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 2020-2021

Milestone: Annual report on new plant naturalisations in South Australia

Chris J. Brodie & Peter J. Lang

August 2021

Government of South Australia

State Herbarium of South Australia

Contents

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Summary

In 2020–21, **eight** new weeds were added to the Census of South Australian Plants as naturalised or 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 **six** taxa collected in South Australia for the first time, and **two** taxa for which herbarium collections had been made in previous years but have now been more thoroughly investigated and assessed as naturalised (weedy) or questionably or sparingly naturalised (questionably weedy) in South Australia. Detailed descriptions are given for each of these plant species.

In addition **21** updates were made to existing Census weed records involving either a change to the scientific name, or a change to its regional distribution.

During the last year, the Weeds Botanist undertook 20 fieldwork trips totalling **30** full or partial field-days. **Seven** of the State's nine Landscape SA regions were visited during these fieldtrips, with **349** specimens collected for the State Herbarium of South Australia. The Weeds Botanist also took part in **17** separate community engagement activities, and responded to **239** enquires regional from staff and community members that required over 142 hours to address.

1. Activities and outcomes for 2020/2021 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

A majority of the external funding for the project was received from 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); and Green Adelaide. Their support is gratefully acknowledged.

Additional funds were secured for the provision of plant identification services from Landscape SA Eyre Peninsula, and for a weed survey in the Valley Lakes at Mount Gambier in the South East via the Grassroots Funding Program, organised and supported by the City of Mount Gambier and supported by the Limestone Coast Landscape SA Board.

Funding covered the salary of a Weeds Botanist (Chris Brodie), based at the State Herbarium, and partially covered the operational costs associated with fieldwork and curation management for specimens collected.

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 eFloraSA and the SA Census).

Activities

A major focus of the work of the Weeds Botanist was discovery and collection of new weed records within South Australia. Between 10 June 2020 and 30 June 2021, Weeds Botanist Chris Brodie undertook 20 fieldtrips totalling **30** full or partial field-days. Fieldtrips were conducted in seven of the nine Landscape SA regions, namely: Green Adelaide, Hills and Fleurieu, Kangaroo Island, Limestone Coast, Murraylands and Riverlands, Northern and Yorke, and South Australian Arid Lands.

Most fieldwork was completed in partnership with staff from PIRSA and regional Landscape SA Boards, local government, or with other community members (see Appendix 1, Table 3). During these fieldtrips **349** plant specimens were collected for the State Herbarium of South Australia.

In addition, **21** updates were made to existing Census weed records, involving either a change to the scientific name, or a change to its regional distribution.

The Weeds Botanist undertook **17** 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 within 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 **239** enquires, and spent over **142 hours** in response. The majority of enquires entailed two or more interactions, and can be separated into the following categories:

- 161 enquires were requests for precise plant identifications of suspected weeds via photographs or specimens submitted with or without data
- 74 enquires were requests for associated information regarding weeds, including distribution, taxonomic status, and establishment status of weeds
- 4 enquires were requests for images.

Of the 161 requests for precise plant identifications, over **70** specimens have been submitted and retained by the State Herbarium.

Fig 1. Weeds Botanist Chris Brodie documenting the third known Australian weedy population of *Tephrocactus articulatus* (Pine-Cone Cactus) in Leigh Creek with staff from PIRSA, Landscape SA, and local community members on 28 Oct 2020.

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 **8** new weeds for the State (see Section 2).

Since the project began in 2009, a total of **244** 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* (the Census[1]).

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.

Six 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.

Two of the new weeds records were of species that had existing (historical) herbarium collections. One of these was a fieldwork-detected species that had an existing State Herbarium collection, but data on its occurrences in the State was inadequate for assessment. The recent field observations and collections enabled its addition to the Census for the first time as questionably naturalised. Another new naturalised species record was discovered when existing State Herbarium collections were re-identified during the past year, resulting in its addition to the Census.

It should be noted that the Monarto plantings continue to be a source of naturalising alien tree species, with another addition included in this report. 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. Nevertheless, preliminary plantings of trees and shrubs from around Australia were made over many hectares on various plots for amenity purposes and as part of a scientific trial. The aim was to find species best suited for the tough conditions of the site. Most of these plants persist today without care or management, and some are establishing and self-propagating to various degrees.

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 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 species occurring in South Australia.

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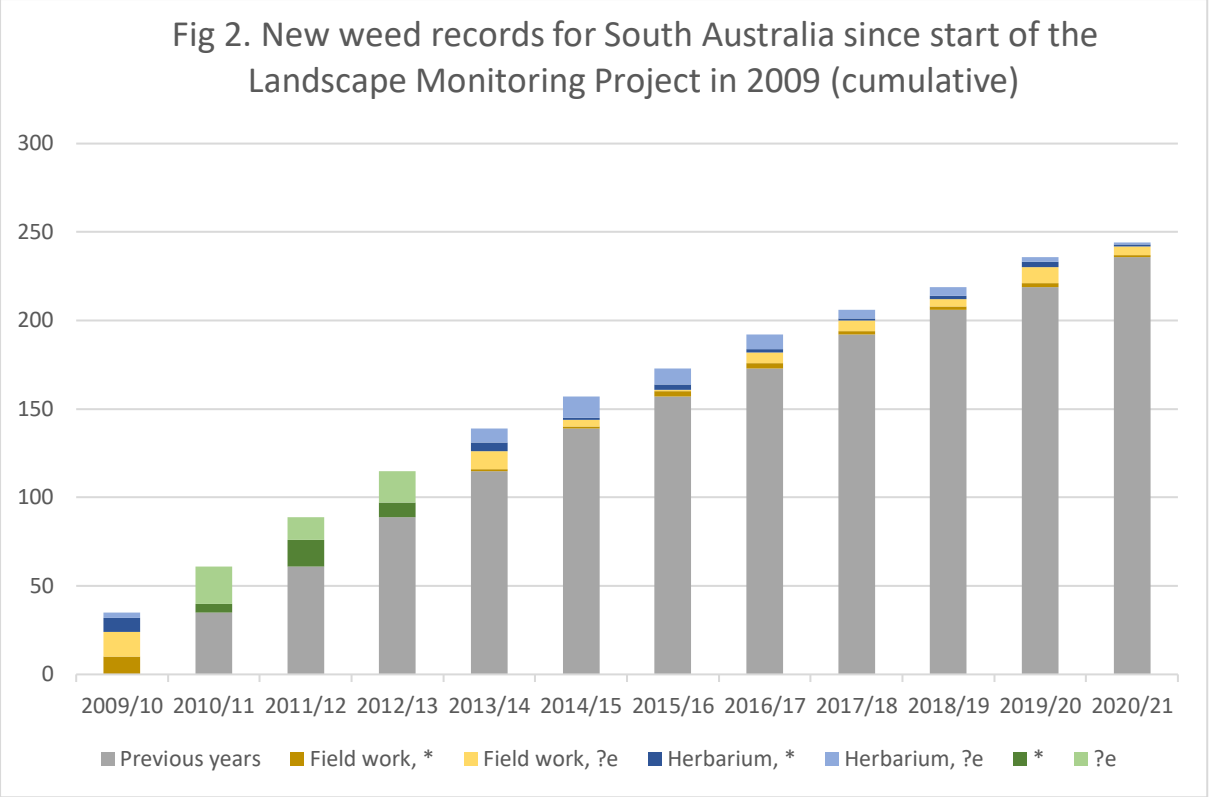
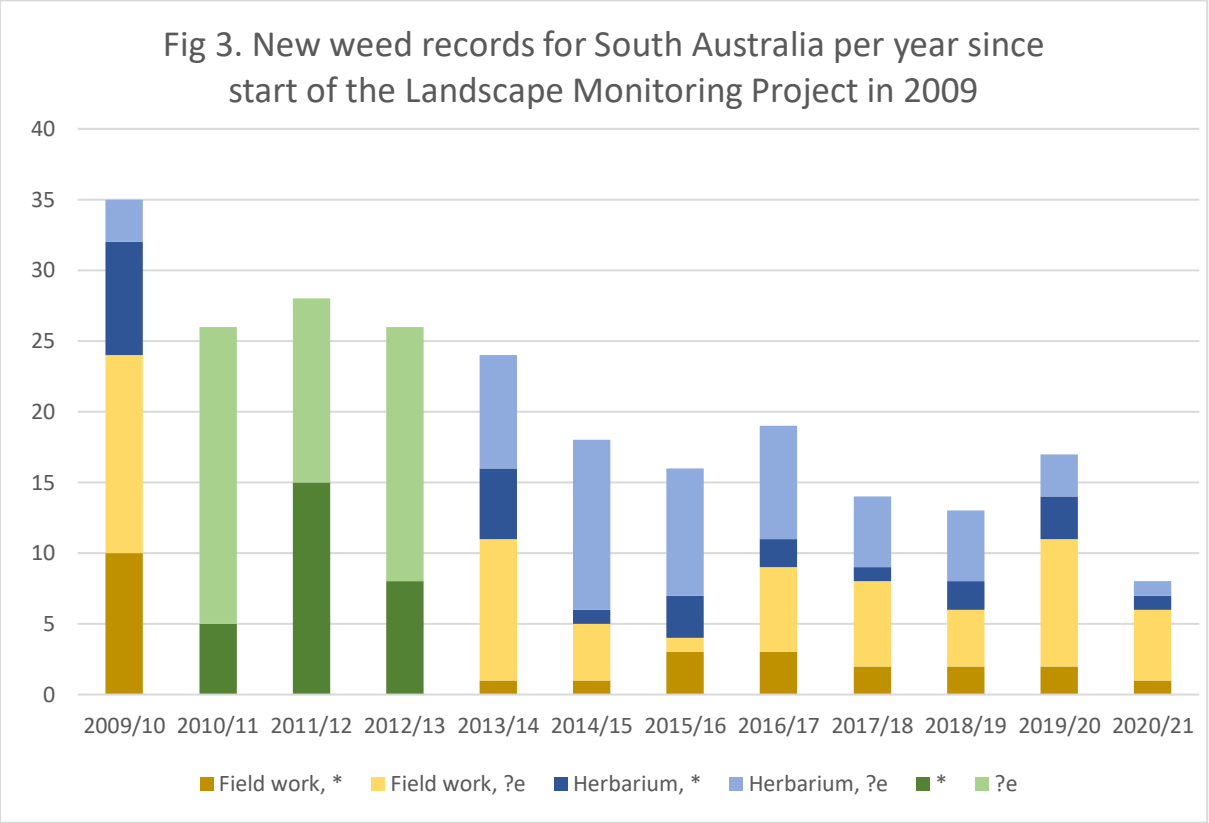
[1] *Census of South Australian Plants, Algae and Fungi*, current edition available online http://flora.sa.gov.au/census.shtml





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 **5144** naturally occurring vascular plant taxa recognised in South Australia, and of these **1618** are 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 are weeds. Over the previous year's reporting period (15 May 2020–1 June 2021), a total of **8** 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:

- Six (**6**) fieldwork-detected species, collected recently for the first time from the wild and added to the Census in the past year. There is evidence of these being established, or questionably established, as wild (non-planted) occurrences:
    - ?e ***Acacia penninervis*** var. ***penninervis*** Hickory Wattle
    - ?e ***Eucalyptus platypus*** subsp. ***platypus*** Round-leaved Moort[+]
    - * ***Euphorbia davidii*** Toothed Spurge
    - ?e ***Petunia ×atkinsiana*** Garden Petunia
    - ?e ***Physalis philadelphica*** Husk-Tomato
    - ?e ***Thunbergia alata*** Black-Eyed Susan Vine.

- One (**1**) fieldwork-detected species that had an existing State Herbarium collection, but data on its distribution was inadequate for assessment. The recent field observations and collections enabled its addition to the Census:
    - ?e ***Agonis flexuosa*** Willow Myrtle.

- One (**1**) new species record that was discovered when existing State Herbarium collections were re-examined and re-identified, in this case by a visiting expert:
    - * ***Tradescantia crassula*** Succulent Spiderwort.

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

Table 1: The eight (8) new South Australian weed records added to the Census, based on recent collections and newly generated knowledge.

Naturalised/established
***** = established/naturalised in the wild, **?e** = questionably established/naturalised in the wild.
Regional distribution
see map and key to Herbarium regions in Appendix 2 (Fig. 12).

New Taxon	Common Name	Family	Naturalised /established	Regional distribution
Acacia penninervis var. *penninervis*	Hickory Wattle	Leguminosae	**?e**	SL
Agonis flexuosa	Willow Myrtle	Myrtaceae	**?e**	KI
Eucalyptus platypus subsp. *platypus*	Round-leaved Moort	Myrtaceae	**?e**	MU
Euphorbia davidii	Toothed Spurge	Euphorbiaceae	*	MU
Petunia ×atkinsiana	Garden Petunia	Solanaceae	**?e**	KI
Physalis philadelphica	Husk-Tomato	Solanaceae	**?e**	SL
Thunbergia alata	Black-Eyed Susan Vine	Acanthaceae	**?e**	SL
Tradescantia crassula	Succulent Spiderwort	Commelinaceae	*	SE

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 the State.

Family: **Leguminosae**

Acacia penninervis Sieber ex DC. var. ***penninervis***

Common name: Hickory Wattle

Description: An erect, spreading, small, variable, evergreen tree growing to 8 m tall. The trunk has finely fissured to rough, dark bark. The smooth, hairless branchlets are rounded and occasionally covered in a fine white, powdery coating. Like most species of *Acacia*, it has phyllodes rather than true leaves. The smooth phyllodes are oblanceolate or narrowly elliptic and are straight to slightly curved, 50–100 mm long and 10–30 mm wide, with a prominent mid-vein and marginal veins. Pale yellow flowers are produced mainly in spring and summer. Pods are dark brown. **Fig 4.**

Native to: Australia; occurring naturally in the Australian Capital Territory, New South Wales, Queensland and Victoria.

Worldwide: It is an introduced species in New Zealand. Not known to be widely cultivated or naturalised elsewhere in the world.

Distribution in Australia: Occasionally planted as an ornamental, but not recorded as naturalised elsewhere in Australia. Occurs naturally from Queensland on the Great Divide from Blackdown Tableland south through New South Wales and the Australian Capital Territory to Monument Ridge in Victoria.

Collections in SA: A recent collection was made on 3 Mar. 2021, from one of four wild self-sown plants. These were growing on the side of a gully in intact native Stringybark woodland near Aldgate, by the Stirling Cemetery. A large parent plant was also present and is presumably a historical planting and source of the seedlings.

Status in SA: A new questionably naturalised record (?e) for SA and the Hills and Fleurieu Landscape SA region. Added to the Census for SA and the Southern Lofty (SL) herbarium region based on collection *C.J. Brodie* (*CJB*) *9255 B & Kat Hill;* identified by Martin O'Leary.

References: PlantNET (2021); WorldWideWattle ver. 2. (2020).

Fig. 4. ***Acacia penninervis*** var. ***penninervis***, herbarium specimen and parent tree, Aldgate. Images: CJB.

Family: **Myrtaceae**

Agonis flexuosa (Willd.) Sweet var. ***flexuosa***

Common name: Willow Myrtle or Peppermint

Description: A small, robust tree to about 10 m tall, sometimes reaching 15 m. It has brown, fibrous bark, and smooth, pendulous branches and leaves, with a weeping habit like a weeping-willow. The long, narrow, dull-green leaves are 80–150 mm long, 3.5–12 mm wide, sometimes slightly twisted, normally without hairs and without teeth. Flowers are borne in dense clusters along the drooping branches in the axils (angles between stem and leaf). Each flower is 8–12 mm diameter with 5 white petals, each 3–6 mm long. The clusters of woody fruit are round in outline. Each fruit is cup-shaped, 2.5–4 mm diameter, 3-valved, and contains many small seeds that are released when the valves open.

It is readily identified by the powerful odour of peppermint emitted when the leaves are crushed or torn. It flowers between August and December. There are two varieties and several horticultural cultivars. Variety *latifolia* is distinguished from var. *flexuosa* by its smaller (less than 45 mm long), often twisted leaves, fewer (15–20) stamens, and its smaller, usually shrubby habit. The majority of cultivated forms are attributable to *A. flexuosa* var. *flexuosa* (VicFlora 2021). **Fig 5.**

Native to: Western Australia.

Worldwide: It is an introduced species in New Zealand and Australia, but is not known to be naturalised elsewhere in the world. Cultivated in California.

Distribution in Australia: Commonly planted as an ornamental and used as a street tree across southern Australia. It is both native and naturalised in WA, and doubtfully naturalised in Victoria.

Collections in SA: Several collections were made from Kangaroo Island old house sites that had burnt in the 2019/20 fires. Hundreds of seedlings were germinating on-mass in monocultures near or under the burnt, planted parent trees. While there are numerous other historical collections in the State Herbarium, it is unclear if they represent cultivated or naturalising plants.

Status in SA: A new questionably naturalised record (?e) for SA and the Kangaroo Island Landscape SA region. Added to the Census for SA and the Kangaroo Island (KI) herbarium region, based on several collections including *CJB 9327 & Laura Williams*, identified by CJB.

References: VicFlora (2021).

Fig. 5. ***Agonis flexuosa*** var. ***flexuosa***, cultivated fire affected parent plants, and a carpet of self-sown seedling on Kangaroo Island (*CJB 9327 & 9371*). Images: CJB.

Family: **Myrtaceae**

Eucalyptus platypus Hook. subsp. ***platypus***

Common name: Round-leaved Moort

Description: An erect, spreading, small, variable, evergreen tree growing to 5–9 m tall, with one or several trunks that are smooth and shiny, and seasonally silvery-grey to orange-tan in colour. Mature plants have a rounded, dense crown. Adult leaves are noticeably thick, 20–60 mm long and 15–60 mm wide, shiny, and oval to round in shape. Young branchlets and twigs are orange-brown in colour. Buds, flowers and fruits are held on broad, flattened, down-curved stalks, 20–55 mm long. Buds have long caps that are slightly constricted at the base where they join the cup. Flowers are lemon-yellow to green-yellow to creamy-yellow, and borne in groups of 7–9. Fruits are woody, red-brown to brown, funnel to barrel shaped, and 10–13 mm long. **Fig 6.**

Native to: Western Australia, occurring in southern coastal and subcoastal areas from the Katanning and Cape Richi area to the Esperance area.

Worldwide: Occasionally available in specialised nurseries around the world, but not known to be widely planted or naturalised outside Australia.

Distribution in Australia: Cultivated in southern Australia as an amenity tree for shelter or screening on seasonally dry sites. Not known to have naturalised elsewhere in Australia.

Collections in SA: A single collection was made on 5 Nov. 2019 from the Monarto plantings, plot RV4. Collected from a 6–8 m tall mature plant that was one of two self-sown plants. The dead remains of an old cultivated putative parent tree was seen nearby.

Status in SA: A new questionably naturalised record (?e) for SA and the Murraylands and Riverlands Landscape SA region. Added to the Census for SA and the Murray (MU) herbarium region, based on collection *CJB 8852 & PJL*, identified by P.J. Lang (PJL).

References: Nicolle (2016).

Fig. 6. *Eucalyptus platypus* subsp. ***platypus*** at the Monarto plantings (*CJB 8852 & PJL*). Images: PJL.

Family: **Euphorbiaceae**

Euphorbia davidii Subils

Common name: Toothed Spurge, David's Spurge

Description: An erect, sparse, leggy annual plant to about 0.5 m tall and sometimes as wide, with 10–50 main stems at, or branching near, the base. Plant have dense to sparsely spaced hairs that are coarse and rough. The leaves are usually opposite with a petiole (leaf stalk) 7–25 mm long. Leaves are lance-shaped to elliptic (to oval), toothed, 10–100 mm long and 5–30 mm wide, with a prominent mid-vein and pinnate side veins. Flowers and fruit are produced in clusters of 5–8 at the end of branches surrounded by leaves (bracts). The fruits are smooth, 3-lobed capsules, 2–3 mm long, and 4–5 mm diameter. The seeds are about 2.5 mm long, mottled grey or brown, with many small wart-like outgrowths. **Fig 7.**

Native to: North east of Argentina, southwest US, and northwest Mexico.

Worldwide: Known to be weedy in Australia and a widespread weed across much of the US and in Europe, including Bulgaria, France, Hungary, Italy, Moldova, Russia, Serbia, and the Ukraine. In early 2021, *Euphorbia davidii* was added to the European and Mediterranean Plant Protection Organization Alert List (EPPO 2021).

Distribution in Australia: Recorded as naturalised in the ACT, NSW and Qld.

Collections in SA: A single recent collection was made by landowner D. Lehmann on 21 Jan. 2021, about 2 km west of Caltowie, from a localised but substantial population that was spreading into paddocks from the roadside.

Status in SA: A new naturalised record (*) for SA and the Northern and Yorke Landscape SA region. Added to the Census for SA and the Northern Lofty (NL) herbarium region based on collection *D.Lehmann 1*, identity confirmed by CJB.

References: EPPO (2021); PlantNET (2021); POWO (2021).

Fig. 7. *Euphorbia davidii*. Images: LHS by Andrey Zharkikh (Wikipedia, CC BY-2.0); RHS *D.Lehmann 1*, pressed specimen, by CJB.

Family: **Solanaceae**

Petunia ×atkinsiana (Sweet) D.Don ex W.H.Baxter

Common name: Garden Petunia

Description: An herbaceous, short-lived, perennial herb with several branching stems becoming sub-woody at the base, and sometimes reaching about 0.6 m in height. The soft green stems, leaves, and flowers are covered with many multi-celled non-glandular and glandular hairs, making the plant feel sticky to the touch, and slightly aromatic. Leaves are oval in outline, 15–50 mm long and 5–25 mm wide. The flowers are large, showy and trumpet-shaped, 40–65 mm long and wide at the apex. Flowers can vary in colour from white to light or dark pink, red, dark or bright purple, or blue. Many cultivars are available: some have small flowers to 25 mm long and wide, others large flowers to 100 mm long and wide; many have multi coloured patterning and veining. The different cultivars also have varying growth habits and may be large or small, short or tall, compact or sprawling, erect or pendulous, depending whether they have been bred for small or large bedding displays, or planters, pots, and hanging baskets. **Fig 8.**

Native to: A hybrid taxon of garden origin involving *Petunia axillaris* and *Petunia integrifolia,* both from South America.

Worldwide: *Petunia ×atkinsiana* is widely cultivated around the world as a garden plant. It is normally treated as an annual, used for bedding, pots and hanging baskets.

Distribution in Australia: Naturalised in NSW and WA, and doubtfully naturalised in the NT, and the ACT.

Collections in SA: Two collections were made in March 2021 from Kangaroo Island, both from old bare house sites that had burnt in the 2019/20 fires and were on the edge of remnant native vegetation surrounded by Blue-Gum plantations. The first was made on 16 March, from 392 Morgan Road, west of Parndana, and the second on 19 March from 507 Baxters Road, east of Flinders Chase National Park and north of Kelly Hill Conservation Park.

Status in SA: A new questionably naturalised record (?e) for SA and the Kangaroo Island Landscape SA region. Added to the Census for SA and the KI herbarium region, based on collections *CJB 9283 & J. Walters*, supported by *CJB 9373 & L. Williams S.E.Berry*, identified by CJB and PJL.

References: APC (2021); Keener *et al.* (2021).

Fig. 8. *Petunia ×atkinsiana*, self-sown plant on Kangaroo Island (*CJB 9327*). Image: CJB.

Family: **Solanaceae**

Physalis philadelphica Lam.

Common name: Husk-Tomato or Tomatillo

Description: An annual soft herb to sub-woody plant, 0.5–1 m tall and wide, sparsely hairy with simple hairs. Leaves alternate or 1 or 2 (sometimes 3) per node (but not opposite), each with a leaf-stalk (petiole) to 70 mm long. Leaves elliptic (oval) or ovate-lanceolate [ovate: egg-shaped with widest part near leaf-stalk; lanceolate: lance-shaped] in outline, usually 20–60 mm long (sometimes to 120 mm long) and 10–30 mm wide (sometimes 40–50 mm wide). Leaf margins smooth or sparsely and irregularly toothed, tapering to the base. Flowers on a pedicel [flower-stalk] 1–13 mm long, with green triangular calyx lobes 6–9 mm long. Flowers with five fused (joined) pale yellow petals with 5 brownish spots, alternating with 5 anthers, each anther 3–4 mm long, becoming twisted after anthesis (pollen release). Style 8–9 mm long. Fruit a rounded berry 15–20 mm in diameter (sometimes to 60 mm diameter), surrounded by a papery 10-veined fruiting calyx, circular in section or nearly so, 18–36 mm long, yellow-green, the veins often purplish. Seeds kidney-shaped, 2–3 mm long, pale yellow-brown. **Fig 9.**

Native to: Mexico, Guatemala, and El Salvador.

Worldwide: Widely cultivated in Mexico and Central America, where it was an important food crop. Now widely grown around the world in vegetable gardens in warm temperate to Mediterranean type climates. Also widely naturalised in many areas, including the US, South and Eastern Europe, parts of Africa, Asia, and Australia.

Distribution in Australia: Naturalised in NSW, Qld and WA

Collections in SA: A single collection from Adelaide Botanic Gardens, in First Creek, by the footbridge leading to the fern-house. The creek is an untended natural area with a rocky to sandy base.

Status in SA: A new questionably naturalised record (?e) for SA and the Green Adelaide Landscape SA region. Added to the Census for SA and the SL herbarium region, based on collection *CJB 8997*, identified by CJB.

References: PlantNET (2021); POWO (2021).

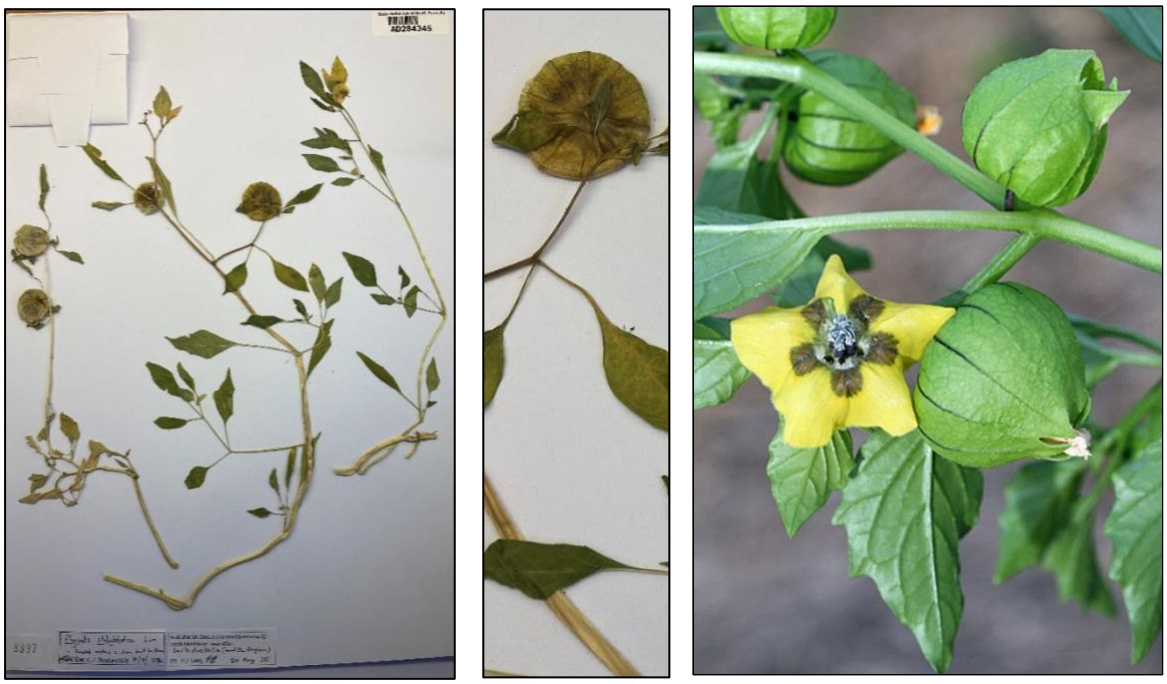


Fig. 9. *Physalis philadelphica*. Images: LHS & Middle, pressed specimen, by CJB; RHS by jrebman (CC) (POWO 2021).

Family: **Acanthaceae**

Thunbergia alata Bojer ex Sims

Common name: Black-Eyed Susan Vine

Description: A long-lived, twining, herbaceous vine growing to 4–5 m in height. Its stems are slender, green, and hairy when young but become smoother and woody with age. Leaves are borne on narrowly angled to winged petioles (leaf stalks), and are opposite (paired), normally 30–40 mm long, sometimes to 80 mm long, and 11–35 mm wide, sometimes to 45 mm wide. Flowers have 5 fused petals forming a tube for most of their length before dividing to free lobes. Flowers are 30–40 mm long and wide, and borne singly along the stems on leaf stalks 30–95 mm long in the leaf axils (angles between stem and leaf stalks), with two leafy bracts at the base of each flower stalk. Flowers are usually bright orange or bright yellow with a striking black throat (black centre). Fruit is a rounded capsule with a rounded base 5–10 mm across and an elongated beak 9–15 mm long. **Fig 10.**

Native to: Much of tropical Africa extending to southern Africa and Madagascar.

Worldwide: Widely cultivated around the world in tropical to warmer temperate areas. Naturalised in many tropical areas around the world including, North, Central and South America, Southeast Asia and Oceania, including Australia, New Zealand and the Pacific Islands.

Distribution in Australia: Planted as an ornamental across Australia. Naturalised in NSW, QLD and WA.

Collections in SA: A single collection, made on 22 Sept. 2017, from an individual large plant growing in Strangways Reserve, Port Elliot.

Status in SA: A new questionably naturalised record (?e) for SA and the Hills and Fleurieu Landscape SA region. Added to the Census for SA and the SL herbarium region based on *D.E.Murfet 8929*, identified by collector and confirmed by CJB and PJL.

References: (CABI 2021); PlantNET (2021): POWO (2021).

Fig. 10. *Thunbergia alata*. Images: LHS, pressed specimen, by CJB; RHS by Forest & Kim Starr (CC BY-SA 3.0)

Family: **Commelinaceae**

Tradescantia crassula Link & Otto

Common name: Succulent Spiderwort

Description: A smooth, small, succulent to semi-succulent, perennial herb, with sparsely branching, erect to sprawling stems, 5 mm wide or more, ascending at their tips. Leaves are semi-succulent, alternately arranged up the stems, elliptic (oval) to broad-lanceolate in outline, 60–100 mm long and 20–30 mm wide, with or without a leaf-stalk, and with a hairy sheath where the leaf joins the stem. The white flowers are held in clusters at the end of main flower stems (peduncle) which are 20–100 mm long and borne in the leaf axils (angle between the stem and leaf) or at the end of the stem. The flowering clusters are in groups of 5–30 and are surrounded by 2 bracts normally smaller than the leaves. Each flower is borne on a flower-stalk (pedicel), with 3 free green sepals 6–8 mm long with hairy main veins, and 3 free white petals slightly larger than the sepals, to 10 mm or more. The fruit is a capsule with 3 chambers, each chamber producing one to several seeds. **Fig 11.**

Native to: South America, including Argentina, Brazil, and Uruguay.

Worldwide: Cultivated in the US, where it has also become a naturalised weed.

Distribution in Australia: Not previously reported as naturalised.

Collections in SA: A historical collection made on 7 Jan. 1994 from a pine forest off the Mount Gambier/Princess Caves Road, with several patches covering about 1 hectare in total.

Status in SA: A new naturalised record (*) for SA and the Limestone Coast Landscape SA region. Added to the Census for SA and the SE herbarium region, based on collection *R.Bates 35773.* This specimen, previously identified as *Tradescantia fluminensis*, was re-determined as *T. crassula* by J.G.Conran (Adelaide University) in May 2021.

References: Pellegrini *et al.* (2017).

Fig. 11. *Tradescantia crassula*. Images: LHS from Curtis (1829); RHS from Pellegrini *et al.* (2017) (CC BY 4.0).

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

Updates to **21** taxa were made in the Census during the last year. These changes are to **distribution**, **names** or establishment **status** (**Table 2**) of 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.

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~~); '**Name'** indicates a name change only.

Update / comment: herbarium regions are shown in Appendix 2 (Fig. 12); **weed status** applied to each region: ***** = naturalised (i.e. established in the wild), **?e** = questionably naturalised / established, **n** = native; **collector abbreviations**: *CJB* = C.J. Brodie; *PJL* = P.J. Lang.

Taxon	Update type	Update / comment
Acacia melanoxylon R.Br. Blackwood	Distribution	EP?e NLn MUn SLn **KI?e** SEn Added KI as questionably naturalised, based on *CJB 9333B*, collected on 17 Mar. 2021.
Acacia suaveolens (Sm.)Willd. Sweet Wattle	Distribution	~~SL*~~ Removed from SL as naturalised, based on re-determination as *Acacia iteaphylla* (*Bates 31816*). All other collections are cultivated
Acacia trineura F.Muell. Three-Nerve Wattle	Distribution	FR?e NL?e MU?e **SL?e** SEn Added SL as questionably naturalised, based on *D.E. Murfet 3104*, collected on 18 Jan. 1998 supported by *R. Taylor 403*, collected on 13 Feb. 1999.
Amaryllis belladonna L. Belladonna Lily	Distribution	FR* NL* YP* SL* **KI*** SE* Added KI as naturalised, based on *CJB 9259*, collected on 15 Mar. 2021, and additional KI collections *CJB 9276*, *CJB 9300*, *CJB 9374*, collected in Mar. 2021.
Cardamine flexuosa With. Wood Bitter-Cress	Distribution	NL* MU* SL* **SE*** Added SE as naturalised, based on *CJB 9188*, collected on 16 Dec. 2020.
Corymbia calophylla (Lindl.)K.D.Hill & L.A.S.Johnson Marri	Distribution	NL* SL* **SE?e** Added SE as questionably naturalised, based on *CJB 9290B* collected on 16 Mar. 2021
Corymbia ficifolia (F.Muell.) K.D.Hill & L.A.S.Johnson Red-flowering Gum	Distribution	SL* **KI?e** Added KI as questionably naturalised, based on *CJB 9290B*, collected on 16 Mar. 2021, and additional KI collections *CJB 9235B* and *CJB 9378*, collected in Mar. 2021.
Datura innoxia Mill. Downy Thorn-apple	Name	Changed from *Datura inoxia* Mill. to *Datura in**n**oxia*, reflecting the correct spelling, as documented by the Australian Plant Census (APC).
Eragrostis curvula (Schrad.)Nees African Lovegrass	Distribution	NU* GT* FR* EP* NL* MU* YP* SL* **KI*** SE* Added KI as naturalised, based on *CJB 9338*, collected on 17 Mar. 2021.
Eragrostis trichophora Coss. & Durieu Hairyflower Lovegrass	Distribution	NU?e GT* FR* EA* EP* NL* **MU*** SL* Added MU as naturalised, based on *CJB 8728*, collected on 3 Feb. 2021.
Eucalyptus dundasii Maiden Dundas Blackbutt	Distribution	NL?e **MU?e** Added MU as questionably naturalised, based on *CJB 9239*, collected on 11 Sep. 2019.

Taxon	Update type	Update / comment
Fraxinus ornus L. Manna Ash	Distribution	SL* **KI[?e]** Added KI as questionably naturalised, based on *CJB 9295*, collected on 17 Mar. 2021.
Heliotropium supinum L. Creeping Heliotrope	Distribution	LE* GT* FR* EA* EP* NL* MU* YP* SL* **KI*** SE* Added KI as naturalised, based on *SHSA-117*, collected on 27 Feb. 2021.
Lotus angustissimus L. Slender Bird's-foot Trefoil	Distribution	EP* SL* **KI*** SE* Added KI as naturalised, based on *SHSA-322*, collected on 2 Mar. 2021.
Melaleuca hypericifolia Sm. Hillock Bush	Distribution	SL* **KI[?e]** Added KI as questionably naturalised, based on *CJB 9316 A*, collected on 17 Mar. 2021.
Melaleuca nesophila F.Muell. Showy Honey Myrtle	Distribution	EP* SL* **KI[?e]** SE* Added KI as questionably naturalised, based on *CJB 9267*, collected on 16 Mar. 2021, and additional KI collections *CJB 9324* and *CJB 9382*, collected in Mar. 2021.
Olea europaea L. subsp. *cuspidata* (Wall. ex G.Don) Cif. African Olive	Distribution	SL* **SE*** Added SE as naturalised, based on *CJB 9165 A*, collected on 15 Dec. 2020.
Pelargonium quercifolium (L.f.) L'Her. Oak-leaved Geranium	Distribution	NL[?e] SL* **KI[?e]** Added KI as questionably naturalised, based on *CJB 9278*, collected on 16 Mar. 2021.
Psoralea pinnata L. African Scurf-pea	Distribution	**KI[?e]** SE* Added KI as questionably naturalised, based on *LW65*, collected on 16 Mar 2021, and *CJB 9349*, collected 18 Mar. 2021.
Solanum lycopersicum L Tomato	Distribution	LE* FR* EA* EP* SL* **KI*** SE* Added KI as questionably naturalised, based on *LKW 065*, collected on 17 Feb. 2021.
Veronica arvensis L. Wall Speedwell	Distribution	EP* NL* SL* **KI*** SE* Added KI as naturalised, based on TERN collection *E. Leitch et al. SAA015748*, collected on 14 Oct. 2020.

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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)	Landscape Region	Participants	No.	General Location	Significant weed collections
11 June 2020	Green Adelaide	CJB, SHSA	2	Linear Park, Lockleys	Declared weed species (*Anredera cordifolia)* (Madeira Vine) collected from River [Torrens] corridor.
24 June 2020	Green Adelaide	CJB, SHSA	5	Linear Park, Lockleys to Adelaide Parklands	General weed species and *Cardiospermum grandiflorum* collected from River corridor prompted by weed enquiry from a member of the public.
8 July 2020	Green Adelaide	CJB, SHSA, & Jeff Dinham, City of West Torrens	5	Linear Park, Lockleys to Underdale	High risk (*Bidens pilosa*) and general weed species collected from River corridor prompted by weed enquiry from council staff.
21 July 2020	Green Adelaide	CJB, SHSA, Renate Velzeboer, Green Adelaide, & Peter Baldacchino, City of Adelaide	0	187 Halifax Street, Adelaide SA 5000	Meet to confirm identify of *Anredera cordifolia* (Madeira Vine).
22 July 2020	Green Adelaide	CJB, SHSA, & Shannon Robertson, PIRSA	5	Holden Hill and Wingfield	Declared weed, *Hyparrhenia hirta*, and potentially high risk weed *Bidens pilosa*, as well as general weed species collected in the City of Port Adelaide and Enfield council area.
21 Aug. 2020	Green Adelaide	CJB, SHSA, & Shannon Robertson, PIRSA	3	Adelaide Parklands	Suspected weedy grasses that were not weeds but native species.
4 Sep. 2020	Green Adelaide	CJB, SHSA	4	Hackney Road.	Self-sown natives from the road side spreading for native garden plantings.
10 Sep. 2020	Green Adelaide	CJB, SHSA	3	Norwood	Spreading garden plants.
1 Oct. 2020	Hills & Fleurieu	CJB, SHSA, Shannon Robertson, PIRSA, & William Hannaford, Landscape SA	11	Lobethal area	Unknown and general weed collections.
9 Oct. 2020	Green Adelaide	CJB, SHSA	5	Adelaide Botanic Gardens and River Torrens	General under represented weed collections

Date(s)	Landscape Region	Participants	No.	General Location	Significant weed collections
27–31 Oct. 2020	South Australia Arid Lands	CJB, SHSA, Shannon Robertson, PIRSA, & Matt Westover, Landscape SA	112	Hawker to Leigh Creek, Nantawarrina Indigenous Protection Area (IPA).	General weeds collection, and targeted areas including abandoned garden in Leigh Creek, Nepabunna IPA, and Merna Mora Station.
25 Nov. 2020	Green Adelaide	CJB, SHSA	3	Breakout Creek, Linear Park, Henley Beach South.	General under represented weed collections.
15–17 Dec. 2020	Limestone Coast	CJB, SHSA, Andrew Shepherd & Anthony Bullock, Landscape SA, Sinaway Georgiou & Tim O'Neil, City of Mount Gambier	65	Valley Lakes, Mount Gambier, & Mount Gambier Sinkhole.	Targeted weed collection as directed by regional and council staff, identifying plants species as part of a collaborative weed control program.
3 Feb. 2021	Murraylands and Riverland	CJB. SHSA. Shannon Robertson. PIRSA, & Scott Hutchins, Landscape SA	6	River Murray near Mannum and roadside	Collection of water plants, including a large infestation of *Nymphaea mexicana*, and some roadside weeds for Landscape SA
23 Feb. 2021	Green Adelaide	CJB, SHSA, Renate Velzeboer, Green Adelaide, & Danny Millbanks, Port Adelaide and Enfield	13	Port Adelaide area, Barker inlet and roadsides	Collection of plants for the purpose of identification, and survey and collection of high priority species, *Cenchrus ciliaris* in City of Port Adelaide and Enfield council area.
3 Mar. 2021	Hills & Fleurieu	CJB, SHSA, & Kat Hill, Landscape SA	2	Aldgate area near cemetery.	Collection of new State Record for *Acacia penninervis* var. *penninervis*
3 May 2021	Green Adelaide	CJB & Carolyn Ricci, SHSA, & Coastal Officers Group	5	Salisbury Highway, Samphire flats and Barker Inlet	Collection of weedy species and plants for identification.
4 May 2021	Green Adelaide	CJB, SHSA	2	Creekline bank and garden bed	Self-sown weedy *Bidens pilosa*
8–10 June 2021	Northern and Yorke	CJB SHSA, & Shannon Robertson, PIRSA	10	Clare and Kadina area	Targeted weed collection directed by Landscape SA staff, including *Opuntia* species, and thin-*leaved Solanum elaeagnifolium*.

Date(s)	Landscape Region	Participants	No.	General Location	Significant weed collections
15–18 June 2021	South Australia Arid Lands	CJB, SHSA, Shannon Robertson, PIRSA, & Matt Westover, Landscape SA	88	Hawker to Leigh Creek,	Targeted weed collection directed by Landscape SA and PIRSA staff, including, *Aizoon pubescens*, *Asparagus plumosus*, *Asparagus scandens*, *Bryophyllum species*, *Lantana camara*, *Opuntia species*, *Senna planitiicola*, *Tamerix aphylla*, & Succulents.

Community engagement

Table 4: Summary of community and professional engagement activities.

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

Date(s)	Other participants	Location	Presentation tittle / subject	Audience / Society	# of Att.
14 July 2020	Jeff Dinham &2 staff members	Green Adelaide Linear Park	Introduction and collection of plant materials for identification.	Jeff Dinham & staff (City of West Torrens Council)	3
2 Sep. 2020	Landscape SA, PIRSA Staff	Teams Meeting	Animal & Plant Network Meeting.	Government staff	10
22 Sep. 2020	PIRSA & Landscape SA Staff	Teams Meeting	Plant risk assessment PIRSA.	Government staff	4
25 Sep. 20	Shannon Robertson, PIRSA	Teams Meeting	Early Intervention of New and Emerging Weeds.	Northern and Yorke Landscape SA staff	10
29 Oct. 2020	Matt Westover, Landscape SA, & Shannon Robertson, PIRSA	South Australian Arid Lands Nantawarrina Nepabunna IPA	Collection of plants for the purposes of weed identification.	Nantawarrina IPA Indigenous Rangers	7
15–16 Dec. 2020	Shannon Robertson, PIRSA	Mount Gambier	Collection of plants for the purposes of weed identification.	City of Mount Gambier & Limestone Coast Landscape SA staff	5
3 Feb. 2021	Shannon Robertson, PIRSA	Mannum	Aquatic plants and weeds.	Murraylands and Riverland Landscape SA staff	20
18 Feb. 2021	Renate Velzeboer & Monica Seiler, Green Adelaide, Shannon Robertson & Michaela Heinson PIRSA	Adelaide Botanic Gardens, Goodman Building	Overview of annual report from previous year; State Herbarium procedure for collection; New & emerging weeds in Green Adelaide and Hills & Fleurieu regions.	Landscape SA and Council staff from across the Green Adelaide area.	20
21 Mar. 2021	Laura Williams PIRSA, & Jason Walters, Landscape SA	Parndana Golf Club, Kangaroo Island	Plants after fire, Kangaroo Island.	General public	10
29 Apr. 2021	Carolyn Ricci, SHSA, & Caroline Taylor, Green Adelaide	Watershed, Salisbury Highway	You, the State Herbarium, and plant identification.	Coastal Officers Network Meeting	20
18 May 2021	Bob Graham	Stirling RSL Club Apex Park Stirling	An introduction to the State Herbarium of South Australia.	Stirling Rhododendron Club	50
28 May. 2020	PIRSA and Landscape SA Staff	Waite Campus	Plant risk assessment PIRSA.	Government staff	6
9 June 2021	Shannon Robertson PIRSA	Clare	State Herbarium procedures for collection and new & emerging weeds.	Northern and Yorke Landscape SA staff	10

Date(s)	Other participants	Location	Presentation tittle / subject	Audience / Society	# of Att.
10 June 2021	Shannon Robertson, PIRSA	Kadina	State Herbarium procedures for collection and new & emerging weeds.	Northern and Yorke Landscape SA staff	10
16 June 2021	Shannon Robertson, PIRSA, & Matt Westover, Landscape SA	Leigh Creek	State Herbarium procedures for collection and weed identification session .	Leigh Creek Land and Progress Association	4
17 June 2021	Shannon Robertson, PIRSA, & Matt Westover, Landscape SA	South Australian Arid Lands Nantawarrina Nepabunna IPA	State Herbarium procedures for collection and weed identification session.	Nantawarrina IPA Indigenous Rangers	
18 June 2021	Shannon Robertson, PIRSA, & Matt Westover, Landscape SA	South Australian Arid Lands Yappala IPA	State Herbarium procedures for collection and weed identification session.	Yappala IPA Indigenous Rangers	
24 June	Shannon Robertson, PIRSA	Teams Meeting	The State Herbarium & PIRSA; An overview of garden plants that are declared weeds or/and invasive for Kangaroo Island.	PIRSA staff	5

POSTPONED

POSTPONED

Appendix 2: Herbarium regions