BOTANIC GARDENS OF SYDNEY

Practical, relatable case studies of

Genomics informing translocation

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We acknowledge the Traditional Custodians of all the Lands we live and work on

Feasible? Yes!

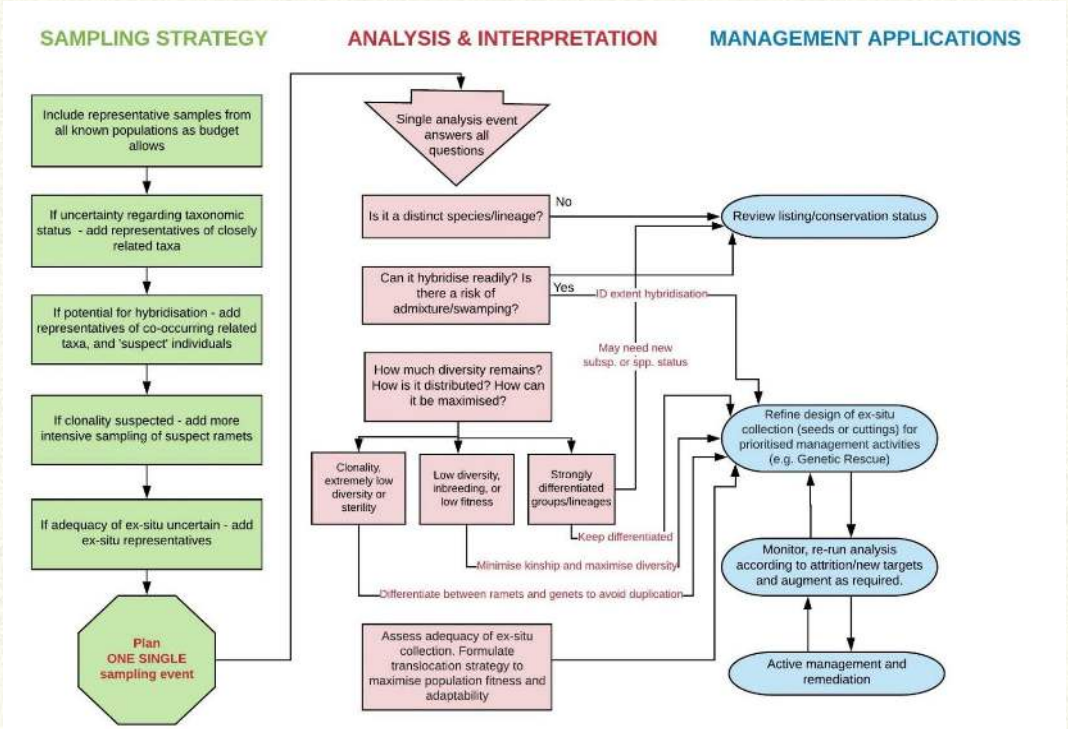
Genomic data generated from one sampling to address multiple questions!

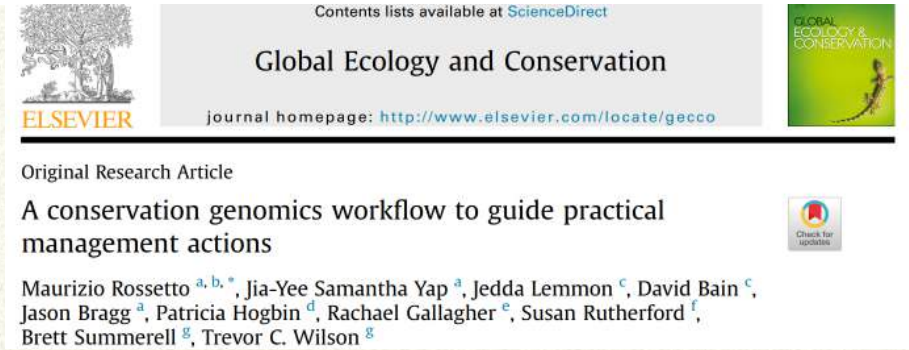
Results in 3-5 months!

Provides genomic-based solutions to guide conservation actions.

How does genomic data help?

When:
- ✓ creating an ex-situ collection
- ✓ optimising and managing existing collection
- ✓ conducting reintroduction
- ✓ reinforcing wild populations




Contents lists available at ScienceDirect

Global Ecology and Conservation

journal homepage: http://www.elsevier.com/locate/gecco

ELSEVIER

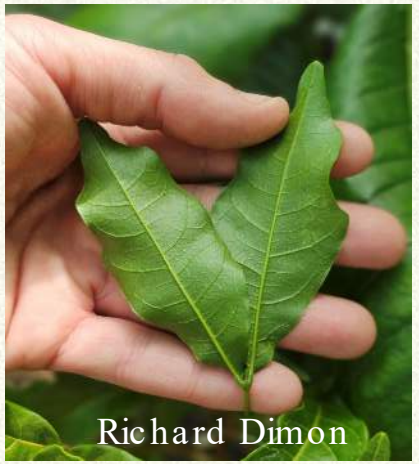
Original Research Article

A conservation genomics workflow to guide practical management actions

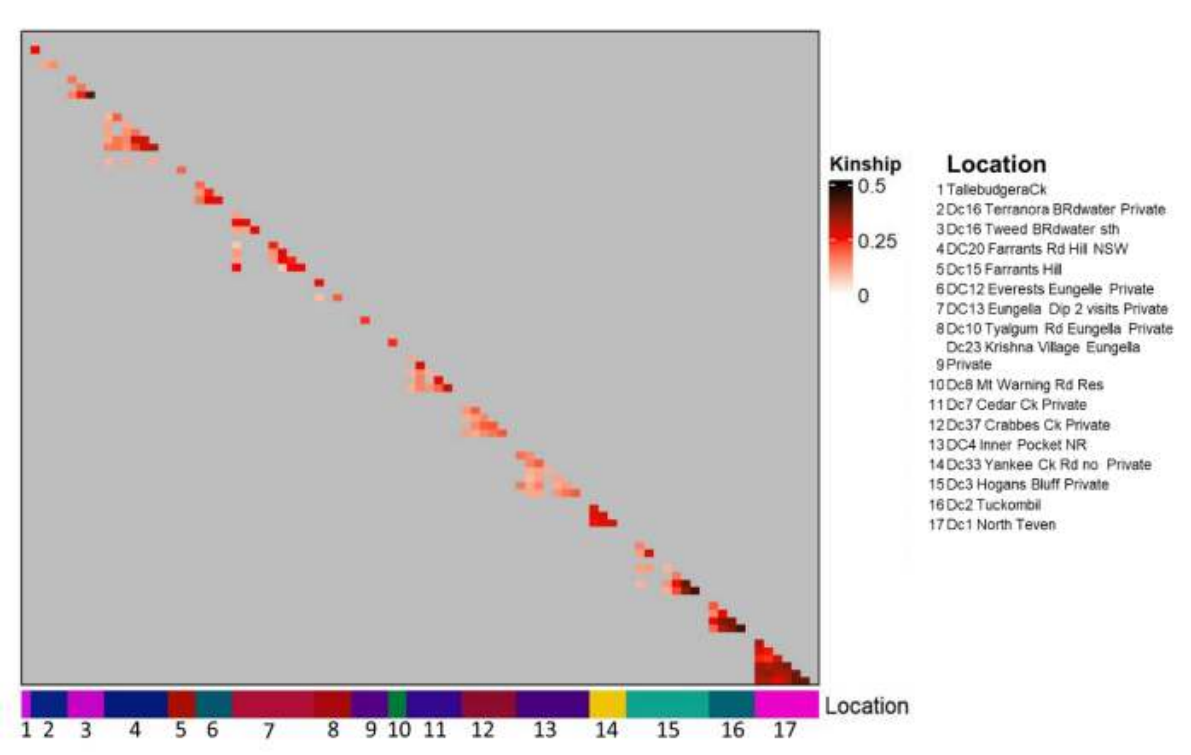
Maurizio Rossetto [a, b, *], Jia-Yee Samantha Yap [a], Jedda Lemmon [c], David Bain [c], Jason Bragg [a], Patricia Hogbin [d], Rachael Gallagher [e], Susan Rutherford [f], Brett Summerell [g], Trevor C. Wilson [g]

Diploglottis campbellii

Extremely small population (~100 individuals remaining), only present on private land. Limited recruitment.



Genomic output: Low levels of genetic variation, with high levels of inbreeding at each site.

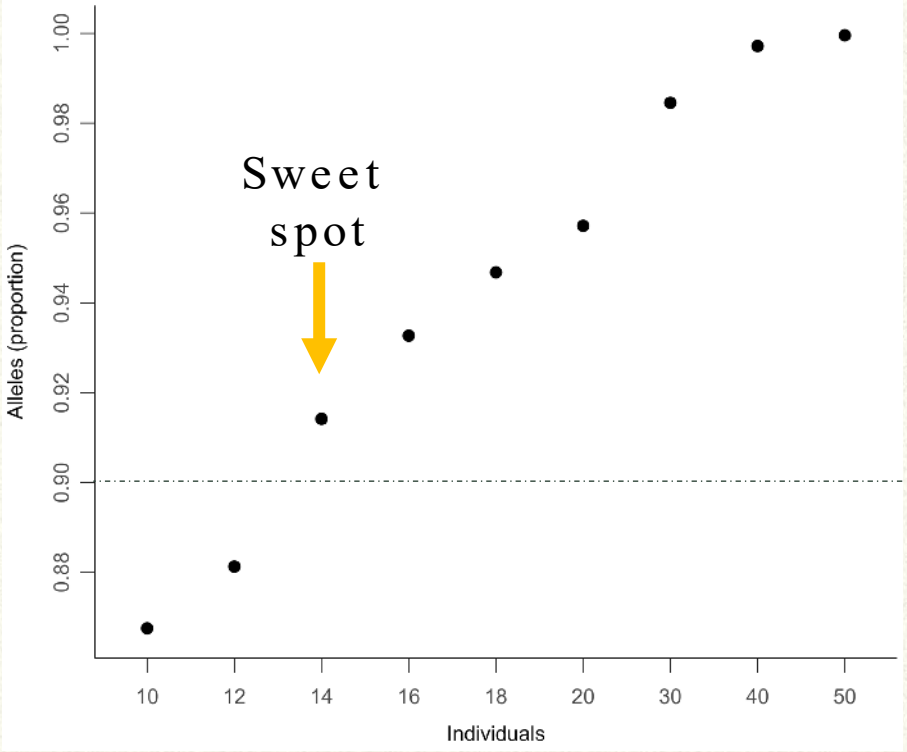


Genomic work funded by the NSW Environmental trust, report completed by Yap et al. 2023

Diploglottis campbellii

Recommendation: **translocation should include a min. selected 14 individuals to capture more than 90% of species' diversity.**

Genomic diversity optimisation output

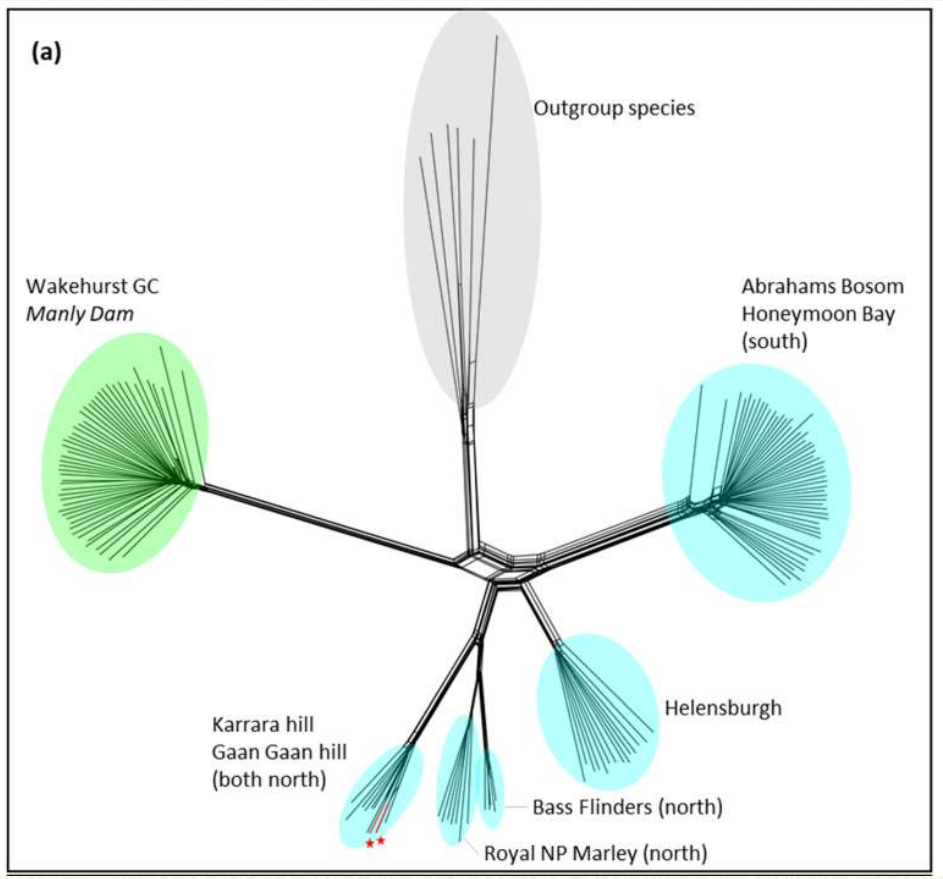


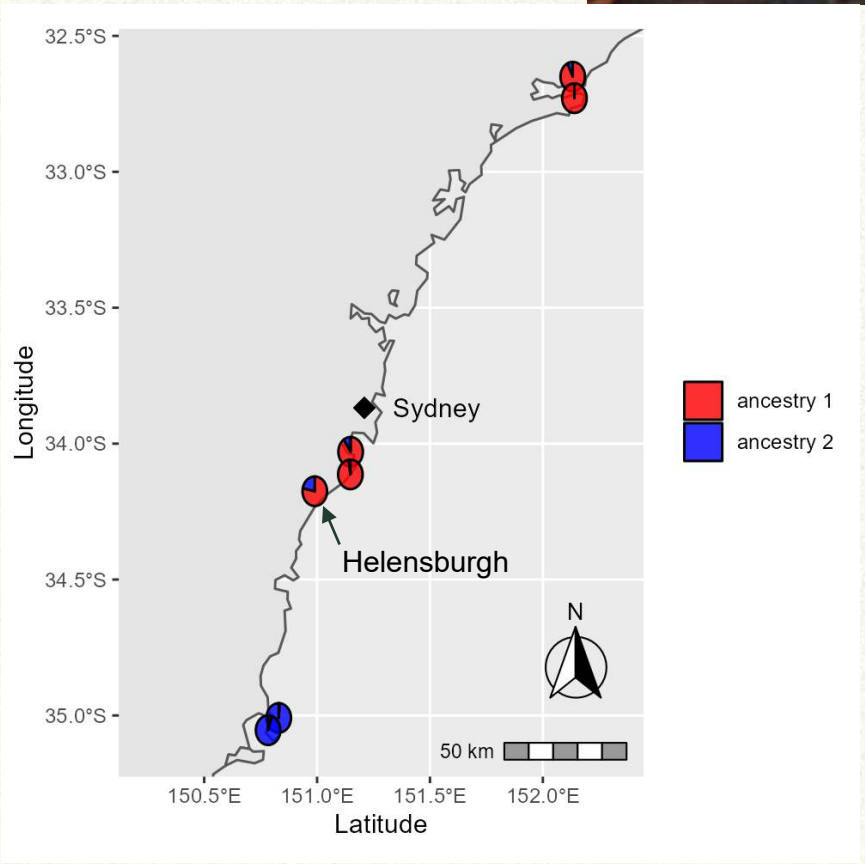
Genomic work funded by the NSW Environmental trust, report completed by Yap et al. 2023

Prostanthera densa

Species info given: Disjunct distribution. No seed production.

Genomic findings: Genetically distinct species, differentiated genetic groups detected.



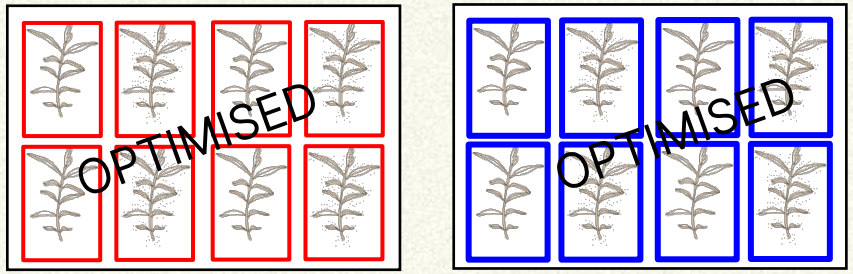


Genomic work funded by the NSW SoS program, published in Rossetto et al. 2023

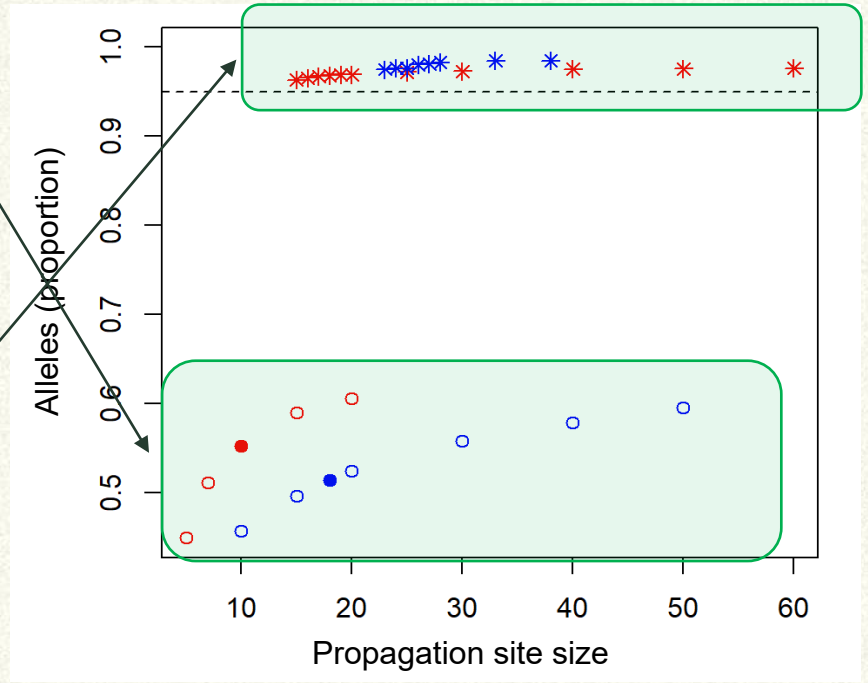
Prostanthera densa

Recommendation: **Conduct genetic rescue based on optimised scenarios.**

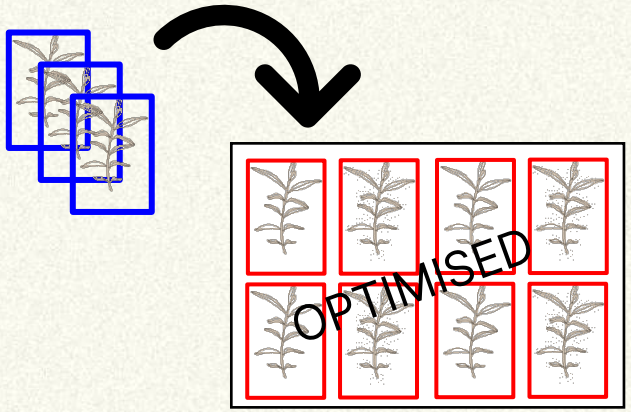
Scenario 1: Optimised planting for each genetic group



Scenario 2: Optimise planting representing species' diversity



For example,



Genomic work funded by the NSW SoS program, published in Rossetto et al. 2023

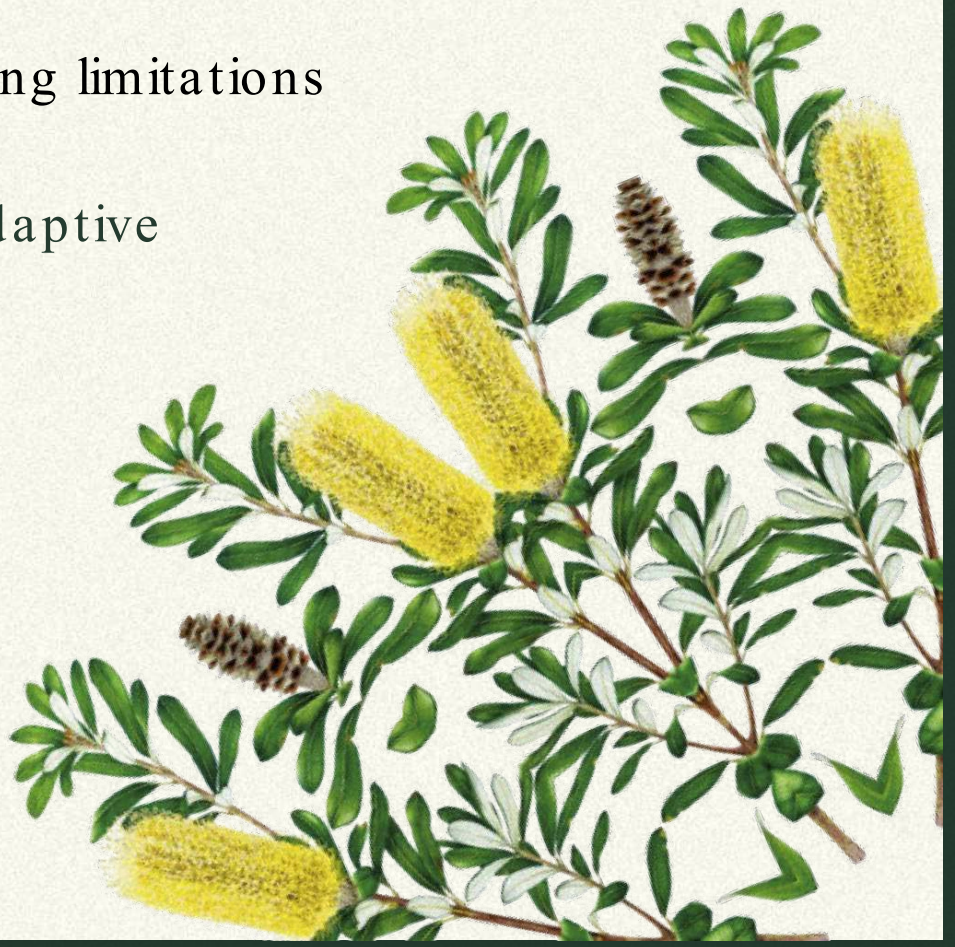
Conclusions

Genomics is a powerful tool to support threatened species management:

- especially when there are time, labour or funding limitations

- helps ensure enhanced fitness and maximal adaptive resilience

- supports long-term species conservation



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NSW GOVERNMENT

Saving our Species Program

Thank You

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