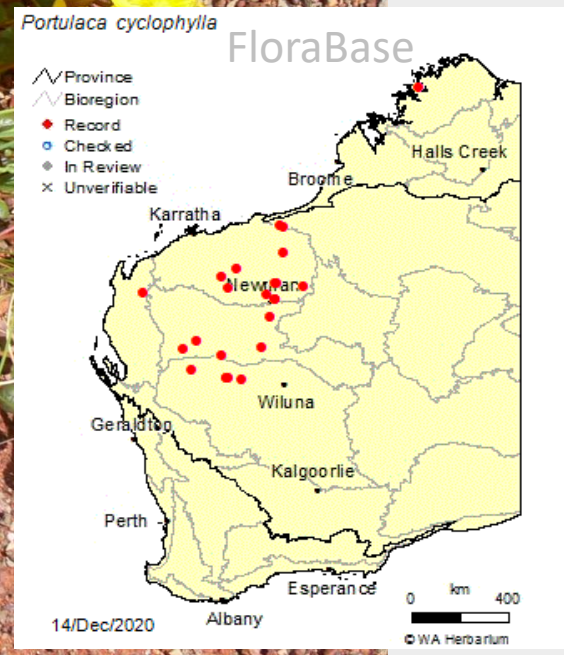
Zoom meeting with the Cactus and Succulent Society of Australia, Melbourne Chapter.

The connection between Herbaria and Cacti/Succulents. A fleshy partnership.

By Karina Knight
26 January 2021



Portulaca cyclophylla

Photo: Karina Knight

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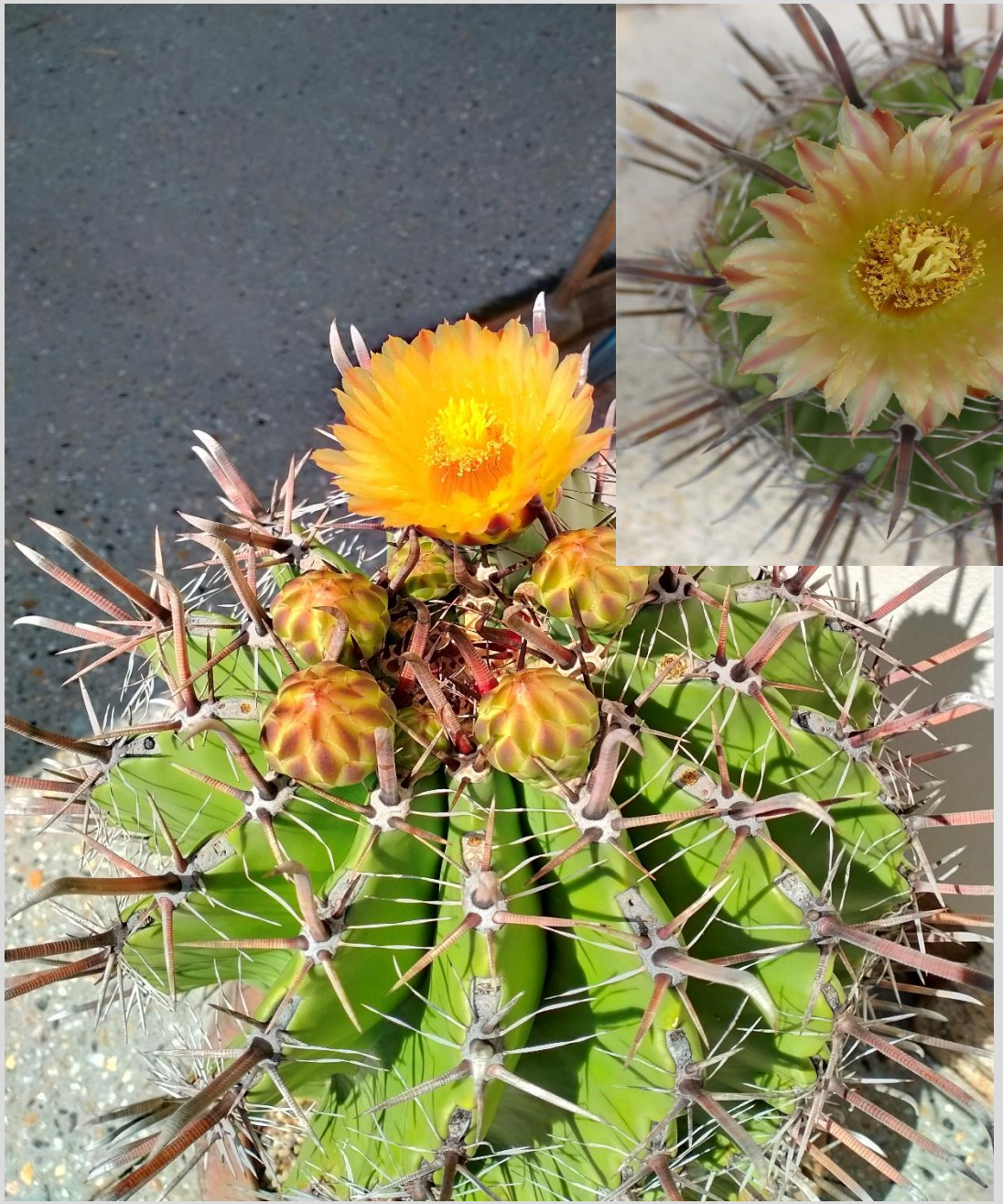
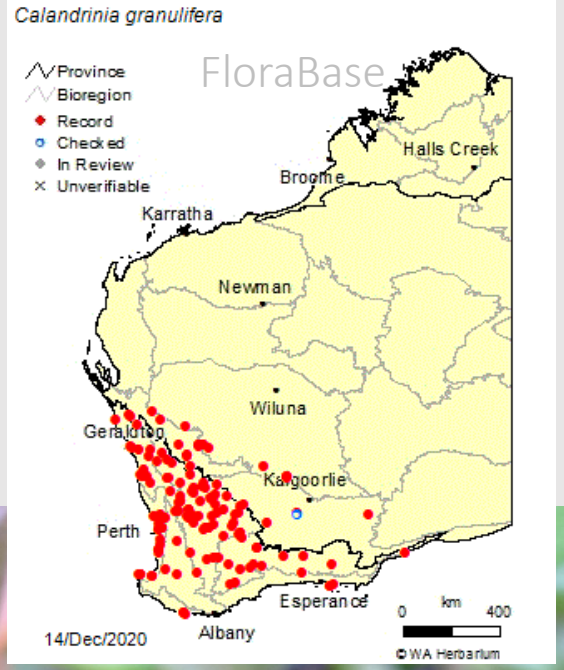



Photos: Karina Knight

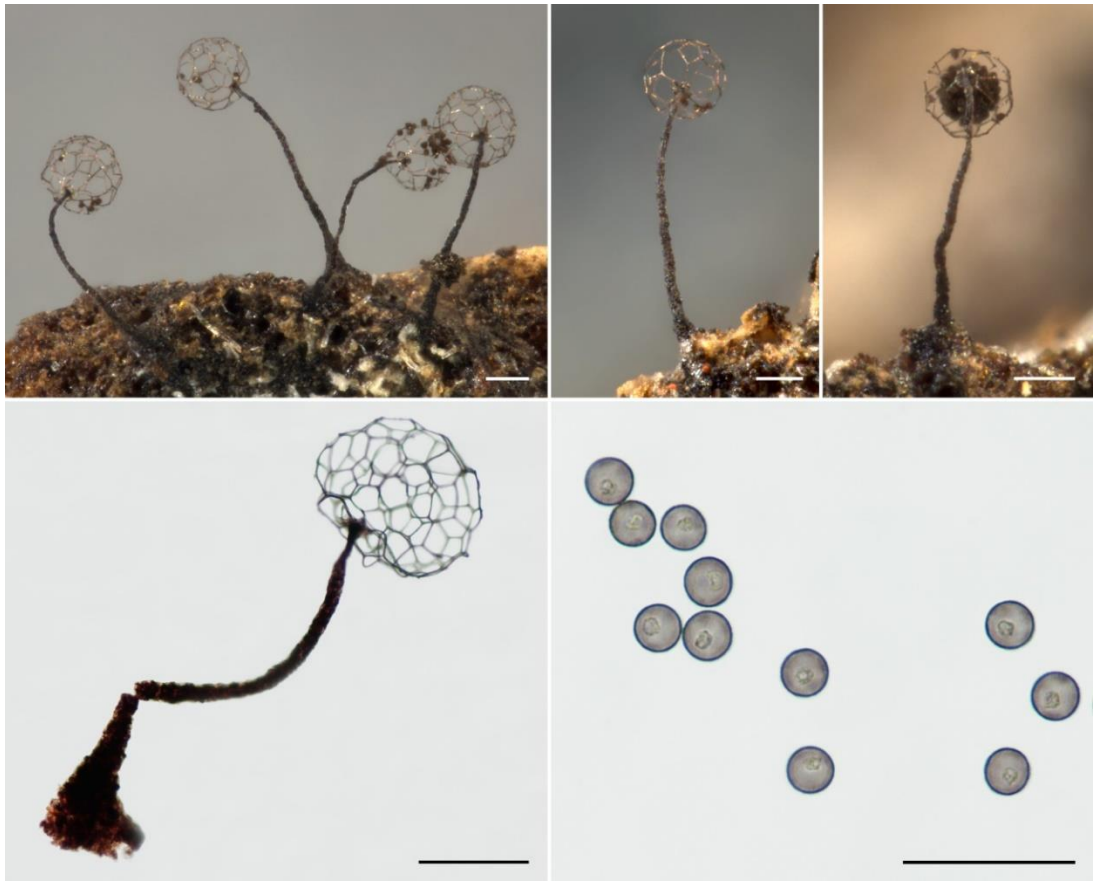


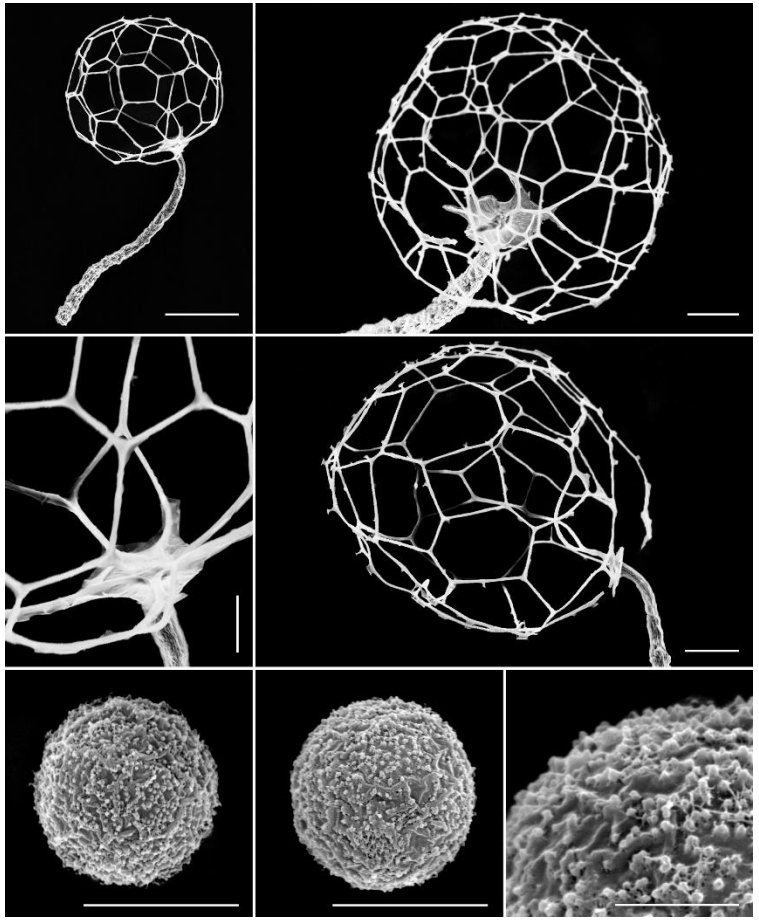
Calandrinia granulifera – pygmy purslane

Photos: Karina Knight

Photo: Karina Knight

Current passion: describing Myxomycetes.





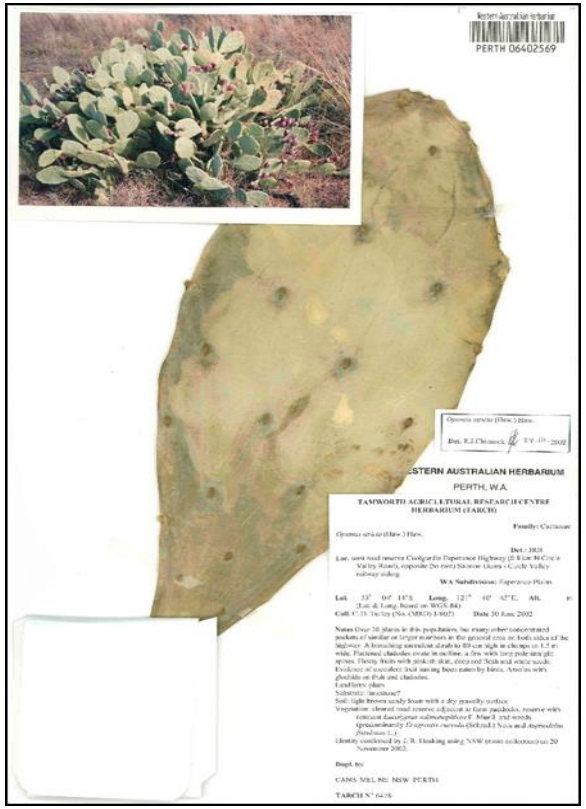
What is a herbarium?

The term refers to the building where specimens are stored, or a scientific institute that not only stores but also conduct research on the specimens.

Photo: W.A.Herbarium

A Herbarium is a morgue! Of sorts.

Herbarium also refers to a collection of preserved plant specimens. The specimens may be whole plants or plant parts: these will usually be in a dried form, mounted on a sheet, but depending upon the material may also be kept in alcohol or other preservative.



Photos: W.A.Herbarium

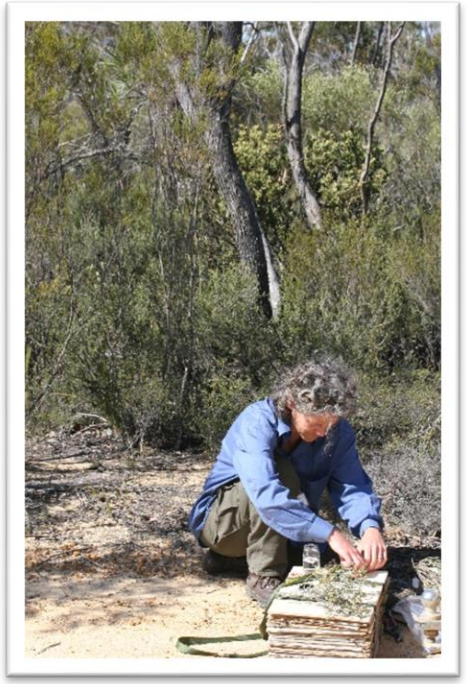
Main functions of a Herbarium
1 - Document the Plant Biodiversity

In the case of W.A., to document the biodiversity of native and alien plants (including the lower plants). Essentially continuing to add specimens of scientific value to the Collection. The information gathered from the specimens underpins conservation.

Photo: W.A.Herbarium

Main functions of a Herbarium
2 - Scientific Research

Is used as a resource by Herbarium Scientists and Research Associates to describe and document the State's flora, both the **native and alien taxa**.



Photos: W.A.Herbarium

Specifically why collect and mount specimens?

- Specimens provide the physical evidence for the presence, distribution and identity of a species
- Have something physical to attach the information gathered to (including a barcode)
- Basis of all the information available on Herbarium databases as label data, images and names are captured for all occurrences in the state.
- Australasian Herbaria are part of a bigger picture – the data is part of larger concatenated data sets such as the AVH, ALA and GBIF.
- The data set is comprehensive and includes native succulents, alien succulents and cacti.

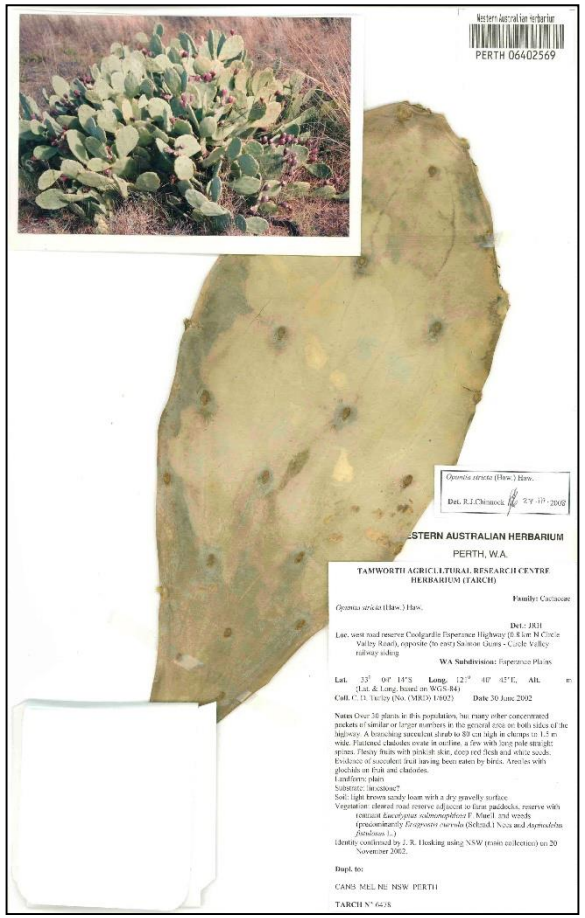
Specimens are maintained in Archival conditions

Photo: W.A.Herbarium

Processing ‘normal’ specimens

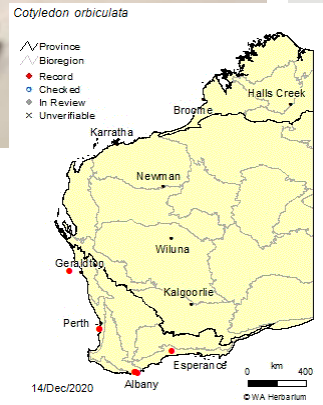
Photos: W.A.Herbarium

Processing cacti and succulent specimens



Photos: W.A.Herbarium

Preparation of succulent plants



Cotyledon orbiculata

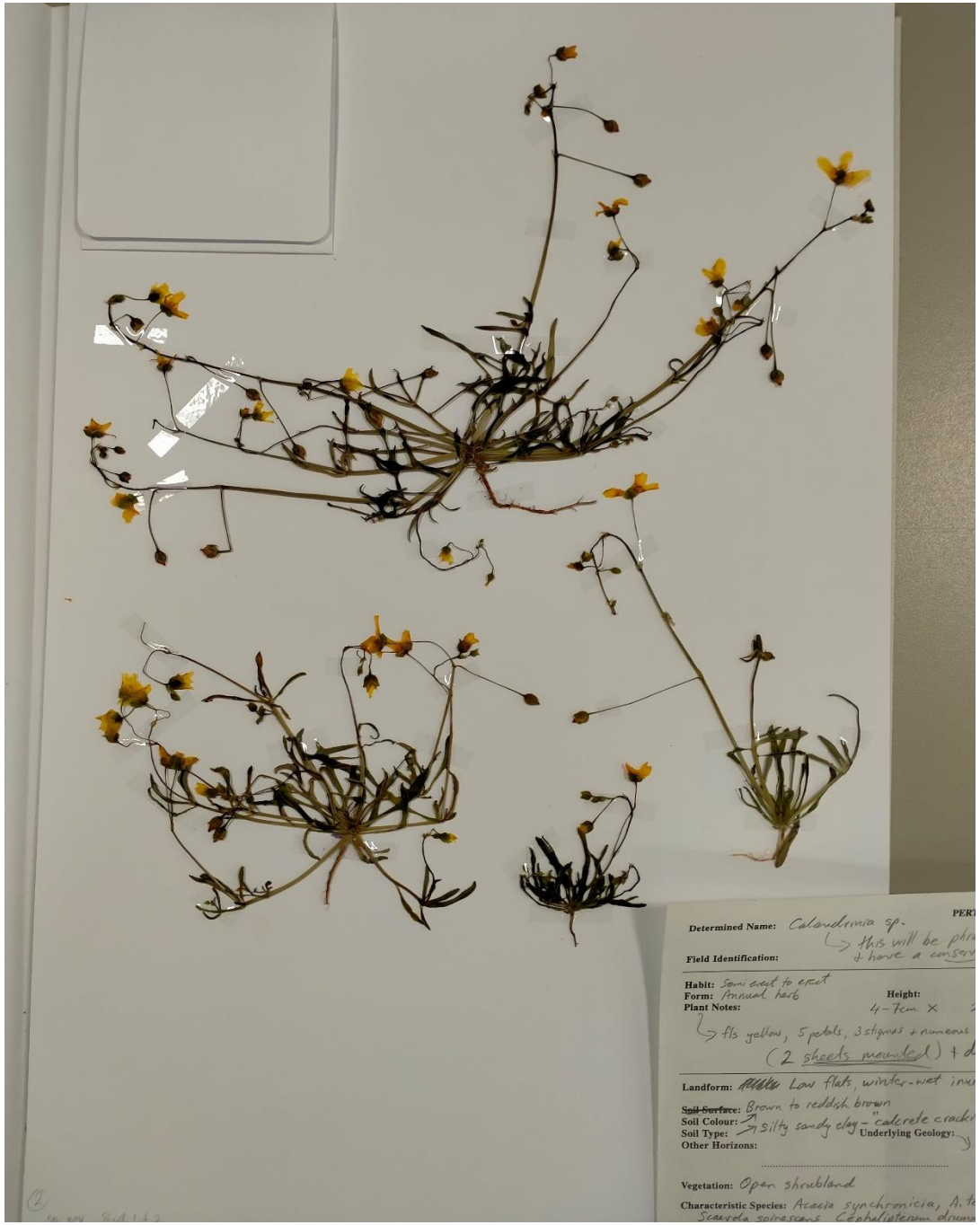
Antony Kusabs, NZ

Opuntia robusta (Wheel cactus)

Photo: W.A.Herbarium

Opuntia robusta (Wheel cactus)

Photos: Juliet Wege



Calandrinia sp. nov.

Photos: Karina Knight

100 Uses for an Herbarium (Well at Least 72)
By Vicki Funk, US National Herbarium

The specimens and associated data can be used in many ways

Division of Botany, The Yale University Herbarium

Peabody Museum of Natural History, Yale University

 # 38. track introduction and spread of invasive species (ecology);

38. track introduction and spread of invasive species (ecology);

Alien (invasive, weedy etc) cacti and succulent occurrences may be tracked over time to represent incursions into bushland, and their ultimate spread, if specimens have been lodged.

Herbaria have very poor records of alien taxa.

Case study *Mesembryanthemum crystallinum*.

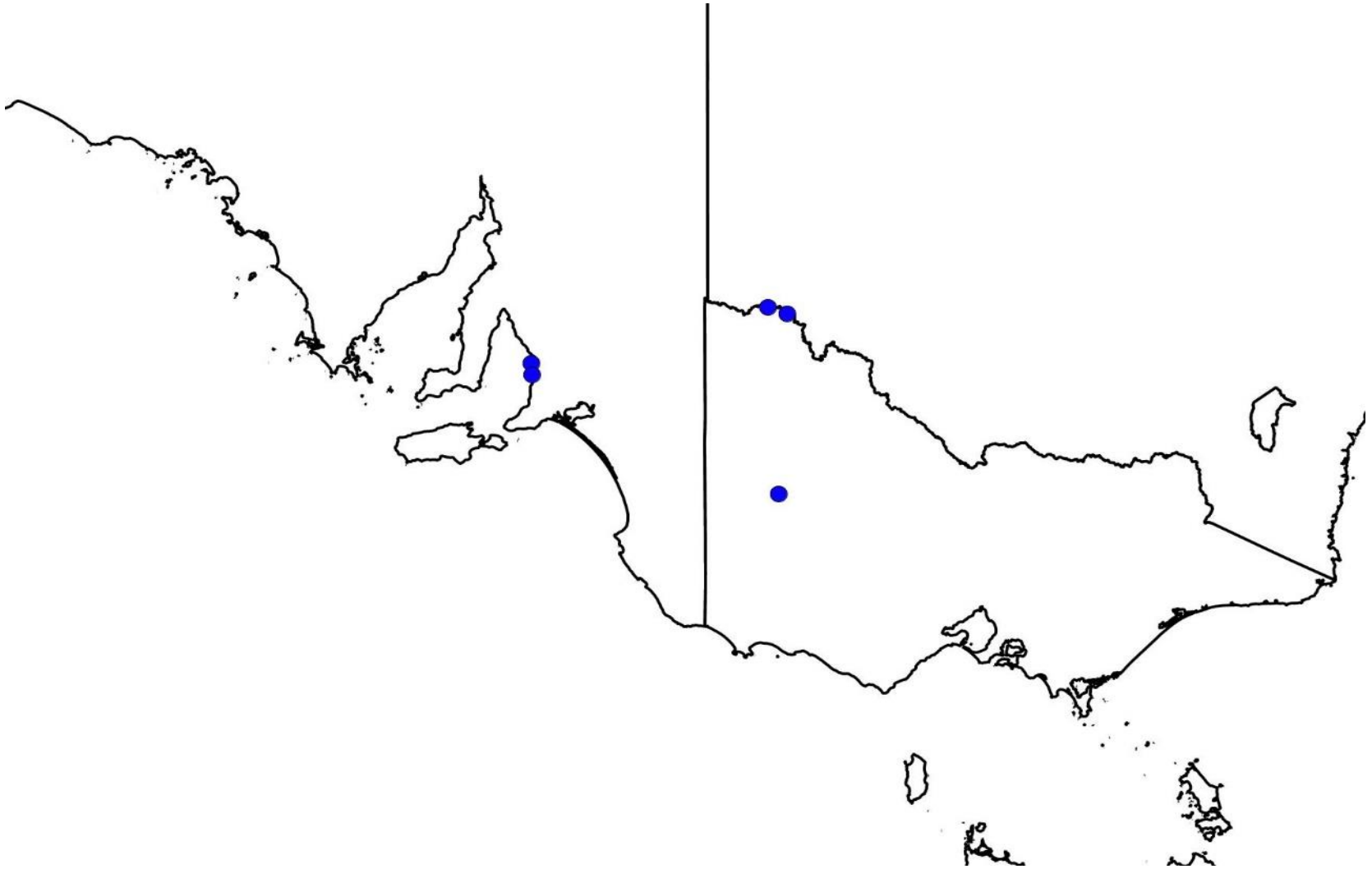
Using data accumulated from herbarium specimens to show the growing distribution of an alien succulent.

Mesembryanthemum crystallinum – common ice plant

Photos: WA Herbarium

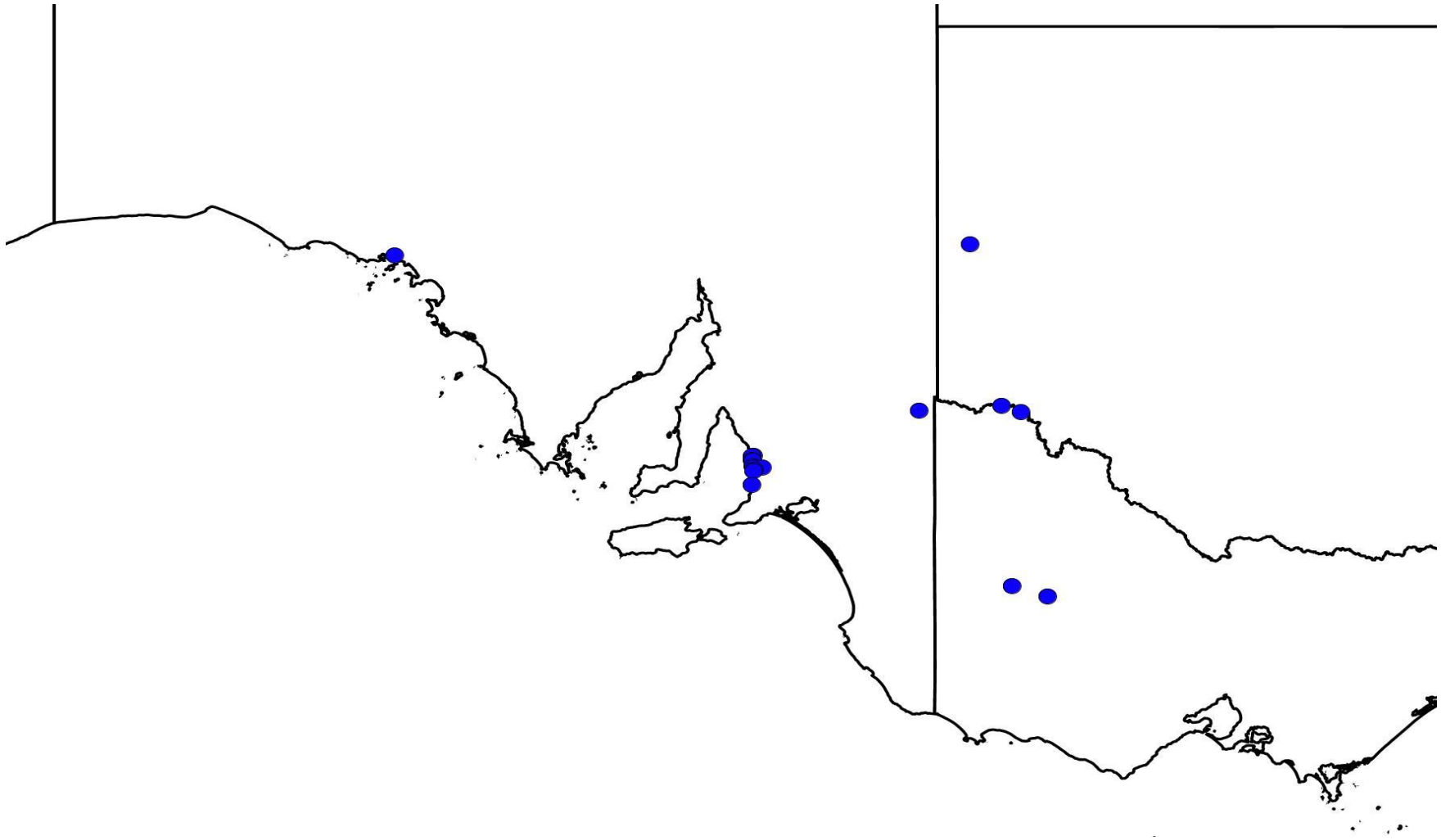
Common Ice Plant

Photos: Wikipedia, RBGVictoria



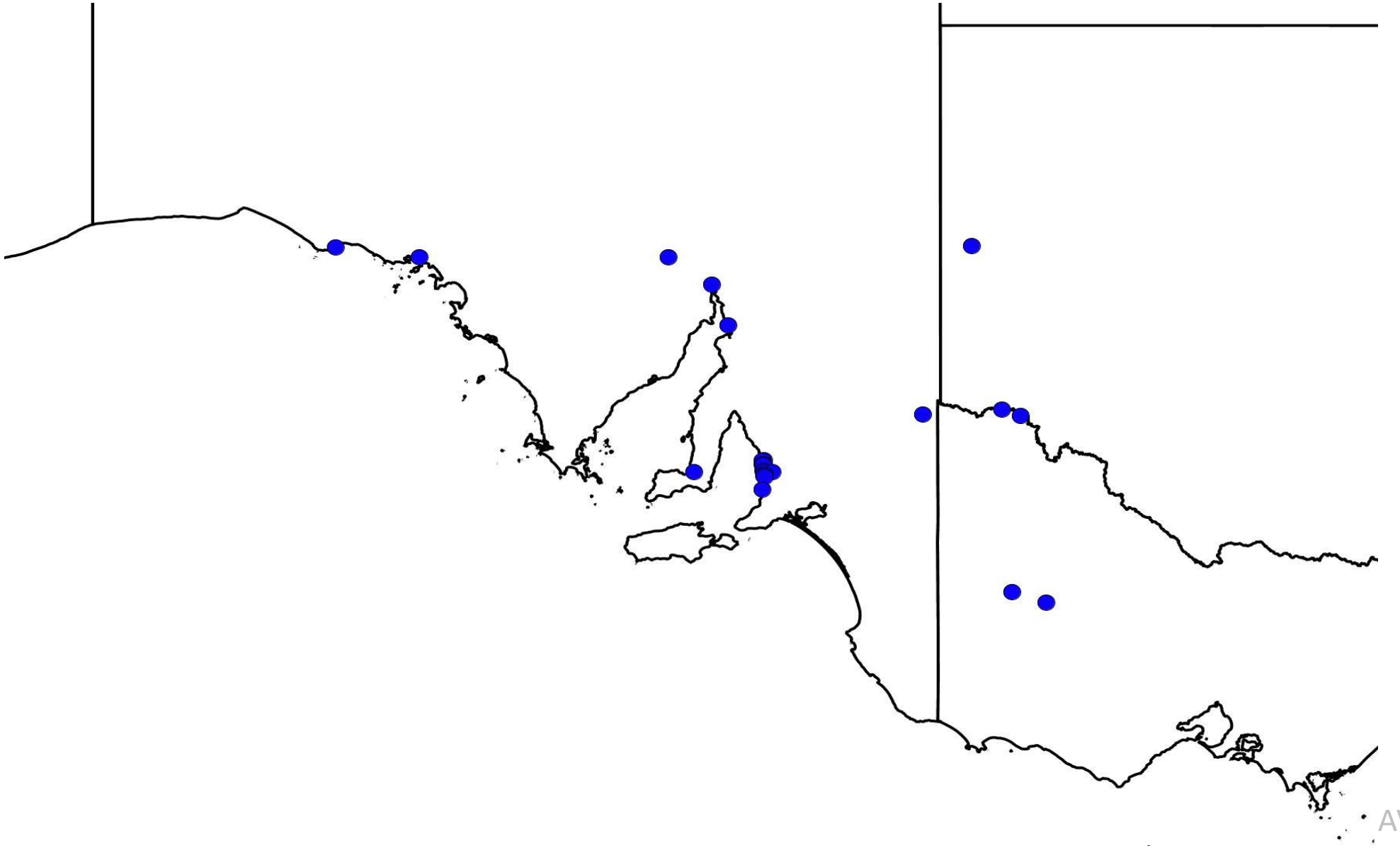
Pre 1900

AVH



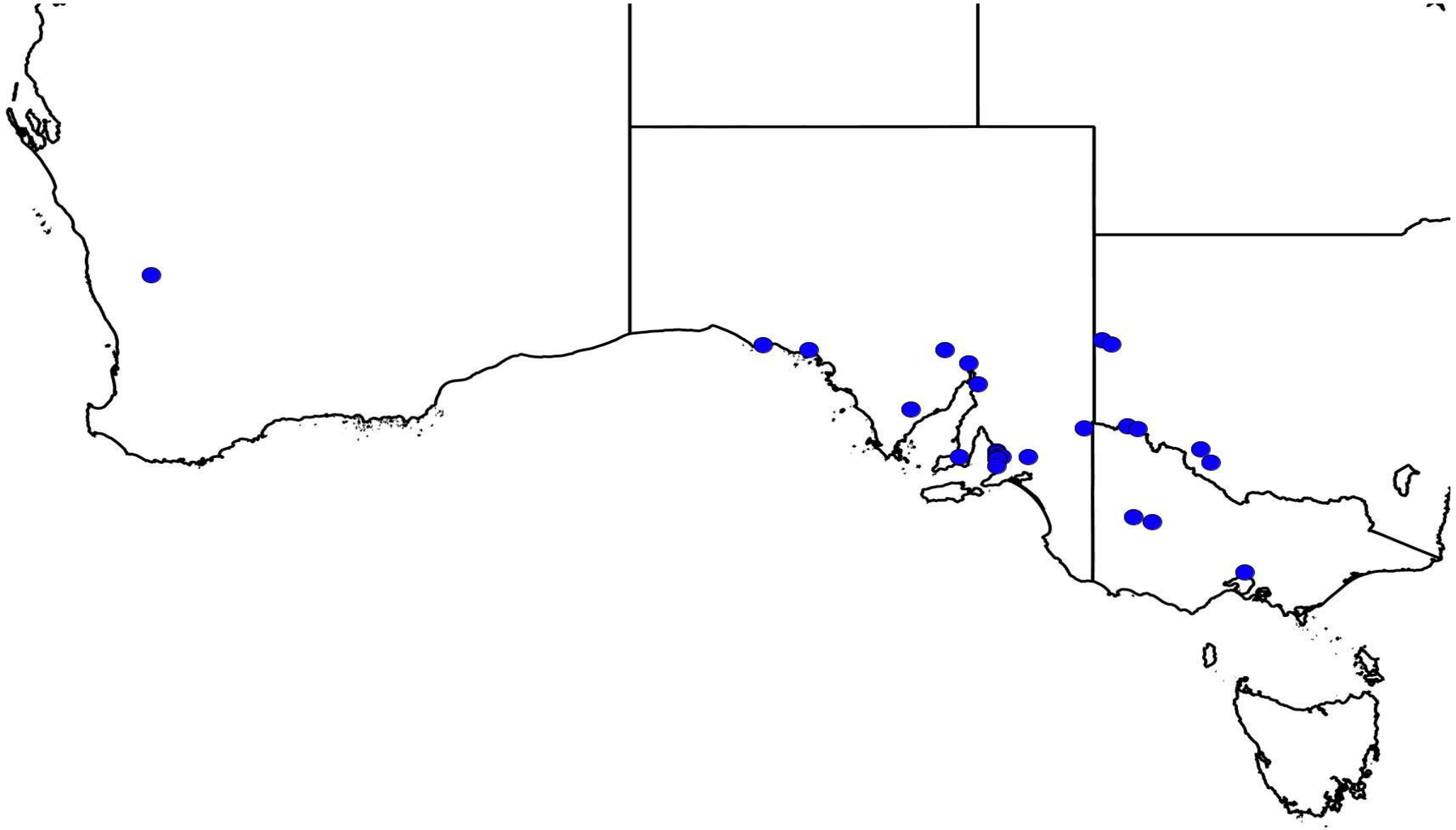
Pre 1920

AVH



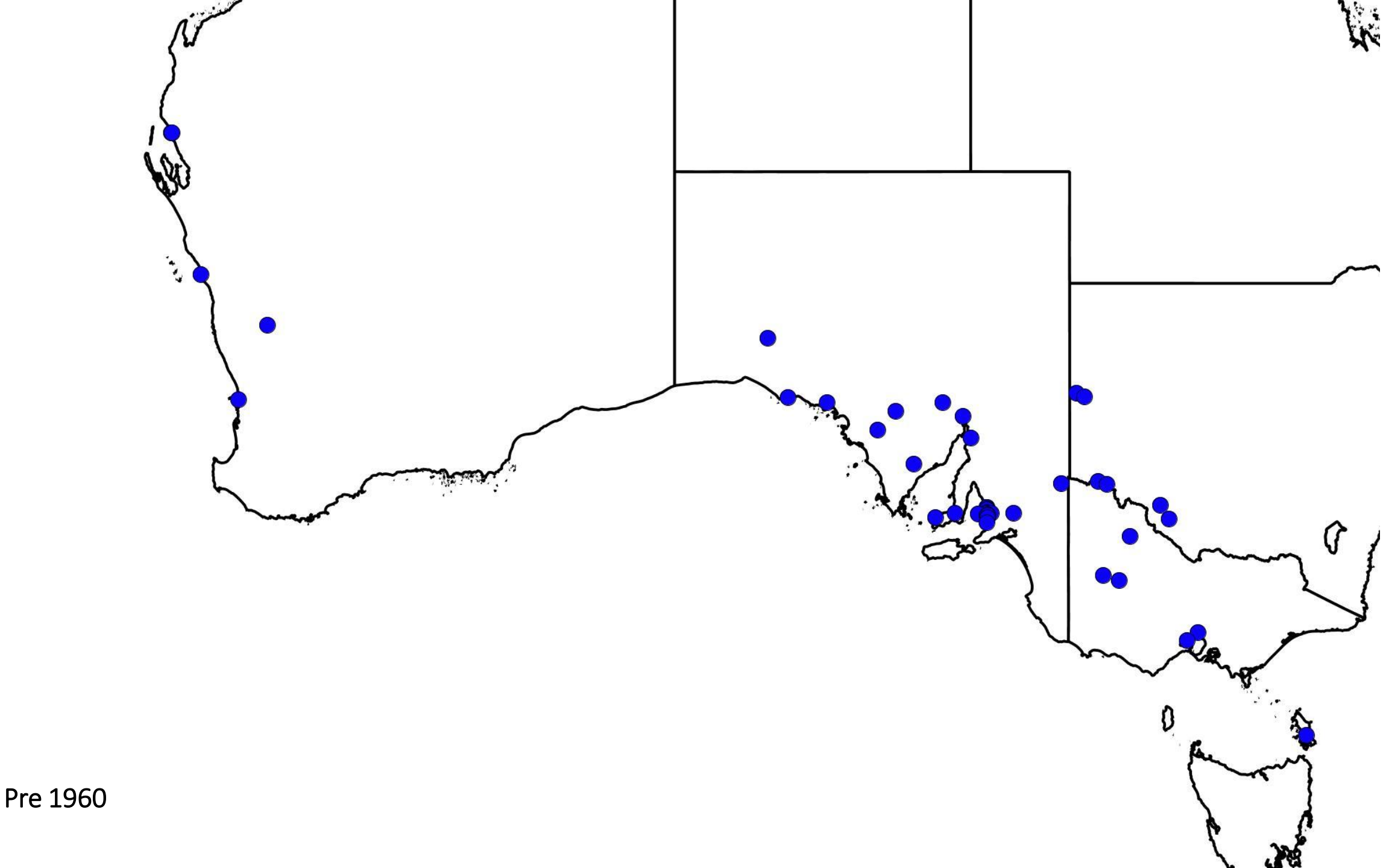
Pre 1940

AVH



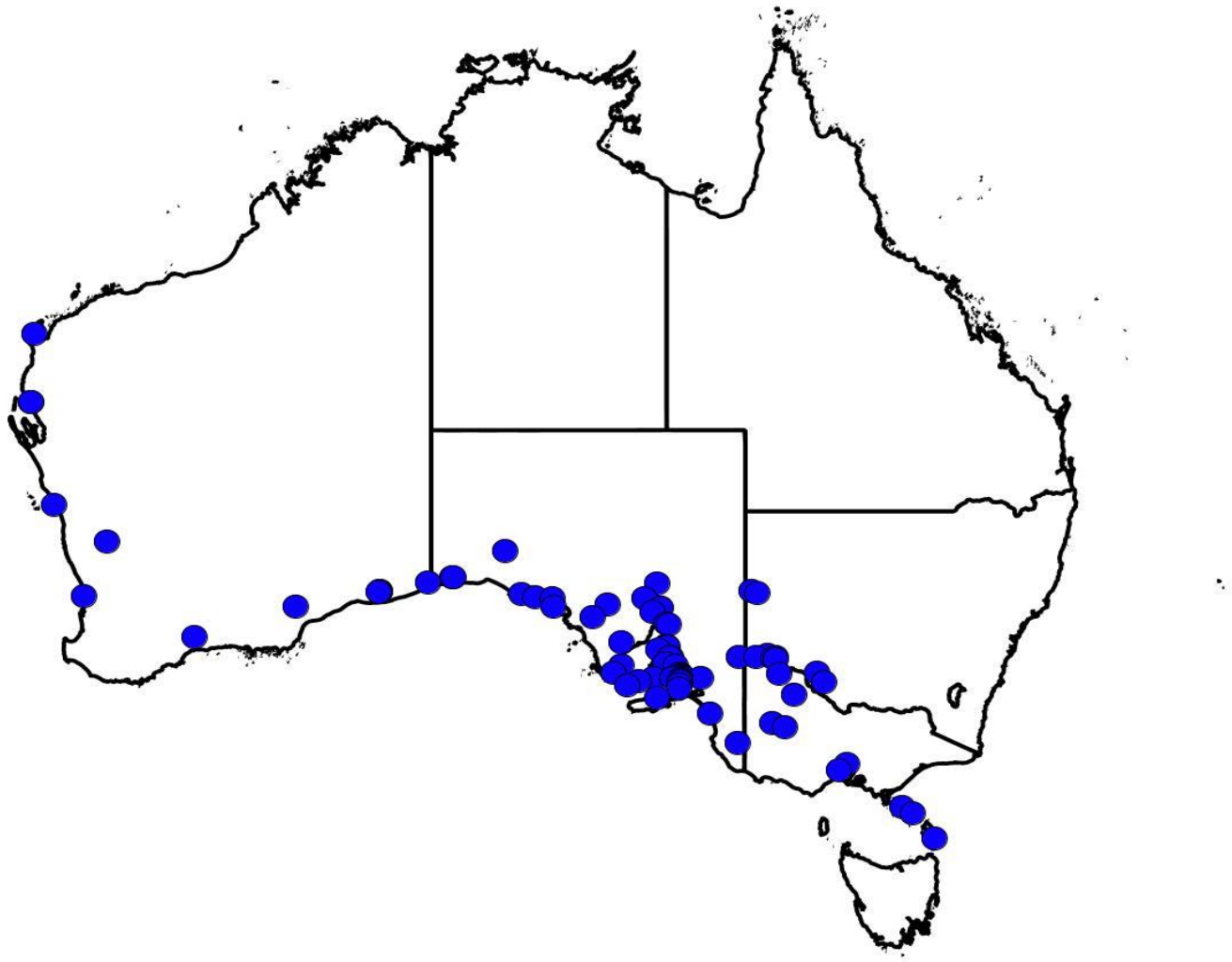
Pre 1950

AVH



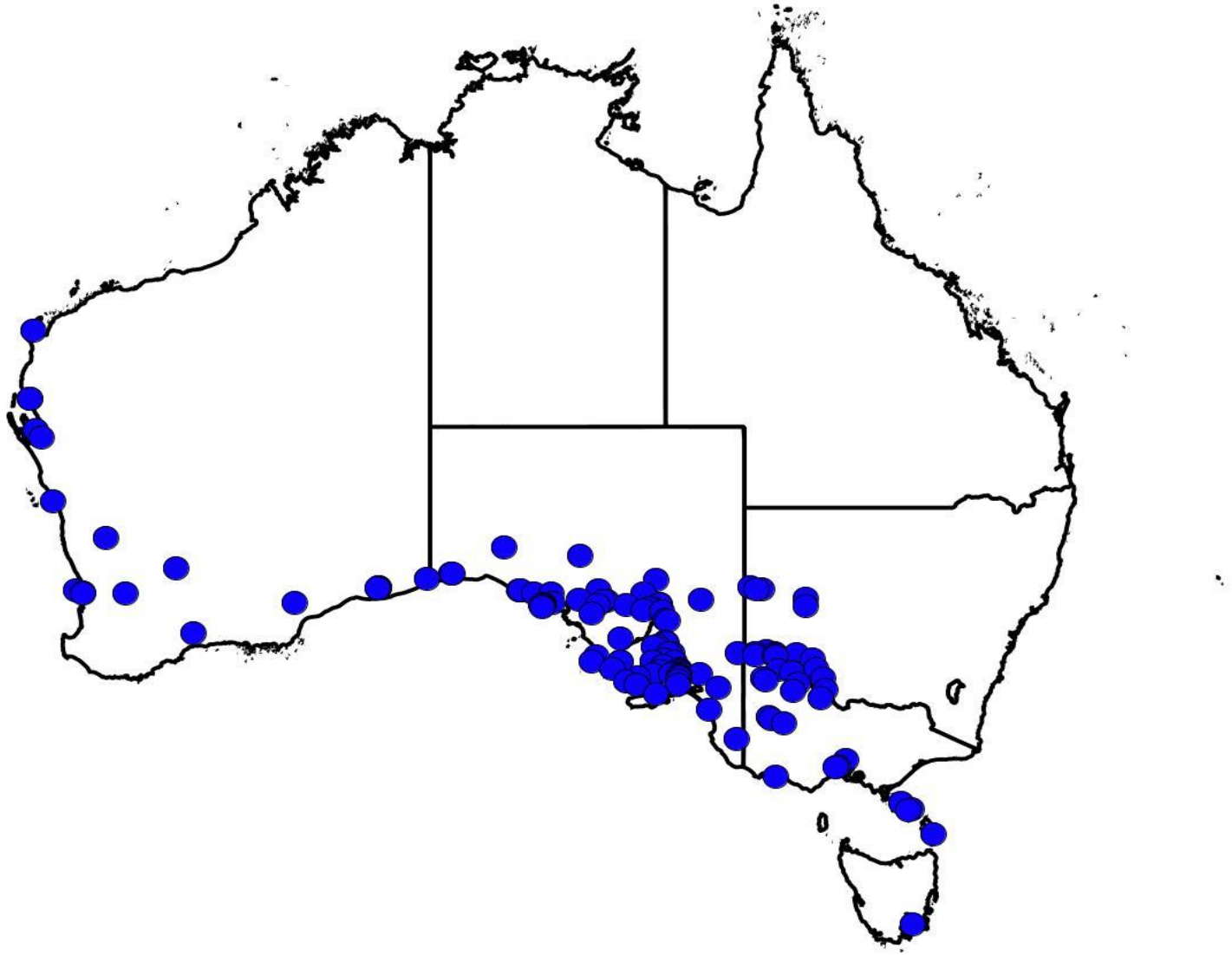
Pre 1960

AVH



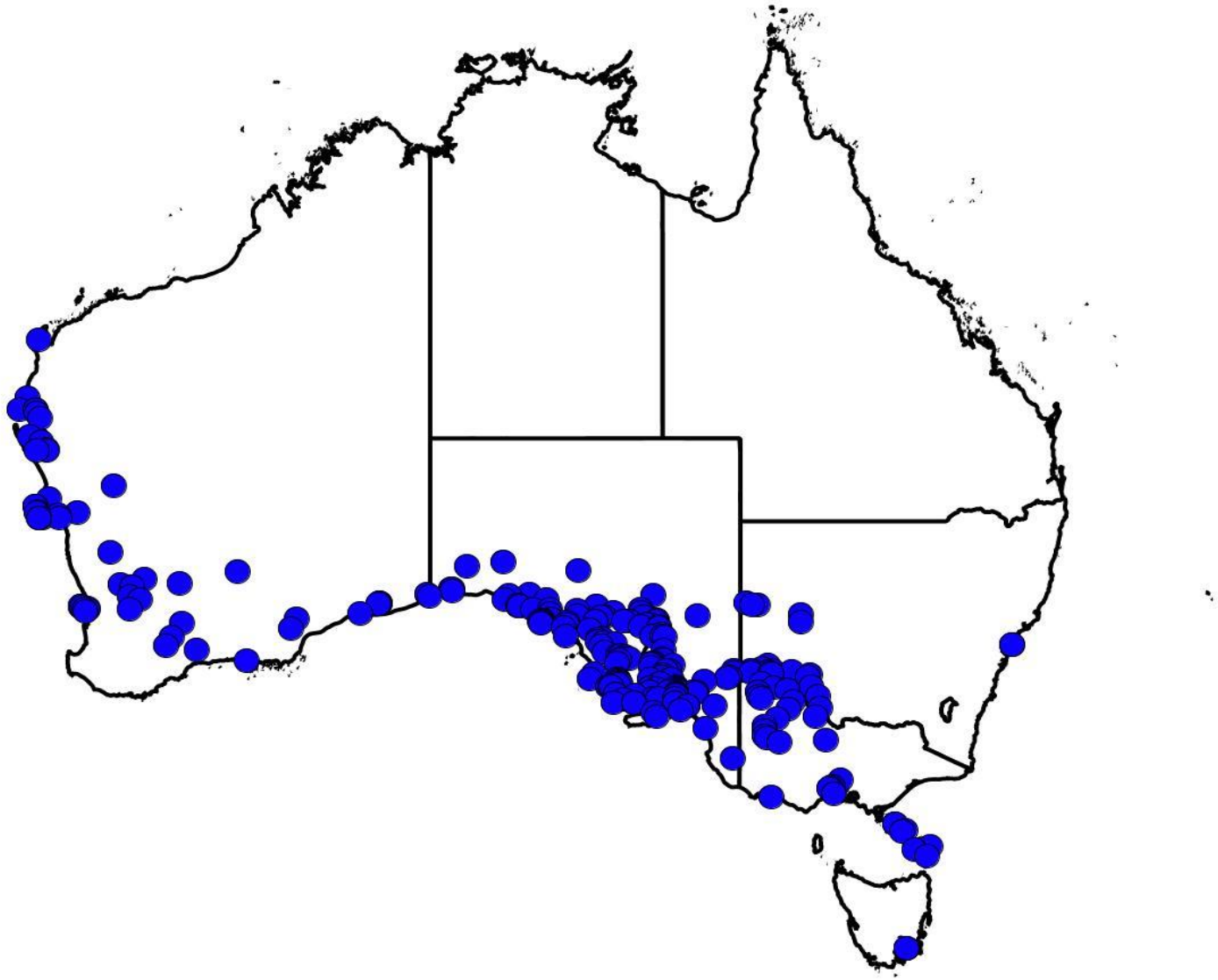
Pre 1970

AVH



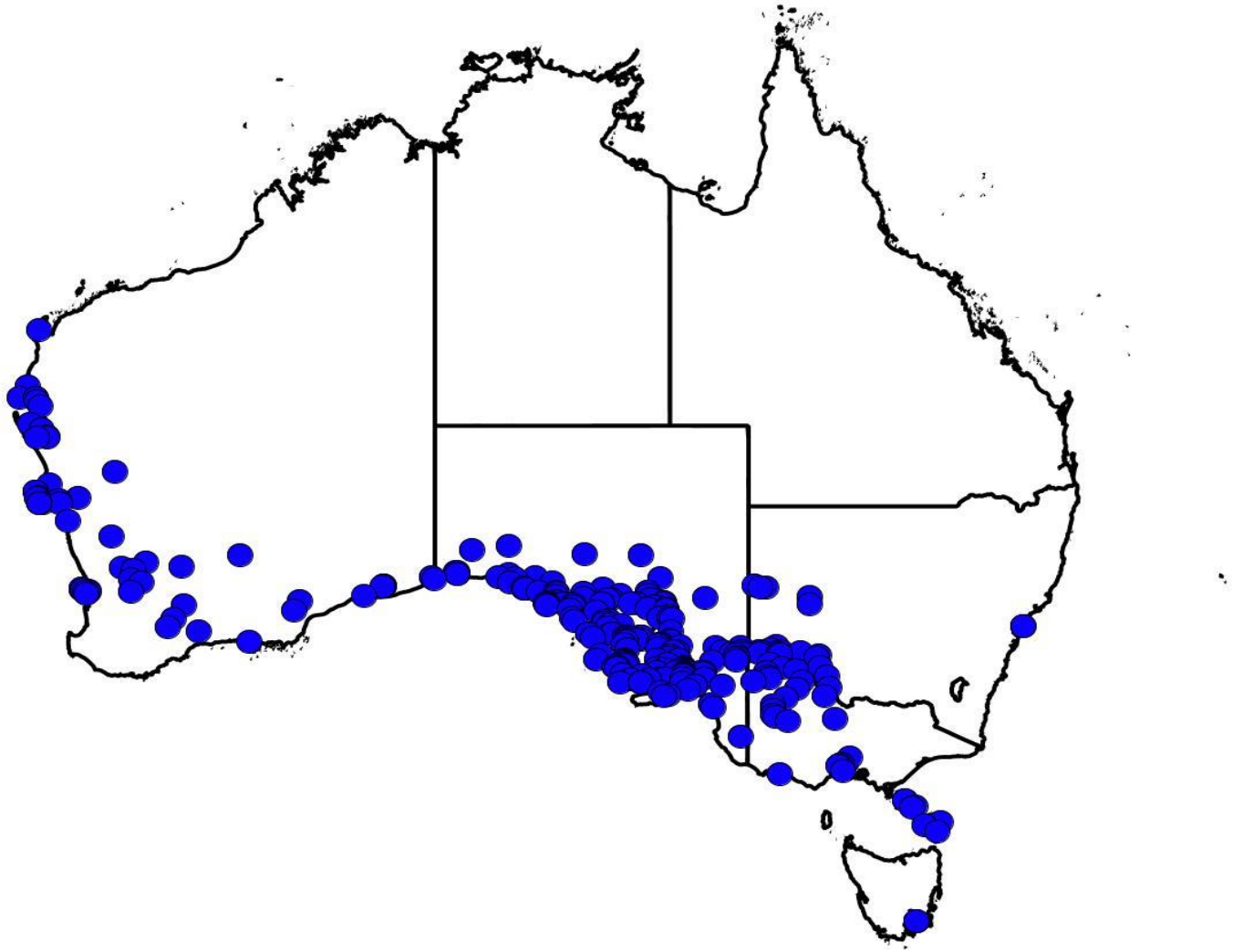
Pre 1980

AVH



Pre 2010

AVH



Today

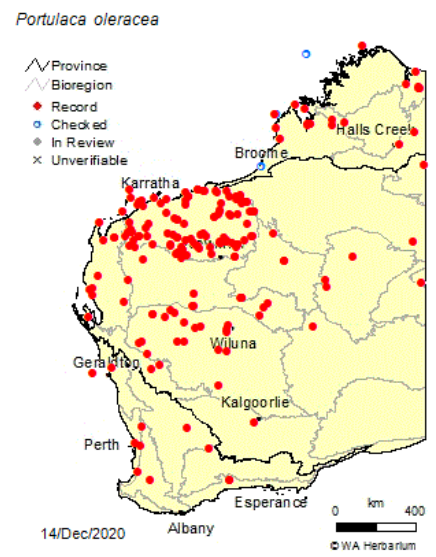
AVH

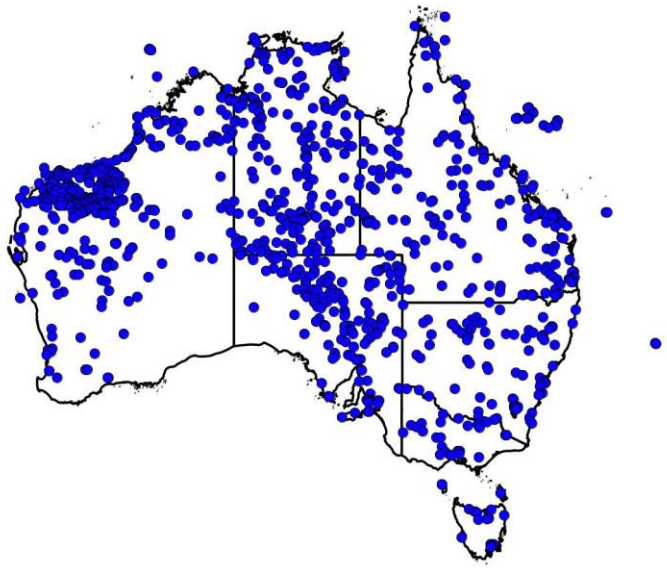
Native or alien/naturalised?

Portulaca oleracea – Purslane

Photo: WA Herbarium

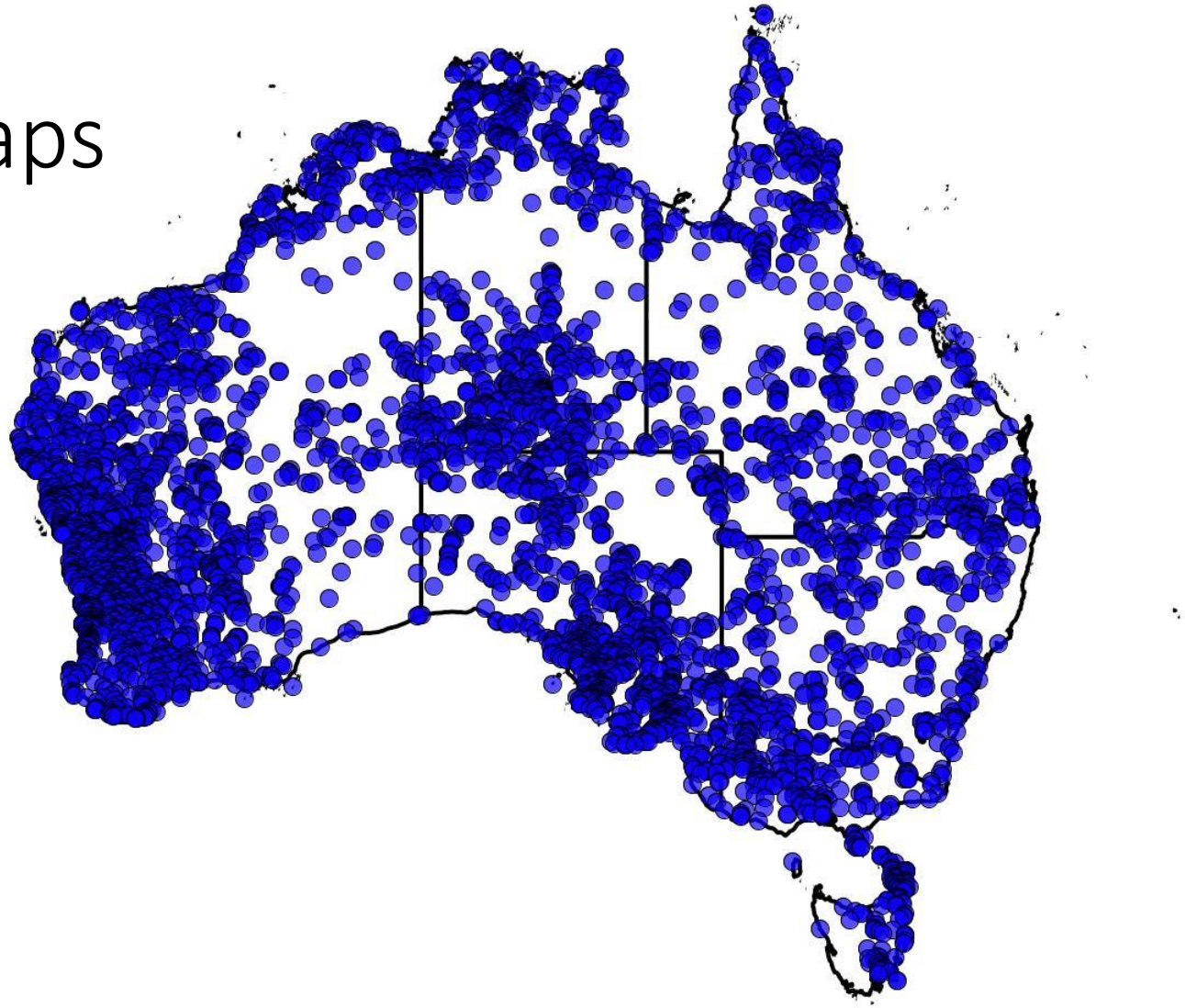
FloraBase





AVH

Knowledge gaps



Calandrinia spp.

AVH

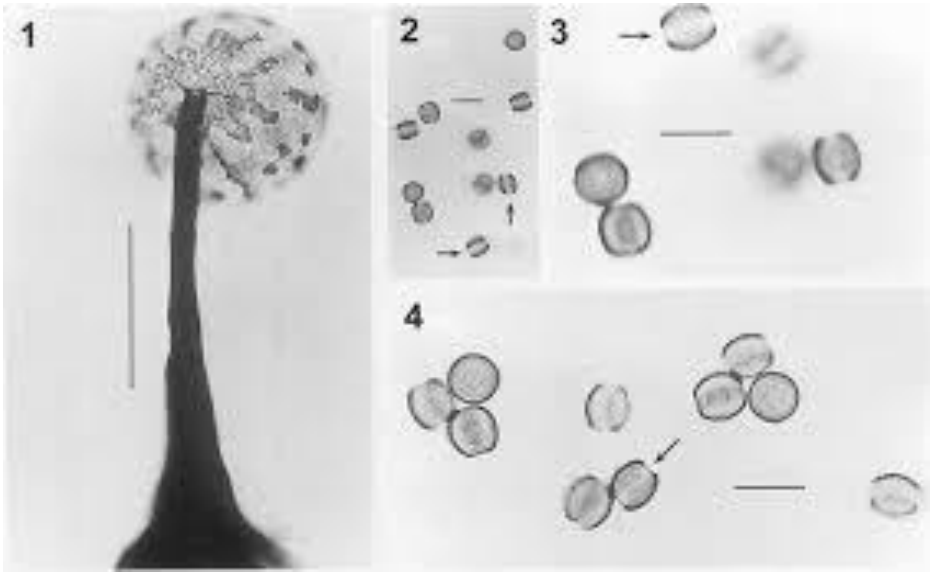
Your passion and mine combine as one.

Factoid: **Succulenticolous Myxomycetes** are slime moulds that grow only on Cacti and Succulents!

A group of myxos sporulate on and in decaying plant material, obtaining water and nourishment by the plant, even in dry periods. For example:

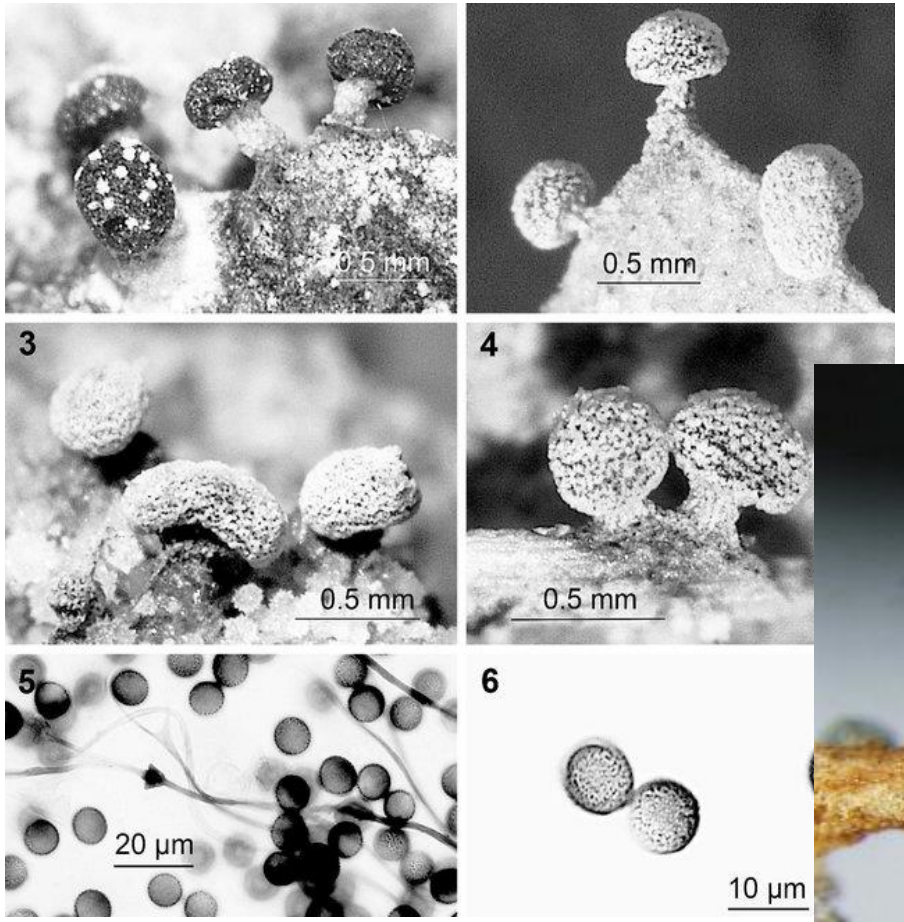
Cribraria zonatispora and *Didymium wildpretii*

Cribraria zonatispora



Images: Lado et al 1999, Nomenmyx, Myxotropic

Didymium wildpretii



Images: Mosquera et al 2007, Nomenmyx, Biodiversidad Mexicana, Myxotropic

Some sporulate on dried pith skeleton that remains when the watery tissues have decayed, and grow after sporadic rain. For example:

Physarum polygonosporum

Physarum polygonosporum

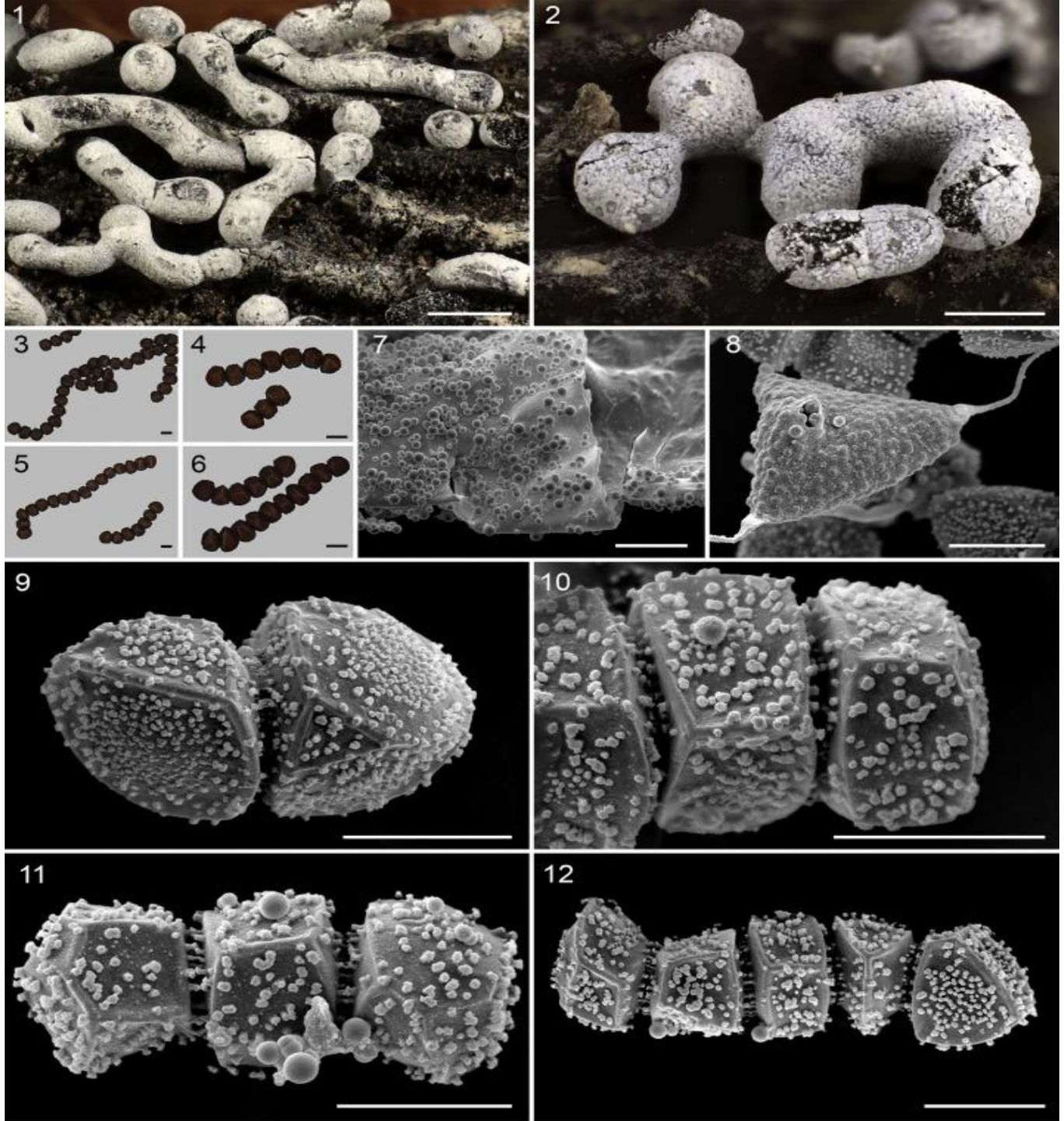


Image: Mosquera et. al 2018

Resources

- WA Herbarium, in particular the Collections staff.
- Western Weeds – a guide to weeds of WA – Hussey et al 2007
- ALA – Atlas of Living Australia
- AVH – Australia's Virtual Herbarium (*https://avh.chah.org.au/*)
- FloraBase – WA Herbarium (*https://florabase.dpaw.wa.gov.au/*)
- Nomenmyx – online nomenclatural system of Eumycetozoa (*nomen.eumycetozoa.com*)
- Myxotropic (Project) - https://www.myxotropic.org/home/
- Wikipedia – https://en.wikipedia.org/wiki/Mesembryanthemum_crystallinum
- VicFlora – Flora of Victoria - https://vicflora.rbg.vic.gov.au/flora/taxon/1a3032c1-c68e-428b-9c69-0bf6c10ffdf2