta* Mexican Fan Palm

- Six (**6**) taxa had existing State Herbarium collections; recent fieldwork collections made from the wild allowed the re-assessment of their establishment status and they were consequently added to the Census for the first time. There is evidence of these being questionably established, as wild (non-planted) occurrences:
 - ?e *Banksia grandis* Bull Banksia
 - ?e *Euryops virgineus* River Resin Bush
 - ?e *Hakea elliptica* Oval-leaf Hakea
 - ?e *Melaleuca diosmifolia* Green Honey-myrtle
 - ?e *Morus alba* White Mulberry
 - ?e *Smyrniolum olusatrum* Alexanders

- One (**1**) new taxon record was discovered when existing State Herbarium collections were re-examined. It was re-assessed as a questionably established, wild (non-planted) occurrence and added to the Census for the first time:
 - ?e *Acacia gonophylla* Rasp-stemmed Wattle

Table 1: The fifteen (15) new South Australian weed records added to the Census as questionably established/naturalised in the wild, based on recent collections and newly generated knowledge.

Naturalised/established

?e = questionably established/naturalised in the wild

?id = questionably identification.

Regional distribution

See map and key to Herbarium regions in Appendix 2 (Fig. 12).

New Taxon	Common Name	Family	Naturalised /established	Regional distribution
<i>Acacia gonophylla</i>	Rasp-stemmed Wattle	Fabaceae	?e	SE
<i>Anisodonteia scabrosa</i>	Rough-leaf African Mallow	Malvaceae	?e	SL ^{?id}
<i>Banksia grandis</i>	Bull Banksia	Proteaceae	?e	KI
<i>Convolvulus sabatius</i> subsp. <i>mauritanicus</i>	Mauritian Bindweed	Convolvulaceae	?e	SL
<i>Dietes grandiflora</i>	Large Wild Iris	Iridaceae	?e	SL
<i>Euryops virgineus</i>	River Resin Bush	Asteraceae	?e	SL
<i>Hakea elliptica</i>	Oval-leaf Hakea	Proteaceae	?e	SL, KI
<i>Maytenus boaria</i>	Mayten	Celastraceae	?e	SL
<i>Melaleuca diosmifolia</i>	Green Honey-myrtle	Myrtaceae	?e	EP, KI
<i>Morus alba</i>	White Mulberry	Moraceae	?e	SL
<i>Protea cynaroides</i>	King Protea	Proteaceae	?e	KI
<i>Protea neriifolia</i>	Oleander-leaf Protea	Proteaceae	?e	KI
<i>Smyrniium olusatrum</i>	Alexanders	Apiaceae	?e	SL
<i>Vincetoxicum barbatum</i>	Bearded Tylophora	Apocynaceae	?e	SL
<i>Washingtonia robusta</i>	Mexican Fan Palm	Arecaceae	?e	FR

3. Descriptions of newly recognised weeds in South Australia

Taxa are listed here in alphabetical order. See also Table 2 for existing weeds that are newly recognised for particular regions of South Australia (SA).

Family: **Fabaceae**

Acacia gonophylla Benth.

Common name: Rasp-stemmed Wattle

Description: Small erect rounded much-branched slightly spreading shrub to 1 m tall. Branchlets ribbed, with phyllodes (leaves) pale green and 5-angled, 2–4.5 cm long, usually 1–1.5 mm wide. Inflorescence a globular head of 12–21 small pale yellow flowers. 1–3 inflorescences cluster together with each cluster 4.5–5 mm in diameter. Fruiting pods are about 8 cm long, 0.3–0.4 cm wide, smooth dark red-brown, linear and slightly constricted between the seeds. Seeds 3–4 mm diameter, black with an aril. **Fig. 1.**

Native to: Western Australia.

Worldwide: Not known outside Australia. However several websites offer seeds for sale.

Distribution in Australia: Native to Western Australia (WA). Apart from this collection, it is not known to have naturalised elsewhere in Australia, with the only other recorded planting outside WA being a single cultivated record in the National Botanic Gardens in Canberra.

Collections in SA: A single historical collection from Gum Lagoon Conservation Park, *D.E. Murfet 2468 & R.L. Taplin*, made on 21 June 1996. Most likely representing a probable introduction rather than a disjunct native occurrence and described as: “a single flowering bush in dense native vegetation near boundary track of Gum Lagoon Conservation Park”.

Status in SA: A new questionably naturalised record for SA and the Limestone Coast Landscape SA region. Added to the Census for SA and the South Eastern (SE) Herbarium region as questionably naturalised (for adventive), based on *D.E. Murfet 2468 & R.L. Taplin*. Specimen identification was made by staff botanist Martin O'Leary on 9 Jan. 1997.

References: Western Australian Herbarium (1998–); Maslin (2018); APC (2023); AVH (2023).



Fig. 1. *Acacia gonophylla*. Images: LHS, plant (*D.E. Murfet 2468 & R.L. Taplin*), at Gum Lagoon Conservation Park, by D.E. Murfet; RHS specimen photo by Chris Brodie.

Anisodonteia scabrosa (L.) D.M.Bates

Common name: Rough-leaf African Mallow

Description: An evergreen upright perennial shrub, up to 2–3 m in height. The aromatic soft leaves are mostly 2–7 cm long, variable in shape, 3-lobed or elliptic, with stiff often sticky hairs. Leaves have prominent veins and margins are toothed. The light to dark pink flowers are hibiscus-like, 2–2.5 cm in diameter and can flower all year round, but mostly flower during spring and early summer. The dry and dehiscent fruit is 9–15 chambered and produces small black seeds. **Fig. 2.**

Native to: South Africa.

Worldwide: Grown as a garden plant in its native South Africa where it reportedly escapes from cultivation. Commonly grown in warm-temperate areas around the world. Recorded as naturalised in the USA, only.

Distribution in Australia: Sometimes grown in gardens around Australia. Some *Anisodonteia* species and several cultivars are available in nurseries and via online sites. Not known to have naturalised anywhere else in Australia. However, there is an unverified observation from the Australian Capital Territory (ACT), listed on iNaturalist.

Collections in SA: A collection from Encounter Bay, *R. Taylor 3476*, made on 1 Feb 2022. Collected from a population of 5 plants on a modified roadside verge, likely representing self-sown plants. The establishment information was obtained by the collector from nearby residents who manage this verge stating, “the [5] plants were not planted and came up after council put mulch on the area.”

Status in SA: A new questionably naturalised record for South Australia and the Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for sparingly established), based on *R. Taylor 3476*. Specimen identification was made by R. Taylor, confirmed by the authors. A questionably identification is applied to this collection, reflecting the possibility that this plant could be of garden origin (a cultivar or hybrid), but most closely resembles the species *A. scabrosa*.

References: Randall (2007); WFO (2023); PlantZA (2023); POWO (2023).



Fig. 2. *Anisodonteia scabrosa*. Images: LHS by KENPEI (CC-BY-SA-2.1-JP); RHS by JMK (CC-BY-SA-3.0).

Banksia grandis Willd.

Common name: Bull Banksia

Description: An architecturally striking *Banksia*, with large leaves and flowers. A slow growing small to medium-sized tree or shrub, to 10 m tall, smaller in less favourable areas, e.g. exposed coastal sites. The distinctive leaves are up to 45 cm long and 10 cm wide, strongly divided into triangular lobes to the midrib. The striking large pale yellow cylindrical flower spikes are up to 40 cm long and to 9 cm in diameter, flowering from spring through to summer. The flowers are followed by very large woody fruiting cones. Plants grown from seed can take many years to flower. **Fig. 3.**

Native to: South-west Western Australia.

Worldwide: Occasionally grown in gardens in warm-temperate areas around the world, it is not known to have naturalised in other countries.

Distribution in Australia: Not known to have naturalised elsewhere in Australia. Widely grown in gardens, especially in temperate areas across Australia.

Collections in SA: A single collection *C.J. Brodie (CJB) 9868A, L. Williams & S. Berry*, from Kangaroo Island, Stokes Bay, made on 20 June 2022. Of the ten or so self-sown seedlings present on the roadside verge next to an ‘Australian Native Bush Garden’, the largest plant was collected. The seed likely spread, from cultivated plants in the neighbouring native bush garden aided by the 2019/20 bush fires. Another historical collection, *T. Maguire s.n.* is part of the Herbarium collection and needs to be accessed for establishment status.

Status in SA: A new questionably naturalised record for South Australia and the Kangaroo Island Landscape SA region. Added to the Census for SA and the Kangaroo Island (KI) Herbarium region as questionably naturalised (for adventive), based on *CJB 9868A et al.*

References: APC (2023); AVH (2023).



Fig. 3. *Banksia grandis*. Images: LHS by C T Johansson (CC-BY-3.0); RHS by Moondyne (CC BY 2.5).

Convolvulus sabatius subsp. *mauritanicus* (Boiss.) Mirb.

Common name: Mauritian Bindweed

Description: A hairy low-growing dense spreading groundcover to trailing perennial, plants 1 m or more in diameter. Leaves are small elliptic to rounded, up to 1.8 cm long and wide, hairy below, and smooth to hairy above. The flowers are funnel-shaped and range in shades from light blue to lavender. This sub-species is identified by the sparsely to densely villous calyx lobes. **Fig. 4.**

Native to: North Africa (Morocco and Algeria), and doubtfully native on mainland Italy.

Worldwide: Naturalised and weedy in the UK, Greece, Sicily (Italy), New Zealand, and Western Australia. Commonly cultivated as an ornamental around the world.

Distribution in Australia: A single naturalised record is known from WA. Widely cultivated throughout Australia from sub-tropical to temperate areas.

Collections in SA: There are two recent collections from separate locations. The first collection, *R. Taylor 3044*, was made on 12 Jan. 2019, from Victor Harbor from a roadside verge, likely representing a self-sown plant. The second collection, *R. Taylor 3045*, was also made on 12 Jan. 2019 in Encounter Bay, from a roadside verge.

Status in SA: A new questionably naturalised record for South Australia and the Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for sparingly established), based on *R. Taylor 3044 & 3045*. Specimen identification was made by R. Taylor and confirmed by the authors in Mar. 2023.

References: Carine & Robba (2010); AVH (2023).



Fig. 4. *Convolvulus sabatius* subsp. *mauritanicus*, specimen (*R. Taylor 3045*). Images: Chris Brodie.

Dietes grandiflora N.E.Br.

Common name: Large Wild Iris

Description: A clumping grass-like to iris-like perennial plant with a creeping rhizome (an underground root-like stem) with long rigid sword-like green leaves. Plants grow to about 0.8–1.2 m tall and wide. Flowering stems are ± straight with open large 6–8 cm wide iris-like white flowers with yellow markings on the outer tepals (petals) with violet style branches. Flowers are borne in abundance, especially during summer. Green fruiting pods/capsules are about 5 cm long, producing dark brown seeds, which are dispersed when the capsule splits open. **Fig. 5.**

Native to: South Africa.

Worldwide: Commonly cultivated in gardens around the world, including in its native South Africa. Planted in a wide variety of climates, ranging from sub-tropical to temperate areas. This species is drought and frost hardy, and is popular for en-masse plantings. Naturalised in Australia, New Zealand, North America. There are records from central and South America, Asia, Africa and Europe, but it is unclear where and if the species is naturalised (weedy) in these regions.

Distribution in Australia: Planted around Australia as a garden plant, and in amenity plantings. Naturalised in WA and NSW, possibly also in Queensland.

Collections in SA: A single collection, *R. Taylor 2592*, made on 22 Dec. 2017, from Encounter Waters wetland, Victor Harbor, where a stormwater pipe enters from Matthew Flinders Drive. Collected from a single cluster. The leaves, arising from thick rhizome were not obtainable due to a wire rubbish net secured on the stormwater pipe.

Status in SA: A new questionably naturalised record for South Australia and Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for adventive), based on *R. Taylor 2592*. Specimen identification was made by Ron Taylor and confirmed by the authors in Mar 2023.

References: Spencer (2005); Randall (2007); APC (2023); AVH (2023); Pacific Bulb Society (2023).



Fig. 5. *Dietes grandiflora*. Images LHS by Rojer Wisner (CC-BY-2.0); RHS by JMK (CC-BY-SA-3.0).

Euryops virgineus (L.f.) DC**Common name:** River Resin Bush

Description: An evergreen much-branched shrub to 1–1.5 m. The branches are mostly long, slender and near straight. Branches bear many dark green overlapping small stalkless leaves, 0.5–1.2 cm long and 0.2–0.7 cm wide, on the upper and middle stems, but these are sparser lower down; branches bare towards the base with obvious leaf scars. Leaves are wedge-shaped and deeply 3–5-toothed. Masses of bright yellow honey-scented daisy-like flowers are produced on stalks, about 2 cm long. Flower-heads are 0.8–1 cm in diameter, consisting of an outer row of 6–7 ray florets (petals) and up to 22 disc florets in the centre of the flower. Fruits (cypselas) are small, 1.8–2.5 mm long, smooth, oblong, slightly angled, shiny, yellow or light brown, with short white hairs about 1 mm long with barbs (pappus hairs) at the apex, which are soon lost. **Fig. 6.**

Native to: South Africa.

Worldwide: Not recorded as a weed outside Australia. Cultivated in New Zealand, the UK, Africa and North America.

Distribution in Australia: Recorded as cultivated in southern Queensland and Tasmania. Naturalised in NSW, and possibly naturalised in Victoria and Tasmania.

Collections in SA: Based on a single collection, *R. Taylor 2364*, made on 8 June 2017, from Encounter Bay. Two self-sown bushes present, growing on brown clay on a footpath adjacent to a vacant block in Hope Street. These likely germinated from seed off a plant in a garden 100 m further north. An earlier historical collection, *R.J. Bates 33886*, made on 30 Aug. 1993, from Golden Grove is in the State Herbarium and needs to be accessed for establishment status.

Status in SA: A new questionably naturalised record for South Australia and Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for adventive), based on *R. Taylor 2364*. Specimen identification was made by Ron Taylor and confirmed authors in Mar 2023.

References: PlantNET (2023); POWO (2023); SANBI (2023); WFO (2023).



Fig. 6. *Euryops virgineus* collection from Encounter Bay (*R. Taylor 2364*). Images: Chris Brodie.

Hakea elliptica (Sm.) R.Br.

Common name: Oval-leaf Hakea

Description: An erect shrub, 2–5 m high without a lignotuber (non-sprouting). Smaller branches densely hairy at flowering with reddish-brown hairs. Leaves elliptic to broadly elliptic, 4.5–9.5 cm long, 1.5–5.5 cm wide, with 3–5 prominent longitudinal veins. The inflorescence are clusters of 35–40 cream to white flowers, each on a smooth stalk (pedicel). The woody uneven egg-shaped (elliptic) fruit is 2.5–3.7 cm long, 1.5–2.5 cm wide, with a pointed beak. The fruit is split down the middle into two valves revealing two blackish-brown ovate seeds, 20–25 mm long, with a wing extending broadly down one side of the fruiting body. **Fig. 7.**

Native to: Western Australia.

Worldwide: Not known to have naturalised outside Australia. Occasionally grown in some gardens in temperate areas around the world.

Distribution in Australia: Native populations are found on the south coast of WA. Also grown as an ornamental in temperate Australia, occasionally escaping cultivation in Victoria.

Collections in SA: There are collections from two separate locations. The first two historical collections are from the same site at Crafers in the Adelaide Hills from the south-east edge by the Mt Lofty Botanic Gardens, made by the same collector. The earliest collection, *R.J. Bates 52736*, made on 24 Apr. 1999, with notes stating that plants were “well established” with “dozens of shrubs, in rough scrub, all same age growing after Ash Wednesday fire”. The second collection, made six years later, *RJB 65279* (5 June 2005), with notes on this specimen stating that “shrubs of 2–3 m ... In Stringybark ... about 50–100 plants, all about same age after Ash Wednesday germination”.

The second site on Kangaroo Island was a single plant and collection, *CJB 9866*, *L. Williams & S. Berry*, made on 20 June 2022, from Stokes Bay, from a roadside verge, next to an ‘Australian Native Bush Garden’, in an area that burnt in the 2019/20 fires.

Status in SA: A new questionably naturalised record for South Australia and the Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for sparingly established), based on *R.J. Bates 52736 & 65279*.

A new questionably naturalised record for Kangaroo Island Landscape SA region. Added to the Census for the Kangaroo Island (KI) Herbarium region as questionably naturalised (for adventive), based on *CJB 9866 et al.* Specimen identification by Laurie Haegi on 31 Aug. 2022.

References: Barker (2010); (APC 2023); AVH (2023); VicFlora (2023).



Fig. 7. *Hakea elliptica* on Kangaroo Island (LHS & middle; *C.J. Brodie 9866 et al.*). Images: LHS & middle by Chris Brodie; RHS by Murray Fagg (CC-BY-3.0-AU).

Maytenus boaria Molina

Common name: Mayten

Description: An evergreen erect tree to 15 m tall and 15 m wide, with rough fissured bark on older trunks. Young trees whippy, with branches and twigs pale grey to grey-brown. Branchlets and twigs \pm pendant (hanging down). Leaves with a short leaf-stalk, 2–5 mm long, elliptic to lanceolate, 1–6 cm long, 0.4–2 cm wide, with the edges (margins) regularly finely toothed (serrulate), and pointed at the apex. The flower sepals and petals are green, 1.5–3 mm long. Fruiting capsules yellow or straw coloured, 5–9 mm long, 5–6.5 mm wide. **Fig. 11.**

Native to: Argentina, Bolivia, Brazil, Central Chile.

Worldwide: Naturalised in California in the San Francisco Bay area where it spreads after fires. A problematic weed in New Zealand. Appears to be cultivated throughout the Americas, in Europe and Asia. Grows across a range of climatic zones.

Distribution in Australia: Not naturalised elsewhere in Australia, and does not appear to be widely cultivated.

Collections in SA: There are two collections from the same location made by the same collector. The determination was based the second collection with fruits, *CJB 10303*, *L. Duffy & S. Rose*, made on 23 Mar. 2023, from Mount Lofty Botanic Gardens. Plants were found growing in a native/wild area of Stringybark woodland, opposite the cultivated manicured gardens known as the South American section. There were three wild self-sown plants in this wild area, with 30 or more plants recently removed, and many 100s more removed from this area over the last 5–10 years. It was described by Mount Lofty Botanic Gardens staff as “an aggressive self-sown plant”. A first collection, *CJB 7779*, made on 19 Apr. 2017, was of vegetative material only that did not allow for positive identification.

Status in SA: A new questionably naturalised record for South Australia and the Hills & Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for sparingly naturalised due to limited area of occurrence and control measures), based on *CJB 10303 et al.*, supported by *CJB 7779*.

References: Bailey (1974); Dawson (2016); WFO (2023).



Fig. 8. *Maytenus boaria* at Mount Lofty Botanic garden in Stringybark woodland (*CJB 10303 et al.*). Images: Chris Brodie.

Melaleuca diosmifolia Andrews

Common name: Green Honey-myrtle

Description: Erect stiff shrub to 3 m tall, with stems and branches mostly erect, sometimes pendent when mature. Leaves are bright shiny green, without a leaf-stalk, arranged alternately on the stem and densely crowded and overlapping. Leaves are narrowly oval or elliptical in shape, 4–13 mm long, 3–5 mm wide. The inflorescence are clusters of flowers that are strikingly green to pale yellow-green along the stem, about 3–5 cm long, 2.5–4 cm wide, known as ‘bottle-brush’ flowers. The woody fruits or capsules, 5–8 mm long, 9–12 mm wide, are also distributed around the stem. Produces many small seeds. **Fig. 9.**

Native to: Western Australian.

Worldwide: Naturalised in New Zealand, reported as an emerging weed in South Africa.

Distribution in Australia: Native and naturalised in WA, naturalised in Victoria. Grown around Australia and available from several online nurseries and seed websites.

Collections in SA: There are two collections, from two Landscape SA regions (in two Herbarium regions). The first is a historical collection, *S. Williams CBP 702*, comprising two sheets: one collection made on 27 Aug 2005, the other on 27 Oct 2005. They are from Coffin Bay National Park, both from a single plant with notes stating “Only specimen in area. I think it came in from tyre traffic - no other sighted in park. On limestone - calcareous soil, growing edge of roadside in campground ...”.

The second recent collection, *CJB 9898*, *L. Williams & S. Berry*, made on 21 June 2022, is from Kangaroo Island. It was made in native vegetation at the entrance to a property on E.W. One Highway that burnt in the 2019/20 Bush fires. There are hundreds of small saplings or seedlings and also plants in bare areas around the old house site.

Status in SA: A new questionably naturalised record for South Australia and the Eyre Peninsula Landscape SA region. Added to the Census for SA and the Eyre Peninsula (EP) Herbarium region as questionably naturalised (for adventive), based on *S. Williams CBP 702*.

A new questionably naturalised record for the Kangaroo Island Landscape SA region. Added to the Census for the Kangaroo Island (KI) Herbarium region as questionably naturalised (for establishing/adventive), based on *CJB 9898 et al.* Specimen identification was made by Laurie Haegi on 31 Aug. 2022.

References: Randell (2017); APC (2023); AVH (2023); Ogle & Lange (2023); POWO (2023); VicFlora (2023); WFO (2023).



Fig. 9. *Melaleuca diosmifolia* on Kangaroo Island (*CJB 9898 et al.*). Images: Chris Brodie.

***Morus alba* L.**

Common name: White Mulberry

Description: A winter-deciduous tree, with a short rough trunk and a dense canopy of alternately arranged glossy dark green leaves, 7–17 cm long; leaves ranging in shape from rounded to deeply lobed, all with prominent veins. Plants have separate male and female flowers. Fruits oval, initially green, turning red, eventually dark black when ripe, edible. This species is the primary food source for the silkworm. **Fig. 10.**

Native to: China.

Worldwide: Widely cultivated around the world and naturalised in many parts of North and South America. Occasionally self-established in Europe, Asia and Africa.

Distribution in Australia: Widely cultivated especially in temperate areas. Naturalised and weedy in WA, Queensland and NSW.

Collections in SA: Represented by two historical collections and one recent collection, all from the Green Adelaide Landscape SA region. The first collection, *T.J. Smith 2100*, was made on 6 June 1973, from “near the Grange [Beach], on coastal sand Dunes, 10 km WNW of Adelaide [CBD]”. The second collection, *M. Mulvaney AD1*, was made on 22 May 1985, from “West Lakes coastal dune reserve ... single (many stemmed) sapling to 1.5m”. The third and most recent collection, *CJB 10153 & H. Rutherford*, made on 13 Jan. 2023, from the southern Adelaide suburb Sheidow Park, at Field River Reserve along a fence line next to a residential garden.

Status in SA: A new questionably naturalised record for South Australia and for the Green Adelaide and Hills & Fleurieu Landscape SA regions. Added to the Census for SA, and for the Southern Lofty (SL) Herbarium regions as questionably naturalised (for possibly adventive/casual), based on *T.J. Smith, 2100*, *M. Mulvaney AD1* and *CJB 10153 & H. Rutherford*. The three collections are probably all isolated self-established individuals.

References: Bailey (1974); Spencer (1997); APC (2023); AVH (2023).



Fig. 10. *Morus alba* in Field River Reserve, Sheidow Park (*CJB 10153 & H. Rutherford*). Images: Chris Brodie.

Protea cynaroides (L.) L.

Common name: King Protea

Description: An upright small woody shrub, 0.35–2 m tall, with several thick sparsely branched stems, with dark green glossy leaves. Mature plants develop a persistent subterranean lignotuber (underground woody stem with buds that can re-sprout after fire), from which new stems grow. Leaves are smooth, 12–30 cm long, comprised of a long leaf stalk (petiole), 4–18 cm long, and a thick-leathery round, oval or elliptic leaf blade, 8–14 cm long, 5–13 cm wide. The inflorescence (the largest inflorescence in genus) is a collection of flowers, surrounded by large colourful bracts (modified leaves), creating a bowl-shaped receptacle, 12–30 cm in diameter. The individual flowers are 7–10 cm long; bracts are in rows around the flowers (forming the bowl), outer bracts 2–4 cm long, 0.7–2.5 cm wide, inner bracts 8–12 cm long, 1–3.5 cm wide. Large plants produce six to ten inflorescences in one season, although some vigorous mature plants can produce many more. The colour of the bracts varies from a creamy white to a deep crimson. Many garden cultivars have been developed around the world with bracts varying in colour and different combinations of colours. **Fig. 11.**

Native to: South Africa.

Worldwide: Cultivated around the world, due to its large impressive flowers. Not known to have naturalised outside its native South Africa.

Distribution in Australia: Widely cultivated in public and private gardens, not known to have naturalised elsewhere in Australia

Collections in SA: The collection *CJB 9767B & J. Walter*, was made on 5 Apr. 2022, from the western end of Kangaroo Island at 1355 Goose Richie Road, in an area that was burnt in the 2019/20 fires, since then regenerating with a mix of self-sown natives, exotics and re-sprouting cultivated plants. Numerous *Protea* seedlings were germinating in the area. However, as several taxa were present it was unclear if this was the only seedling of this species. *CJB 9767C & J. Walter*, the regenerating cultivated parent plant that had grown to over 1 m tall and much wider, was in flower allowing identification of seedling (*CJB 9767B & J. Walter*).

Status in SA: A new questionably naturalised record for South Australia and Kangaroo Island Landscape SA region. Added to the Census for SA and the Kangaroo Island (KI) Herbarium region as questionably naturalised (for adventive), based on *CJB 9767B & J. Walter*.

References: AVH (2023); PlantZAfrica (2023); WFO (2023).



Fig. 11. *Protea cynaroides*, re-generating parent plant (*CJB 9767C & J. Walter*) on Kangaroo Island. Images: Chris Brodie.

Protea neriifolia R.Br.

Common name: Oleander-leaf Protea

Description: A large erect shrub 1.5–3 m tall and up to 2 m wide, with a stout main trunk that branches near ground level. The stalk-less leathery leaves are mostly erect on the stem (pointing upwards) mostly hairy at first then losing the hairs. Leaves are 10–18 cm long, 1.5–3 cm wide, linear to oblong in shape with near parallel margins. The long cup-shaped inflorescences produced at the tips of most branches, are 6 to 8 cm in diameter, 10–13 cm long, and made-up of a collection of large red/pink many individual flowers, 7–10 cm long. The inflorescence is surrounded by several whorls of large colourful bracts (modified leaves) that forms the cup. The tips of the bracts are rounded, with dense black hairs forming 8–10 mm long beards (occasionally white hairs or mixed). Many garden cultivars have developed around the world with varying colour forms and combinations. If burnt in wildfires, mature plants of this species are killed, but the seeds are able to survive and germinate. **Fig. 12.**

Native to: South Africa.

Worldwide: One of the more commonly cultivated *Protea* species around the world due to its impressive flowers. Not known to have naturalised outside its native South Africa.

Distribution in Australia: Not known to have naturalised elsewhere in Australia. Widely available for sale around Australia and commonly planted in gardens

Collections in SA: A single collection *CJB 9768 & J. Walter*, made on 5 Apr. 2022, from the western end of Kangaroo Island on Goose Richie Road, in an area that was burnt in the 2019/20 fires and regenerating with a mix of self-sown natives, exotics and (regenerating) cultivated plants. Numerous *Protea* seedlings and saplings were germinating in the area with about 30 seedling of different taxa present.

Status in SA: A new questionably naturalised record for South Australia and Kangaroo Island Landscape SA region. Added to the Census for SA and the Kangaroo Island (KI) Herbarium region as questionably naturalised (for adventive), based on *CJB 9768 & J. Walter*.

References: AVH (2023); PlantZAfrica (2023).



Fig. 12. *Protea neriifolia* plants on Kangaroo Island (*CJB 9412 & J. Walter*). Images: Chris Brodie.

***Smyrniium olusatrum* L.**

Common name: Alexanders

Description: A robust hairless biennial herb to 1.5 m tall, with a long tap-root and some fibrous lateral roots. Stems to 2 cm in diameter, becoming hollow and grooved with age. The lower stem leaves are opposite to spirally arranged, with upper leaves often opposite and sometimes in whorls of 3. Leaves are large in outline up to 60 cm long, 40 cm wide, broadly diamond-shaped, and divided 2 or 3 times into leaflets with teeth that are dark green above and pale green below. Leaf bases have an inflated, purple-striped fleshy stalk with papery margins towards the base. The yellow small flowers are in numerous umbels at the top of the stem, with each individual flower having 5 petals, 5 stamens, and 2 styles. The fruits are 6–8 mm long, broadly ovoid, lateral compressed with 3 prominent ridges, turning black when ripe **Fig. 13**.

Native to: Europe (eastern and southern Europe), the Middle-East and North Africa.

Worldwide: Introduced and naturalised in the UK, Ireland, Netherlands and New Zealand. Grown in temperate areas around the world as an ornamental and thought to have medicinal properties.

Distribution in Australia: Not known to have naturalised elsewhere in Australia. Occasionally grown, and available from a limited number of online nurseries.

Collections in SA: Two collections from two separate locations. The most recent collection *CJB 9952*, was made on 18 Aug. 2022, from a single self-sown plant from First Creek, within the Adelaide Botanic Gardens, between the footbridge near the Cascade fountain, and the fern house, from the creek base in a wild area on a deposit of stoney gravel and soil. An earlier collection, *T. Hands & J. Wamsley s.n.*, made on 17 Sep. 2014, was from Scott Creek Conservation Park from a “seasonal creekline, top end (E end) of MacKereth Creek, near waterfall”.

Status in SA: A new questionably naturalised record for South Australia, for the Green Adelaide and Hills & Fleurieu Landscape SA regions. Added to the Census for SA, and for the Southern Lofty (SL) Herbarium regions, as questionably naturalised (for adventive), based on *CJB 9952* supported by an earlier collection, *T. Hands & J. Wamsley s.n.*

References: Sell & Murrell (2009).



Fig. 13. *Smyrniium olusatrum*. Images: LHS by Chris Morgan CC BY-SA 2.0; RHS by Miguel Porto CC BY-NC 4.0.

Vincetoxicum barbatum (R.Br.) Kuntze

Synonym: *Tylophora barbata* R.Br

Common name: Bearded Tylophora

Description: Slender climber or trailer with smooth stems to 3 m long. Leaves ovate or elliptic, 2.5–7.5 cm long, 1–4 cm wide, with leaf stalks, 0.7–2 cm long. Mid-vein and secondary veins on leaves more prominent below. Inflorescences of 1–3 short umbels, each with 3–5 small purplish-red flowers, less than 1 cm wide, on flowers stalks, 0.5–0.8 cm long. The dry long thin smooth fruit is 5–7 cm long, 0.4–0.7 cm wide, splitting along the length revealing the numerous attached seeds that are 0.5–0.7 cm long and about 0.3 cm wide, topped with many long hairs, 2–4 cm long. **Fig. 14.**

Native to: Australia (NSW and Victoria).

Worldwide: Not known to be cultivated outside Australia.

Distribution in Australia: Naturally occurring in eastern NSW and north east Victoria in temperate rainforests gullies, and wet rarely dry sclerophyll forests. A weedy occurrence know SE of Melbourne.

Collections in SA: A single collection *CJB 10305*, *L. Duffy & S. Rose*, made on 23 Mar. 2023, from the Adelaide Hills on Campbell Road, Crafers, on a verge between the road and Mount Lofty Botanic Gardens. A self-sown plant that most likely spread via seed from garden plantings, now extending for 20 m along the road and up to 4 m wide in places, and also forming a ground cover here.

Status in SA: A new questionably naturalised record for South Australia and the Hills and Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) Herbarium region as questionably naturalised (for sparingly naturalised due to limited area of occurrence), based on *CJB 10305 et al.* Field determination was by Lisa Duffy, with specimen identification/confirmation made by the collector on 28 April 2023.

References: AVH (2023); PlantNET (2023); VicFlora 2023.



Fig. 14. *Vincetoxicum barbatum* plants in the Adelaide Hills, Crafers area on Campbell Road verge bordering Mount Lofty Botanic Gardens, (*CJB 10305 et al.*). Images: Chris Brodie.

Washingtonia robusta H.Wendl

Synonym: *Washingtonia filifera* var. *robusta* (H.Wendl) Parish

Common name: Mexican Fan Palm

Description: A large single stemmed tall palm tree, up to 25 m tall. Leaves are produced at the tip of the plant with older leaves dying, retained and hanging for some time on the plant. Mature large plants have leaf-stalks to 1 m long, with hooked sharp thorns. The large rounded-oval leaf blades are 1–1.5 m long, pleated many times, with pleats cut nearly to the middle, often the with copious white marginal fibres. Old dead dark brown leaves remain hanging (leaf-stalks and blades) to form a shaggy skirt that persists and is added to by the lowest and oldest green leaves that eventually die. The lowest and oldest leaves of the skirt eventual falling after years exposing the lower smooth ringed trunk. If cultivated plants have their leaves removed for aesthetics, cut at the base of the leaf-stalk leaving only a small part of the leaf-stalk then these remain attached to the trunk and no smooth trunk is revealed. *Washingtonia robusta* leaves are brighter green, and the stems taller and more slender than the close relative *Washingtonia filifera*. **Fig. 15.**

Native to: Mexico

Worldwide: Planted in temperate, semi-arid to arid areas around the world. Naturalised in Europe, North Africa, the USA (California, Florida, Hawaii), and the Middle-east. Commonly planted around the world.

Distribution in Australia: Planted in gardens around Australia. The similar species *Washingtonia filifera* is sparingly to doubtfully naturalised in WA, the Northern Territory, SA and Victoria.

Collections in SA: A single collection, *CJB 10008 & M. Westover*, made on 14 Sep. 2022, from Leigh Creek, beside a bitumen roadside in dry soil by the curb, in an abandoned and demolished part of Leigh Creek, now returning to scrub. This single self-sown small seedling, with about 12 leaves with cream coloured threads from the leaf margin, most likely germinated from seed, with no parent plants seen in this location. However, there are some large parent palms in other areas of Leigh Creek, as well as several other self-sown *Washingtonia* palms in the town.

Status in SA: A new questionably naturalised record for South Australia and the South Australian Arid Lands (SAAL) Landscape SA region. Added to the Census for SA and the Flinders Ranges (FR) Herbarium regions as questionably naturalised (for adventive), based on *CJB 10008 & M. Westover*. Specimen identification was made by Laurie Haegi on 14 Apr. 2023.

References: Bailey (1974).



Fig. 15. *Washingtonia robusta*. Images: RHS and middle, plant (*CJB 10008 & M. Westover*) on the roadside in Leigh Creek by Chris Brodie; RHS image by User:Geographer (CC-BY-SA.3.0).

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

In addition to the new State species records, 24 taxa had updates made in the Census during the last year (reporting period 4 June 2022–12 May 2023). These are changes to **distribution**, **names** or **weed / establishment status** (Table 2) for plants already listed in the Census. Some taxa have multiple changes listed for one or more herbarium regions within SA.

A change in **distribution** includes:

- 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 adopted in South Australia, or merely through application of the rules of botanical nomenclature to existing taxonomy.

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

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

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

Update type:

- **‘Distribution’** indicates a change in the regional distribution (new regions shown in **bold**, deleted regions with ~~strike through~~); with the collectors initials or name, followed by the collection number given in italics (example: *CJB 9943*), with any other collectors subsequently listed (example: *CJB 8055 & PJJ*); Collection date is given in brackets
- **‘Name’** indicates a name change only
- **‘Status’** indicates a change in the weed / establishment status applied to each region: * = naturalised (i.e. established in the wild), ^{?e} = questionably naturalised / established**, ^{?n} = questionably native.

Update / comment: Herbarium regions: A key to the two-letter codes is provided in Appendix 2 (Fig. 12).

Collector abbreviations: *CJB* = C.J. Brodie; *PJJ* = P.J. Lang.

** Note: the questionably naturalised / established category (?e) as applied in the Census is used very broadly, but is here subdivided into the following three major categories by the addition of further qualifications:

- (1) questionably naturalised (for establishment status uncertain): usually due to lack of data or ambiguity
- (2) questionably naturalised (for sparingly established): only a very limited extent or small numbers of self-established plants
- (3) questionably naturalised (for becoming established, or adventive): presumed temporary/transient establishment where longer term persistence or viability of population occurrence is not apparent or likely.

Taxon	Update type	Update / comment
<i>Achillea millefolium</i> L. Yarrow	Distribution	EP ^{?e} , NL ^{?e} , MU*, SL*, KI* , SE* Added KI as naturalised, based on <i>CJB 9943</i> (24 June 2022).
<i>Alstroemeria aurea</i> Graham Golden Peruvian Lily	Name	SL ^{?e} Name change from ‘ <i>Alstroemeria aurantiaca</i> D.Don’, to ‘ <i>Alstroemeria aurea</i> Graham’, following the APC (2023), POWO (2023) and <i>Flora of New Zealand</i> .
<i>Aizoon pubescens</i> Eckl. & Zeyh. Coastal Galenia	Distribution	LE*, FR*, EA* , EP*, NL*, MU*, YP*, SL*, KI ^{?e} , SE ^{?e} Added EA as naturalised, based on <i>CJB 10290</i> (3 Feb. 2023).
<i>Angophora costata</i> (Gaertn.) Britten subsp. <i>costata</i> Smooth-barked Apple	Distribution	SL*, KI^{?e} Added KI as questionably naturalised (for establishing/adventive - many progeny, but not yet matured to reproductive stage), based on <i>CJB 9927B</i> (23 June 2022).
<i>Avicennia marina</i> (Forssk.) Vierh. subsp. <i>marina</i>	Distribution	EP, NL, YP, SL, KI^{?n?e} Added KI as questionably naturalised (as well as questionably native, as several senior DEW staff have raised the possibility that this species may have been introduced here), based on <i>CJB 10132</i> (28 Oct. 2022).
<i>Bidens pilosa</i> L. Cobbler's Pegs	Name	NW*, EP ^{?e} , MU ^{?e} , SL*, Name change: Combined ‘ <i>Bidens pilosa</i> L. var. pilosa ’ and ‘ <i>Bidens pilosa</i> L. var. minor (Blume) Sherff’ to ‘ <i>Bidens pilosa</i> L.’ following Bean (2020), <i>Australasian Systematic Botany Society Newsletter</i> 184: 44-45, and in accordance with the APC (2023).

Taxon	Update type	Update / comment
<i>Cotoneaster glaucophyllus</i> Franch. Cotoneaster	Distribution	EP*, SL*, KI ^{?e} , SE* Added KI as questionably naturalised (for adventive), based on <i>CJB 10130</i> (6 Apr. 2022).
<i>Cyperus exaltatus</i> Retz. Splendid Flat-sedge	Status	NW, LE, FR , MU, SL ^{?n?e} FR : Changed status for FR from questionably native to native, based on two AVH collections from natural areas. SL : Changed status for SL from naturalised to questionable native and questionably naturalised to allow for the possibility of natural spread, based on four ADHERB collections (the earliest being 1969).
<i>Ehrharta villosa</i> Schult.f. Pyp Grass	Name	EP*, MU*, YP*, SL*, SE* Name change from ' <i>Ehrharta villosa</i> (L.f.) Schult.f. ex Schult. & Schult.f. var. maxima Stapf. ', to ' <i>Ehrharta villosa</i> Schult.f.', following the APC (2023), POWO (2023) and consistent with VicFlora (2023).
<i>Euphorbia davidii</i> Subils Toothed Spurge	Distribution	FR *, NL* Added FR as naturalised, based on <i>CJB 10292</i> (3 Feb. 2023).
<i>Geranium molle</i> L. Soft Geranium	Name	EP*, NL ^{?e} , MU*, YP*, SL*, KI*, SE* Name change from ' <i>Geranium molle</i> L. var. molle ' to ' <i>Geranium molle</i> L.', following the APC (2023) and POWO (2023).
<i>Holcus annuus</i> Salzm. ex C.A.Mey. Annual Fog	Name	NL*, MU*, SL*, KI*, SE* Name change from ' <i>Holcus setosus</i> Trin.' to ' <i>Holcus annuus</i> Salzm. ex C.A.Mey.', following the APC (2023) and POWO (2023).
<i>Lupinus angustifolius</i> L. Narrow-leaf Lupin	Distribution	FR ^{?e} , EP ^{?e} , SL ^{?e} , KI ^{?e} , SE ^{?e} Added KI as questionably naturalised (for adventive), based on <i>CJB 10092</i> (26 Oct. 2022).
<i>Melaleuca armillaris</i> (Sol. ex Gaertn.) Sm. subsp. <i>armillaris</i> Bracelet Honey-myrtle	Distribution	EP ^{?e} , MU ^{?e} , SL*, KI*, SE* Added MU as questionably naturalised (for sparingly established - a clump of saplings), based on <i>CJB 8055</i> & <i>PJL</i> (24 Aug. 2017).
<i>Orobanche minor</i> L. Lesser Broomrape	Distribution	MU*, YP*, SL*, KI ^{?e} , SE* Added KI as questionably naturalised (for sparingly established), based on <i>CJB 10082</i> & <i>J. Walter</i> (26 Oct. 2022).
<i>Mesembryanthemum cordifolium</i> L.f. Heart-leaf Iceplant	Name	NW ^{?e} , NL ^{?e} Name change from ' <i>Aptenia cordifolia</i> (L.f.) Schwantes' to ' <i>Mesembryanthemum cordifolium</i> L.f.', following the APC (2023) and POWO (2023).
<i>Mesembryanthemum cordifolium</i> L.f. × <i>Mesembryanthemum haeckelianum</i> A.Berger Heart-leaf Iceplant	Name	SL ^{?e} Name change from ' <i>Aptenia cordifolia</i> (L.f.) Schwantes × <i>Aptenia haeckeliana</i> (A.Berger) Bittrich ex Gerbaulet.' to ' <i>Mesembryanthemum cordifolium</i> L.f. × <i>Mesembryanthemum haeckelianum</i> A.Berger', following the APC (2023) and POWO (2023).

Taxon	Update type	Update / comment
<i>Mesembryanthemum granulicaule</i> Haw. Match-head Plant	Name	FR*, EA*, EP*, NL*, MU* Name change from ' <i>Psilocaulon granulicaule</i> (Haw.) Schwantes' to ' <i>Mesembryanthemum granulicaule</i> Haw.' following the APC (2023) and POWO (2023).
<i>Picnomon acarna</i> (L.) Cass. Soldier Thistle	Distribution	FR*, NL*, MU* , YP*, SL*, KI*, SE* Added MU as naturalised, based on <i>CJB 10293</i> (3 Feb. 2023).
<i>Rosa canina</i> L. Dog Rose	Distribution	FR*, EP*, NL*, MU*, SL*, KI^{2e} , SE* Added KI as questionably naturalised (for adventive – single plant), based on <i>CJB 10066</i> (24 Oct. 2022).
<i>Stachys arvensis</i> (L.) L. Stagger Weed	Distribution	FR*, EP ^{2e} , MU*, SL*, KI* , SE* Added KI as naturalised, based on <i>CJB 9739</i> (4 Apr. 2021).
<i>Tecoma stans</i> (L.) Juss. ex Kunth Yellow Trumpet Bush	Distribution	MU ^{2e} , SL^{2e} Added SL as questionably naturalised (for adventive – single plant), based on <i>CJB 10177</i> (14 Dec. 2022).
<i>Trifolium scabrum</i> L. Rough Clover	Status	NW*, LE*, GT*, FR*, EA*, EP*, NL*, MU*, YP*, SL*, KI* , SE* Changed status for KI from questionably naturalised to naturalised, based on <i>CJB 10114</i> (27 Oct. 2022).
<i>Veronica hederifolia</i> L. Ivy-leaf Speedwell	Distribution	NL*, MU*, SL*, KI* , SE* Added KI as naturalised, based on <i>CJB 9937</i> (24 June 2022).

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Appendix 1: Activities of the Weeds Botanist

Surveillance based on field observations and collections

Table 3: Summary of 31 field surveys and collections

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

Date(s)	Landscape Region	Participants	No.	General Location	Significant weed collections
5 Aug. 2022	Hills & Fleurieu	CJB, Alexia Catford (PIRSA)	2	Cudlee Creek scar area	A private property visited, weed survey carried out with property owner.
18 Aug. 2022	Green Adelaide	CJB, TAFE students	1	First Creek, Adelaide Botanic Gardens	A collection of an unknown Apiaceae specimen, subsequently identified as <i>Smyrnium olusatrum</i> (Alexanders) and added to the Census as a new State species record for SA.
29 Aug. & 17 Nov. 2022	Green Adelaide	CJB	2	Old Norton Summit Road	Garden escapee collected on two occasions; one in flower, and another in fruit, and subsequently identified as <i>Euphorbia characias</i> .
29 Aug. 2022	Hills & Fleurieu	CJB, Nikola Streiber (SHSA), Shannon Robertson (PIRSA)	2	Mount Torrens area	Several private properties visited as Part of PIRSA Cudlee Creek Fire scar project. Several Bulbs collected.
12–14 Sep. 2022	South Australia Arid Lands	CJB, Matt Westover (Landscape SA)	86	Leigh Creek Township and Copley	General weed, garden escapee / remnants plant collections. A new regional species record of <i>Washingtonia robusta</i> for the Flinders Ranges Herbarium Region (SAAL).
20 Sep. 2022	Hills & Fleurieu	CJB	1	Adelaide foothills, Terowie	Garden escapee subsequently identified as <i>Silene pseudoatocion</i> .
23 Sep. 2022	Green Adelaide / Hills & Fleurieu	CJB, Matthew Baker (Tasmanian Herbarium)	9	Brownhill Creek RP, Belair NP, Stirling & Mark Oliphant CP	General weed collections, with a focus on <i>Salix</i> and Iridaceae taxa.
20 Oct. 2022	Hills & Fleurieu	CJB, Jeremy Last (PIRSA)	9	Cudlee Creek scar area	A private properties visited, with surveys carried out with property owners.
24-28 Oct. 2022	Kangaroo Island	CJB, Alanah Murrell (PIRSA), Jason Walters (Landscape SA)	89	Majority of Kangaroo Island	New regional weed records for Kangaroo Island plus underrepresented and general weed collections.

Date(s)	Landscape Region	Participants	No.	General Location	Significant weed collections
2 Nov. 2022	Green Adelaide	CJB, Henry Rutherford (Green Adelaide)	11	Field River Reserve	Collection of <i>Morus alba</i> , a new questionably naturalised record for South Australia.
18 Nov. 2022	Hills & Fleurieu	CJB	1	Old Norton Summit Road	Collection of weed <i>Ornithogalum thyrsoides</i> , spreading from Horsnell Gully CP.
25 Nov. 2022	Green Adelaide	CJB, Henry Rutherford (Green Adelaide)	10	Field River Reserve	Declared plants and general weed collection.
12 Dec. 2022	Green Adelaide / Hills & Fleurieu	CJB, Kat Hill (National Park and Wildlife Service)	6	Blackhill Conservation Park.	Naturalised population of <i>Rumex vesicarius</i> (Rosy Dock) in the Southern Lofty Herbarium Region (Green Adelaide).
13 Dec. 2022	Hills & Fleurieu	CJB	3	Norton Summit	General weed collections.
14 Dec. 2022	Green Adelaide	CJB, Henry Rutherford (Green Adelaide)	19	Field River Reserve	Collection of a new questionably naturalised species record of <i>Tecoma stans</i> for the Southern Lofty Herbarium Region.
4 Jan. 2023	Hills & Fleurieu	CJB	3	Norton Summit	Collection of new and emerging weed <i>Torilis arvensis</i> (Common Hedge Parsley).
12 Jan. 2023	Green Adelaide	CJB, Monica Seiler (Green Adelaide), staff from Port Adelaide Council, Renewal SA and Flinders Adelaide Container Terminal	6	Port Adelaide	<i>Cenchrus ciliaris</i> (buffel grass) specimens.
19 Jan. 2023	Green Adelaide	CJB, Monica Seiler (Green Adelaide) and Renewal SA staff member	2	Port Adelaide	<i>Solanum elaeagnifolium</i> (Silver-leaf nightshade) specimen.
31 Jan. – 3 Feb. 2023	South Australia Arid Lands / Northern & Yorke	CJB, Dan Duval, Jenny Guerin, & Brad Bianco (BGSH) & Denzel Murfet (Volunteer)	94	Gammon Ranges, main focus in Arkaroola, with roadside collections made on the return to Adelaide	Arkaroola: A new native regional record of <i>Euphorbia thelephora</i> var. <i>thelephora</i> for the Flinders Ranges Herbarium Region (SAAL). A new regional species record of <i>Aizoon pubescens</i> for the Eastern Herbarium Region (SAAL). Two new regional species records of <i>Euphorbia davidii</i> & <i>Picnoman acarna</i> for the Flinders Ranges Herbarium Region (N&Y).
13 Feb. 2023	Green Adelaide	CJB, Carolyn Ricci (SHSA)	1	First Creek, Adelaide Botanic Gardens	Collection of <i>Solanum lycopersicum</i> (Tomatoes) from a self-sown population in the Creek.

Date(s)	Landscape Region	Participants	No.	General Location	Significant weed collections
17 Feb. 2023	Green Adelaide	CJB	2	College Park, Adelaide	Collection of cultivated and self-sown seedlings of <i>Ailanthus altissima</i> (Tree of heaven).
28 Feb. 2023	Green Adelaide	CJB and Coastal officers forum attendees	1	Linear Park, Lockleys	Collection of <i>Euphorbia serpens</i> (Matted Sandmat).
17 Feb. 2023	Green Adelaide	CJB	2	Old Norton Summit Road	Collection from self-sown seedlings and mature trees of <i>Ailanthus altissima</i> (Tree of heaven), spanning the road for about 70 m.
20 Mar. 2023	Green Adelaide	CJB, Andrew Hart (BGSB)	1	Adelaide Botanic Garden Ponds	Collection of overabundant native water plant <i>Potamogeton crispus</i> (Curly pondweed.) causing pump blockages.
23 Mar. 2023	Hills & Fleurieu	CJB, Lisa Duffy & Sam Rose (BGSB)	3	Mountry Lofty Botanic Gardens and surrounding roadsides	Garden escapees and new SA records of <i>Maytenus boaria</i> (Mayten) and <i>Vincetoxicum barbatum</i> (Bearded Tylophora) for the Southern Lofty Herbarium Region.
11 Apr. 2023	Green Adelaide	CJB	5	Glenelg North by Adelaide Airport	General weed collections, while surveying for <i>Cenchrus ciliaris</i> (Buffel grass; none found).
14 Apr. 2023	Green Adelaide	CJB, PJL, Tim Hammer (SHSA)	1	Adelaide Botanic Gardens	Self-sown <i>Cyperus exaltatus</i> around margins of ponds.
18–20 Apr. 2023	Murraylands & Riverland	CJB	78	Floodplains (Calperum station, Chowilla Game Reserve, Katarapko)	Weeds and abundant plant species in the flood plain areas of the River Murray, where water has recently receded. Some of these areas collected had not seen inundation for nearly 70 years.
17 May 2023	Green Adelaide	CJB, Laurie Haegi (SHSA)	2	Linear Park, Hackney	Two <i>Solanum</i> species.
18 May 2023	Green Adelaide	CJB, Shannon Robertson (Green Adelaide)	2	Norton Summit & Belair	Collection of <i>Dahlia imperialis</i> & <i>Crassula</i> sp.
22–26 May 2023	Kangaroo Island	CJB, Alanah Murrell (PIRSA), Jason Walter (Landscape SA)	77	Majority of Kangaroo Island	New regional weed records for Kangaroo Island plus underrepresented and general weed collections.

Community engagement

Table 4: Summary of community and professional engagement activities.

Weeds Botanist, Chris Brodie (CJB), State Herbarium of South Australia (SHSA), Botanic Gardens and State Herbarium (BGSH), with other participants as listed; Primary Industries and Regions South Australia (PIRSA).

Date(s)	Other participants	Location	Presentation title / subject	Audience / Society	# of Att.
25–29 Sep. 2022	Peter J. Lang (SHSA) (author)	Adelaide Oval	A decade of new weed records in South Australia: an overview from the State Herbarium of South Australia.	22 nd Australasian Weeds Conference: Australasian weed community	330
8 Nov. 2022	N/A	Goodman Building, Adelaide Botanic Gardens	Overview of Weeds Botanist annual report for FY 2021/22. New weed records for South Australia and other highlights?	BGSH Staff Forum	50
9 Dec. 2022	Shannon Robertson, Laura Williams (PIRSA) (authors)	Goodman Building, Adelaide Botanic Gardens	Overview of Weeds Botanist work in the last year (or two). New state and regional weed records for South Australia. Kangaroo Island, Leigh Creek work and other highlights?	Weed Management Society of South Australia, Annual General Meeting	15
8 Feb. 2023	N/A	Goodman Building, Adelaide Botanic Gardens	An introduction to the State Herbarium of South Australia and the Weeds Botanist work... New weed records, Kangaroo Island, Leigh Creek, and other highlights?	Rose Society of South Australia	50
21 Feb. 2023	N/A	Glenelg Golf Club rooms	The State Herbarium of South Australia and the Weeds.	Coastal officers forum	30
28 Feb. 2023	N/A	Lockleys Oval - Rutland Ave, Lockleys	The State Herbarium of South Australia and the Weeds.	Urban River Torrens Recovery Project meeting with Green Adelaide and Council staff	15
3 May 2023	N/A	Goodman Building, Adelaide Botanic Gardens	<i>Meeting attendance & Verbal presentation.</i>	Green Adelaide Urban Animal and Plant Control Forum	15
9 May 2023	Green Adelaide	Green Adelaide field sites.	<i>Filming an educational social media video called: 'The impact and spread of garden escapees', informing the public regarding harmful garden plants. With Shannon Robertson & Amy Park (Green Adelaide), John Sandham (BGSH), Peter Watton (Trees for Life).</i>	To be published on social media	5
2 June 2024	N/A	Adelaide Botanic Gardens	Feral plants.	4 school groups ranging from year 3–5	110

Date(s)	Other participants	Location	Presentation title / subject	Audience / Society	# of Att.
14 June	Green Adelaide	Waymouth Street, Level 4: Dr Bob Culver meeting Room	<i>Meeting attendance & participation:</i> Green Adelaide declared plant policy review.	Green Adelaide	10

Appendix 2: Herbarium regions

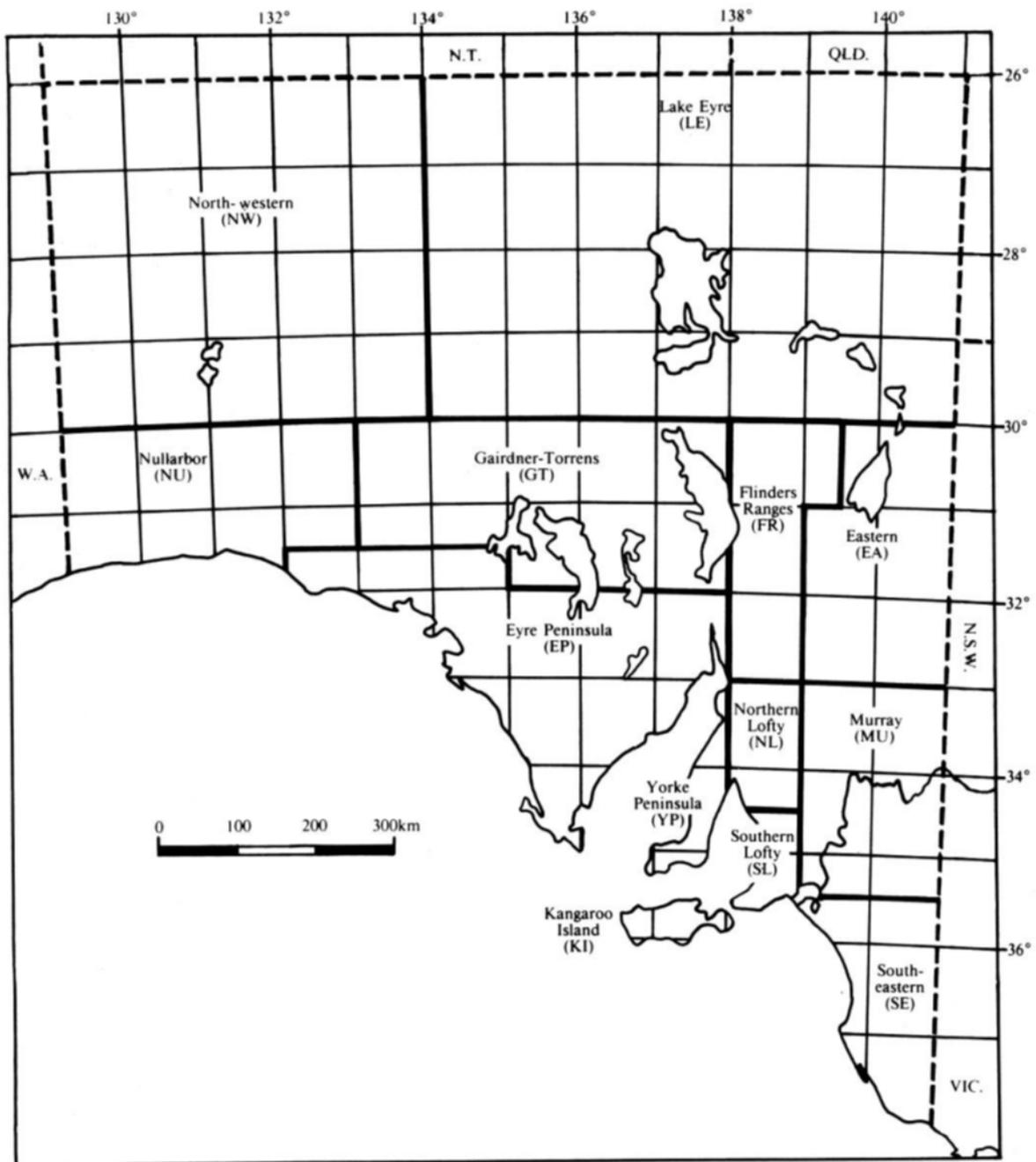


Fig. 12. State Herbarium regions for South Australia. Map from J.P. Jessop & H.R. Toelken, *Flora of South Australia*, vol. 4 (1986).