

Back from the brink

the story of
recovering Goldilocks

Antrophyum astroqueenlandicum

a critically endangered
rainforest fern

Acknowledgments

Justin Mallee, National Parks and Wildlife
Service

Karen Sommerville, Botanic Gardens Sydney

Lui Webber, Montane Ecological Solutions

Amalia Pahlow Tweed Landcare Inc Stage 2

Barbara Stewart, Wilsons Creek Huonbrook
Landcare Stage 1

Darren Bailey and the BRS team

Queensland Parks and Wildlife Service

Australian Network for Plant Conservation



GOLDILOCKS

a fairytale fern story

Border Ranges Lined Fern
Antrophyum astroqueenlandicum

Lost to the world

On 11th August 2006 *Antrophyum astroqueenlandicum* was listed as extinct in the wild under the *Queensland Nature Conservation Act 1992* and the *Nature Conservation (Wildlife) Regulation 2006*.

Happily, the fern was rediscovered as a single population during a 2015 survey near Tyalgum in Tweed Shire, Northern New South Wales. Now there has been discovery at several sites in the Huonbrook Valley near Mullumbimby, NSW. There are currently no known individuals anywhere in Queensland.

What can you do to help Goldilocks?

- Look after rainforest habitat by removing known weeds and allowing native regeneration.
- Join Landcare and other groups looking after the habitat of threatened species.

Learn how to identify the fern:

- They grow up to 150mm in size, but are usually around 50mm.
- They predominantly grow out of cracks in rock faces or boulders, usually andesite.
- The fronds are thick, brittle (be careful), narrow at the base and widest towards the ends like a stretched teardrop.
- Spores occur in mature plants and follow the main veins when viewed from underneath.

If you think you've spotted this precious fern, take a photo (including the spores) and a GPS location and contact your local Landcare group or Justin Mallee at Justin.Mallee@environment.nsw.gov.au

This fern is currently listed as Critically Endangered under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, the *Queensland Nature Conservation Act 1992*, and the *New South Wales Biodiversity Conservation Act 2016*.

A Recovery Action Plan to outline recovery actions has been developed by the Queensland Government Threatened Species Operations unit to support project funding from the federal government.

For further information contact us at Threatened.Species@des.qld.gov.au



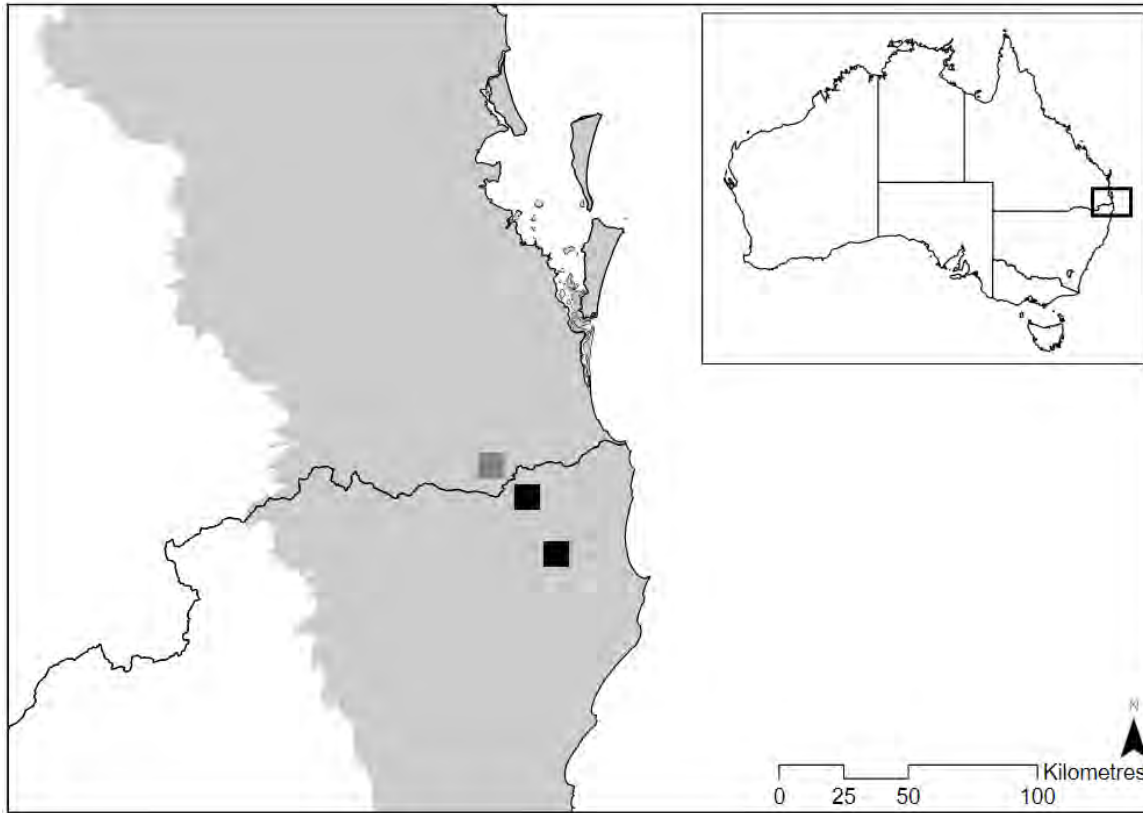
*This project received grant funding from the
Australian Government Saving Native Species Program*



The past story

- Lost to the world - declared extinct but rediscovered in Tweed Shire by Lui Webber in 2015, and Justin Mallee in Byron Shire in 2021. Not in QLD at this
- The reasons for rarity ...specific habitat requirements *Andesite rocks*, in sheltered locations near streams in SEQ and NNSW.
- Over collectionclimate effects.
- 2021 – 2023 : cross border partnership of State Government agencies in QLD, NSW and Landcare in NSW.
- Funding from Australian Government Saving Native Species Program
- This led to the ***Cross Border recovery of the Antrophyum austroqueenslandicum (stage 1).***

Cross Border recovery of *Antrophyum austroqueenslandicum* *Project area and habitat*



Map courtesy of QPWS Recovery plan



The story so far Actions / Methods

Stage 1 – completed 2023

1. Site survey, fern locations by Lui Webber
2. Training in ID for bush regeneration teams.
3. Monitoring points set up and baseline information collected.
4. Weeds treated and follow up monitoring completed
>8h under management (5 key sites).
5. Data loggers recorded micro habitat requirements
6. Environmental DNA (eDNA) samples collected and analysed.



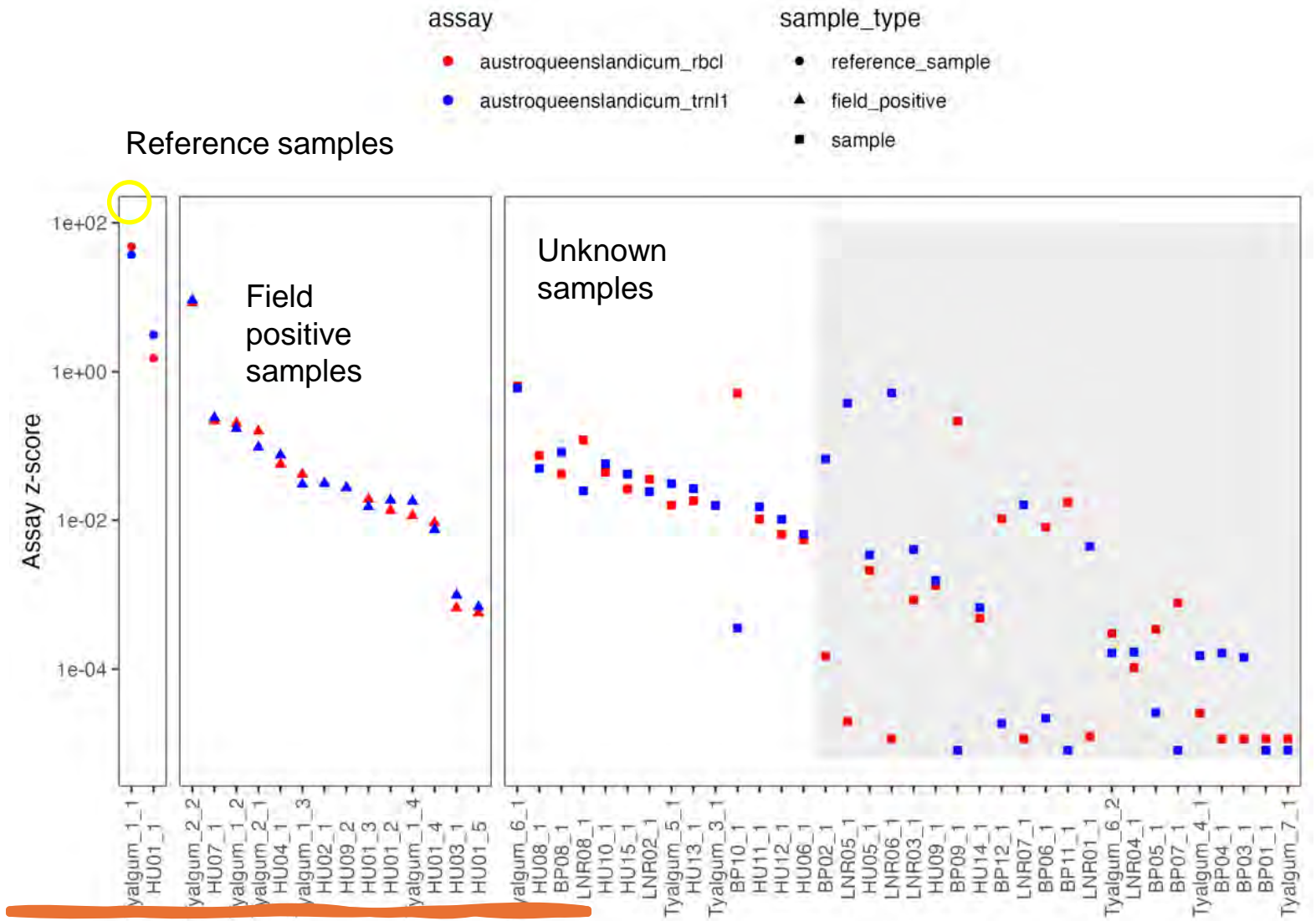


The story so far....

6. eDNA samples collected and analysed.

a targeted species qPCR approach, useful for more sensitive or sparse, elusive, or cryptic species.





Results from eDNA

Conclusion – A happy ending for Goldilocks

- Stage 1 complete and Stage 2 commencing
 - QPWS Recovery Action Plan draft complete
 - Identified knowledge gaps
 1. Undertake more research - life history and ecology.
 2. Research - propagation and germination methods.
 3. Work towards ex-situ conservation/and translocations.
 - Identify sites with secure tenure (map).
 - Monitor responses to recovery actions and threats.
 - Control threats.
 - Find more subpopulations
- eDNA
- Validate method to locate gametophytes.



Lui Weber

Acknowledgments

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NSW

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- Karen Sommerville, Botanic Gardens Sydney
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- Darren Bailey, Bushland Restoration Services.

Queensland

- Queensland Parks and Wildlife Service
- Australian Network for Plant Conservation



Lui Weber