



The Monarto Mintbush

Prostanthera eurybioides

Journey



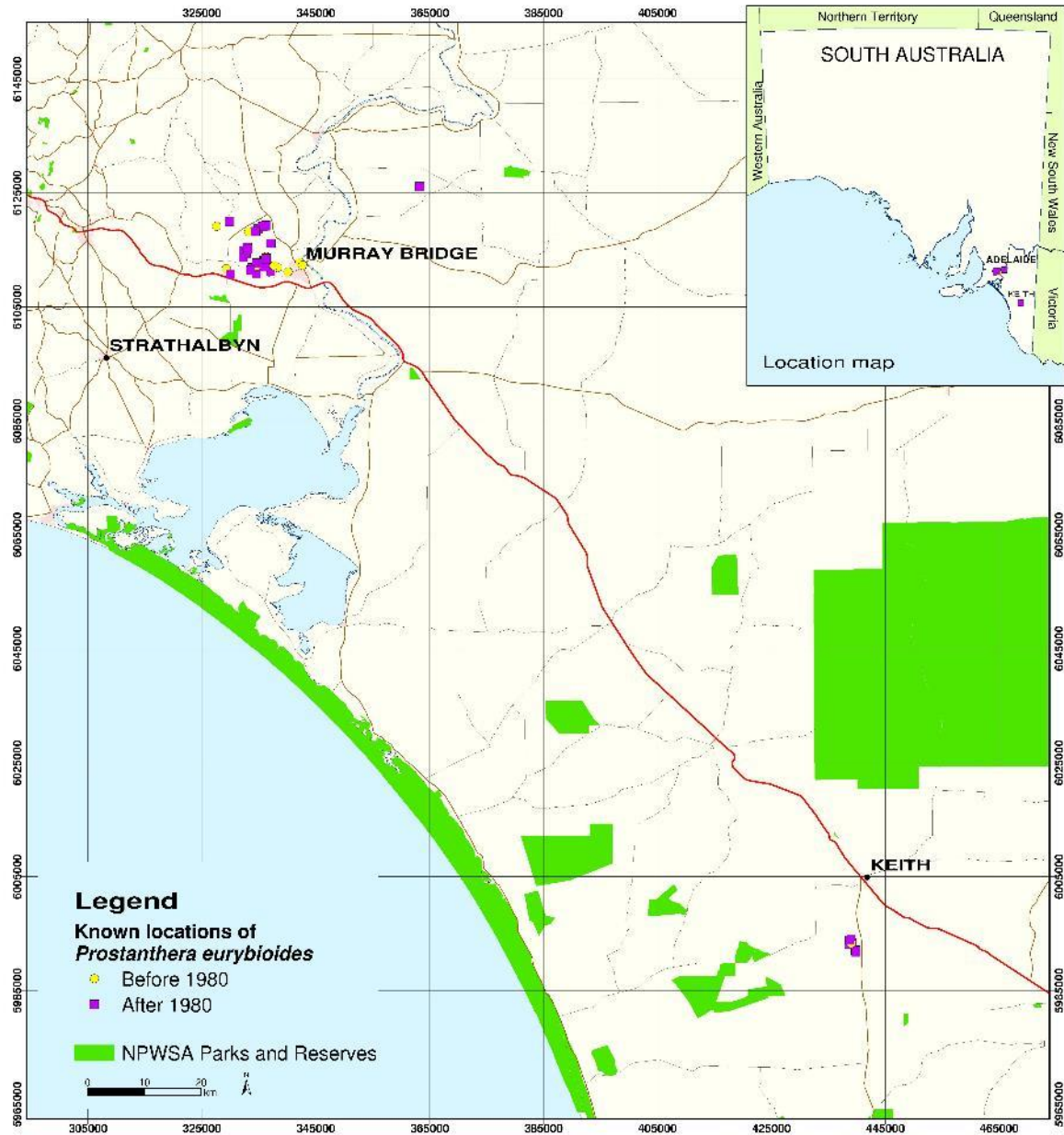
Natural Resources
SA Murray-Darling Basin



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The location of known populations of Monarto mintbush (*Prostanthera eurybioides*) in South Australia



Mt Monster 200 plants 1995

1996 - 99 Monarto 423 plants

Monarto 1000 plants 2003

2007 Monarto 31 plants
Drought impact

Recruitment post fire 2009

2008 - 09 *Genetic & Seed dormancy Studies*

Seeding event 2016

2014 Monarto 500 plants

Monarto 820 plants 2018

2019 Monarto 450 plants

1995

Mt Monster translocation 200 (seed)

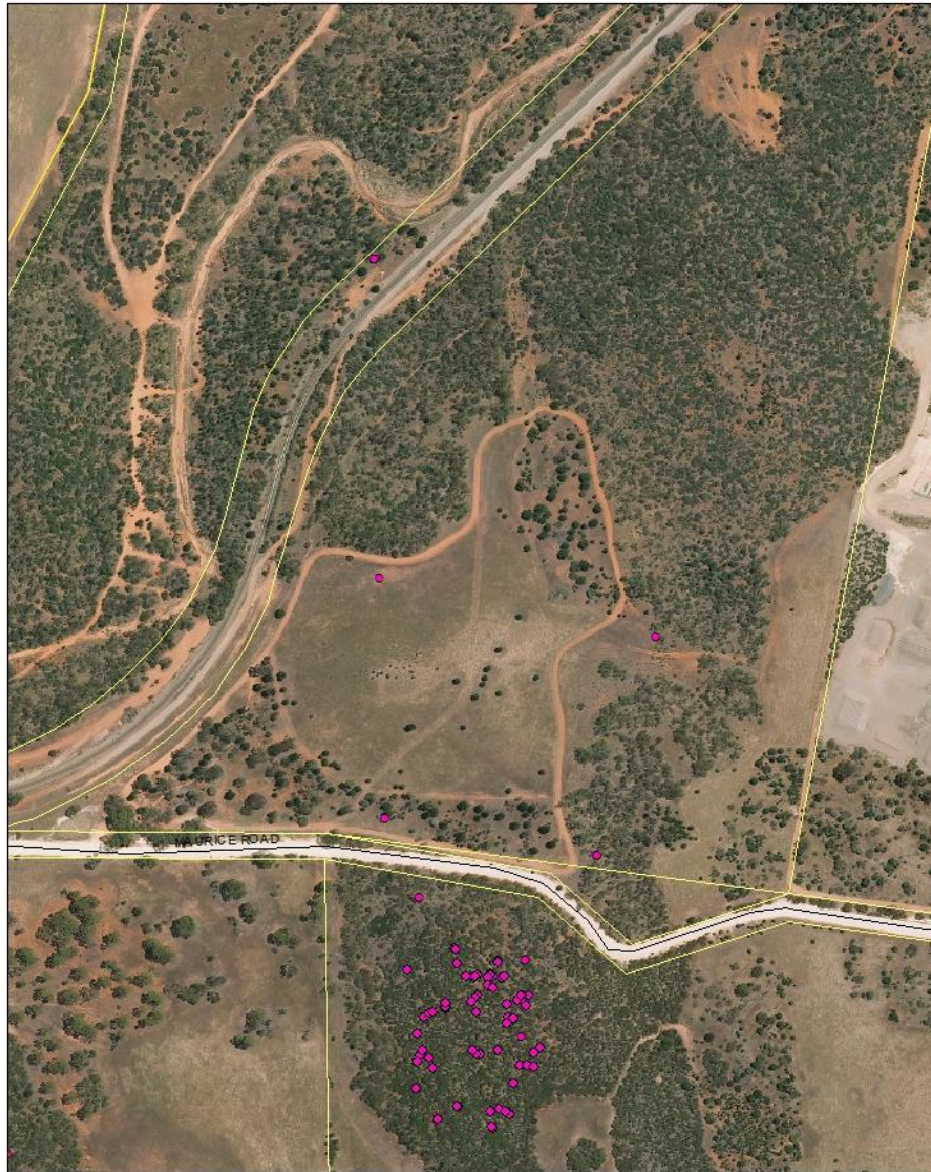


1996 – 99 Monarto translocation 423 (seed)



2003

Monarto translocation 1000 (cuttings)



2007

Monarto translocation 31 (tissue culture)



2008

Genetic study



Diversity HIGH

Inbreeding LOW

Differentiation MOD

- Monarto maintains high diversity and low inbreeding
- Not at risk of extinction due to genetic causes in short term
- Manage ecological threats (weeds, grazing etc) to increase survival and recruitment
- No support for crossing Mt Monster and Monarto populations

Overcoming physiological dormancy in *Prostanthera eurybioides* (Lamiaceae), a nationally endangered Australian shrub species

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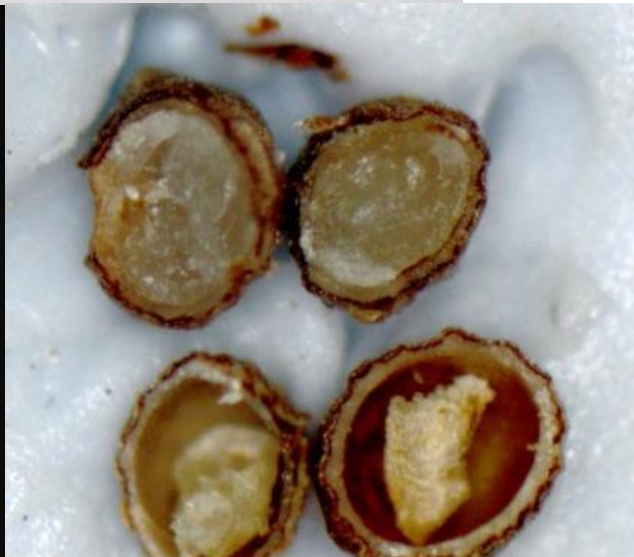
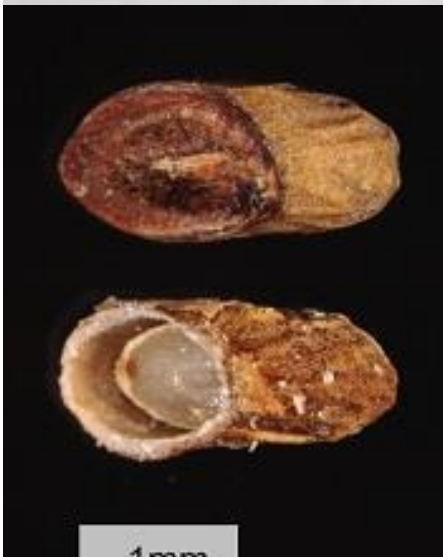
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Abstract. *Prostanthera eurybioides* (Lamiaceae) is an endangered shrub endemic to South Australia. Fruits consist of four mericarps enclosed by a persistent calyx, with each seed characterised by the presence of what we are defining as a mericarp plug. Research focussed on understanding the role of the mericarp plug in the germination process, determining seed dormancy classification and germination cues. Treatments tested included combinations of pulse dry heat (60–120°C) for up to 60 min, continuous application of gibberellic acid (100 mg L⁻¹), smoked water (10% (v/v)) and excision of the mericarp plug. Seed imbibition experiments dispelled the presence of physical dormancy. The mericarp plug was found to be acting as a mechanical barrier preventing germination. Pulse dry heat (80°C) significantly improved germination, as did removal of the mericarp plug. Smoked water inhibited germination. Based on germination response, seeds have been classified as having non-deep physiological dormancy, with maximum germination (86%) observed following a pulse heat treatment (80°C, 10 min) and removal of the mericarp plug. Natural mechanisms for overcoming dormancy are proposed.



likely to be viable

nonviable seeds



a viable intact seed shown with mericarp
plug intact and removed

Environmental responses

- Drought
- Fire





2014

Monarto translocated 500 (seed)



Simple learnings Monarto

- Watering in first summer (& second)
- Guards essential due to grazing pressure
- Plantings close to established vegetation did not survive
- Low survival rate (52%)
- If get past 2nd summer, good survival
- 70% flowering at 2yrs



Monarto Mintbush

(Prostanthera eurybioides)

Propagation methods for Nurseries

A germination method for Monarto Mintbush (*Prostanthera eurybioides*) suitable for nurseries to use was found by screening different treatments using Gibberellic Acid and fire cues (heat and smoked water).

The treatments were applied as a pulse indicating a short treatment time followed by incubation in moist conditions. These types of treatments are useful methods for nurseries to use, as once treatment has been applied the seeds can be sown directly into soil, or they can be dried and stored. Recent research has shown that pre-treated seeds remain in a non-dormant state for up to 3 years.



The propagation method is as follows:

- Heat the seeds to 80 °C for 10 mins, allow to cool then wash with hydrogen peroxide for 10 mins, rinse three times with water then soak the seeds in smoked water (10% (v/v)) for 24 hours. Seeds do not need to be rinsed and can be sown directly or dried and stored for several months.

This method is suitable for larger scale propagation. Using this method, seedlings germinated well in the potting soil and were easy to manage in the nursery for growing and potting on.



Germination Method

1. Float seed to reduce # of empty seed
 2. Pulse Dry heat (80°C, 10 min)
 3. 20% Hydrogen Peroxide 10 min
- 2 hour light
- 100% germination in 30 days



2015

Recruitment



2016

High seed production event Monarto



2018

Monarto 820 plants (seed)

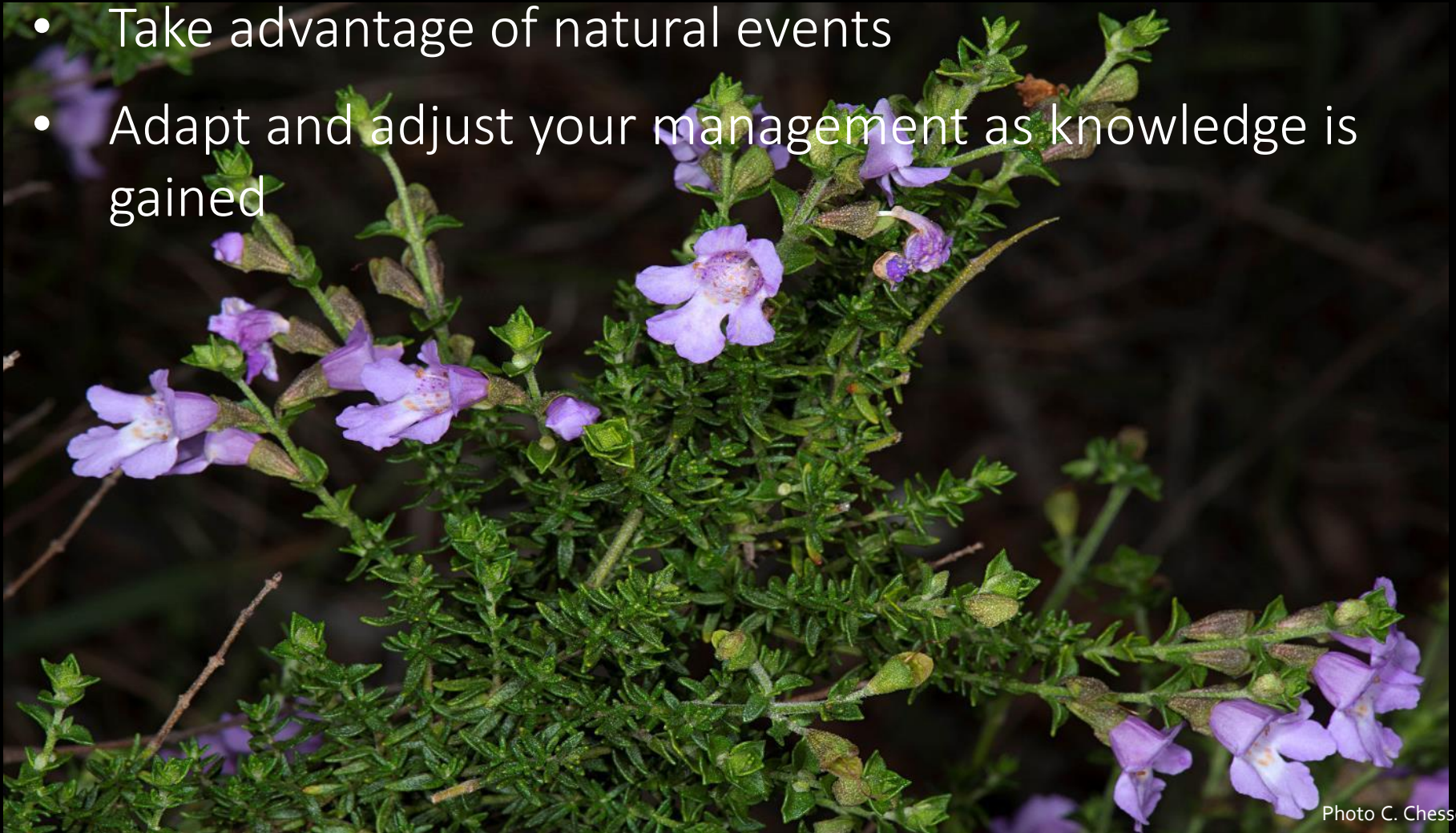


2019

Monarto 350 -400 plants (seed)

Key messages

- Understand the species biology and ecology
- Monitoring is critical to learning
- Take advantage of natural events
- Adapt and adjust your management as knowledge is gained



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Thank you

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Aboriginal Learning on Country Team Monarto

Clive & Claire Chesson



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