Challenges in ex situ conservation of rainforests in the South Pacific region

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The Royal Botanic Garden Sydney

The Australian Botanic Garden Mount Annan

The Blue Mountains Botanic Garden Mount Tomah

Centennial Parklands

The Domain

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Review

Saving rainforests in the South Pacific: challenges in *ex situ* conservation

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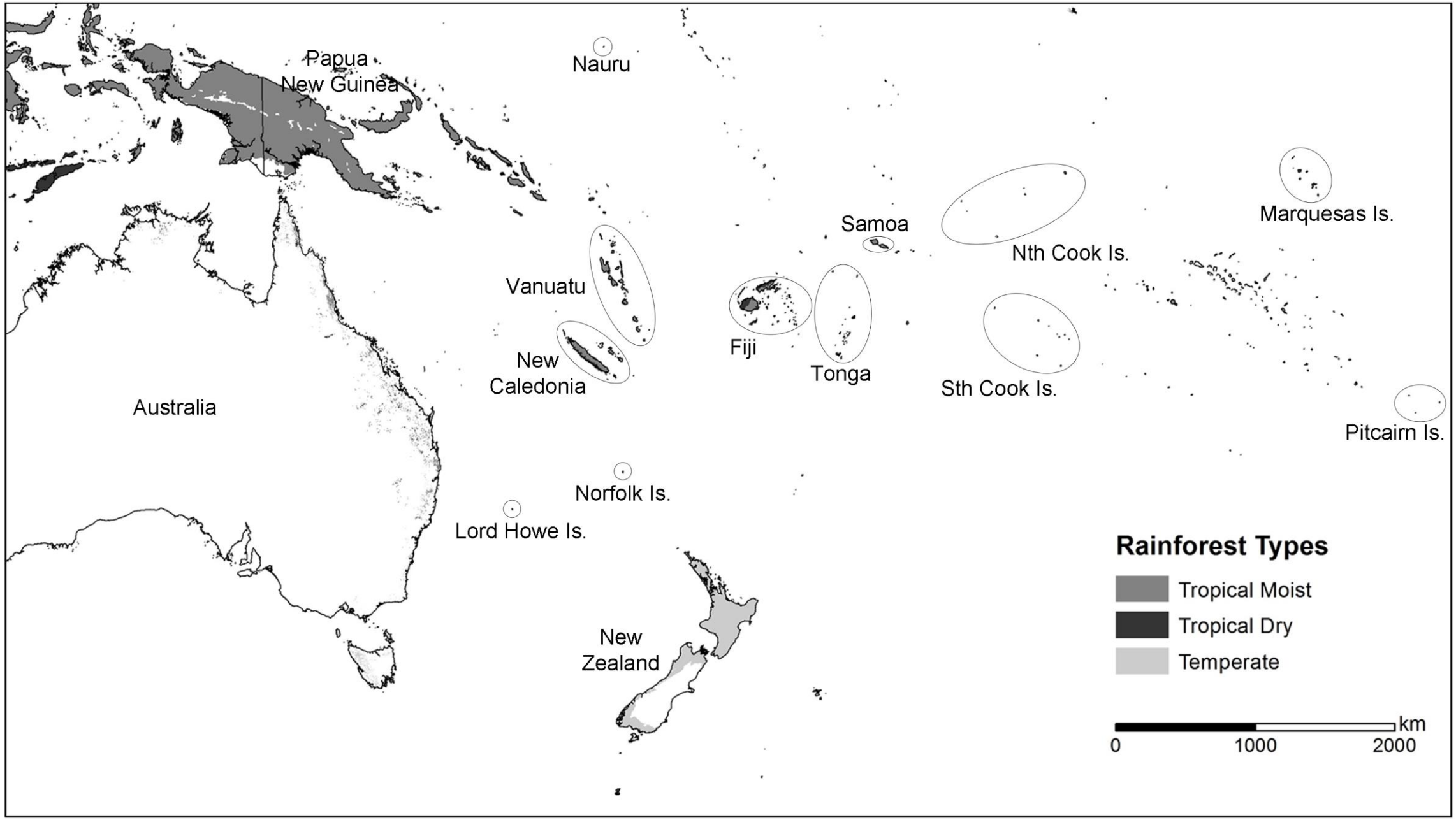
Fruit and seed of Kohekohe (*Dysoxylum spectabile*). Photo credit: R Southward.

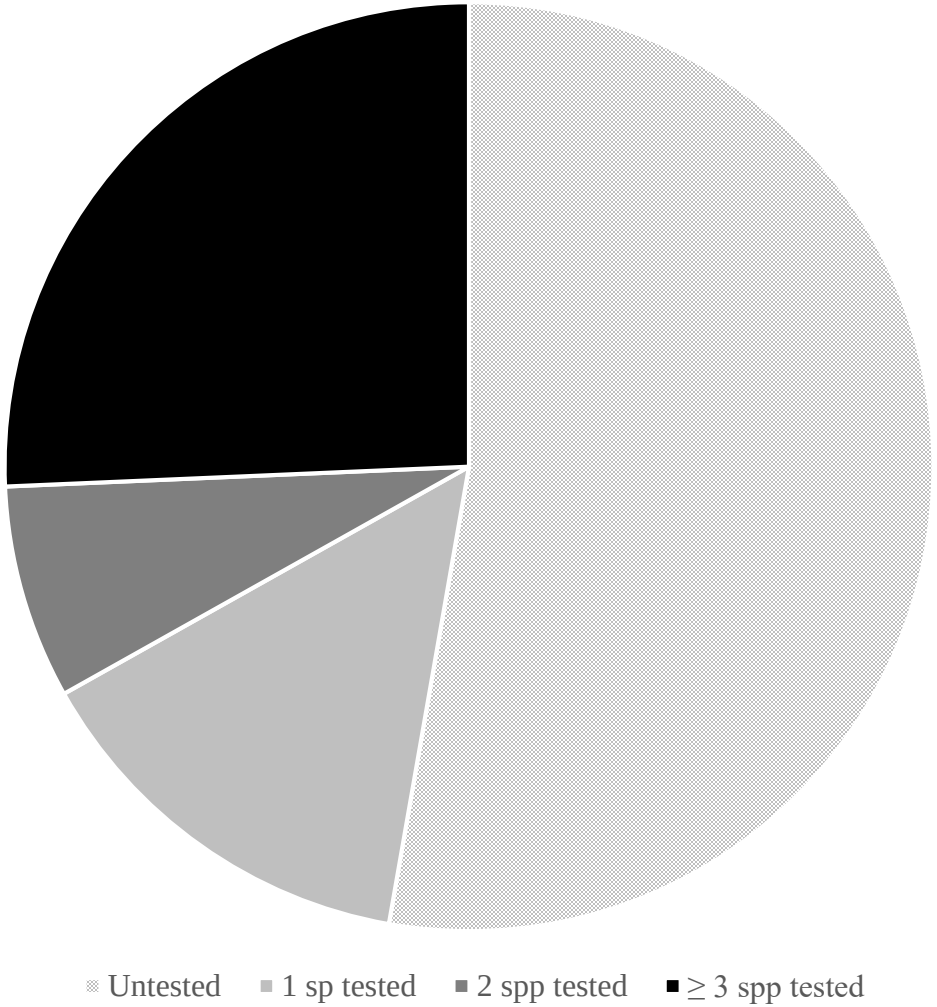


Pre-disturbance distribution of rainforest across the South Pacific

Extent of diversity and endemism in rainforest ecosystems of the South Pacific

Rainforest biome	Extent of primary rainforest (km^2)		Diversity of indigenous seed plants		
	Historic	Current	No. spp	% End.	Tree spp ha^{-1}
Tropical-subtropical rainforest					
Australia	21,006	13,053	>1788	45	81-85
Fiji	11,346	3,162	971	66	85-124
New Caledonia	14,523	3,451	1888	88	71-96

The small seeds of Whitewood (*Endospermum medullosum*) and the large seeds of the Hairy Walnut (*Endiandra pubens*) are both highly sensitive to drying.
Photo credits: P Macdonell (l), K Hamilton (r).



n=1503 genera

The proportion of rainforest genera in the South Pacific for which data on seed storage behaviour is currently lacking.

Desiccation sensitive *Cryptocarya microneura* (Lauraceae) in sterile culture (l) and following successful transfer to growing medium (r).

Photo credit: N Emery (l), K Sommerville (r).

The conservation focus and capacity of *ex situ* conservation facilities in the South Pacific.

Institution	Location	Facilities			Conservation focus
		S/bank	T/cult.	Cryo	
Australia					
Australian National Botanic Gardens	Canberra, Australian Capital Territory	*			Australian native species
Australian Botanic Garden, Mount Annan	Mount Annan, New South Wales	*	*	*	Australian native species
Australian Grains Genebank	Horsham, Victoria	*			Grains, crops and crop wild relatives
Botanic Gardens of South Australia	Adelaide, South Australia	*			Australian native species
Brisbane Botanic Gardens	Toowong, Queensland	*			Australian native species
CSIRO Australian Tree Seed Centre	Canberra, Australian Capital Territory	*			Australian native and non-native trees
George Brown Darwin Botanic Gardens	Darwin, Northern Territory	*			Australian native species
Griffith University	Brisbane, Queensland		*	*	Research only
Hunter Region Botanic Gardens	Heatherbrae, New South Wales	*			Australian native species
Kings Park and Botanic Garden	West Perth, Western Australia	*	*	*	Australian native species
North Coast Regional Botanic Garden	Coffs Harbour, New South Wales	*			Australian native species
Royal Botanic Gardens, Victoria	Melbourne, Victoria	*	*		Australian native species
Royal Tasmanian Botanic Gardens	Hobart, Tasmania	*	*		Australian native species
Threatened Flora Seed Centre	Perth, Western Australia	*			Australian native species
Fiji					
SPC Centre for Pacific Crops and Trees	Narere, Suva		*	*	Taro, yam, s/potato, banana, cassava, breadfruit
SPC Pacific Islands Tree Seed Centre	Narere, Suva	*			Pacific Islands native and non-native trees
Koronivia Research Station	Nausori		*		Agricultural research
Legalega Research Centre	Nadi	*			Breadfruit field genebank
New Zealand					
Margot Forde Germplasm Centre (MFGC)	Palmerston North	*			Pasture and turf grasses
New Zealand Indigenous Flora Seed Bank	Palmerston North (hosted by MFGC)	*			New Zealand native species
Plant and Food Research Limited	Lincoln, Canterbury	*	*		Vegetable, fodder and cereal crops
Plant and Food Research Limited	Palmerston North		*	*	Tuber and fruit crops
Plant and Food Research Limited	Motueka		*		Berry fruits
Cawthron Institute	Nelson			*	Micro-algae and aquaculture species
Papua New Guinea					
NARI Highlands Regional Centre	Aiyura, Eastern Highlands Province		*		Taro, sweet potato, banana, cassava, yams, aibika
NARI Islands Regional Centre	Keravat, East New Britain		*		Food and cash crops
Samoa					
The University of the South Pacific	Apia		*		Taro, yams, sweet potato, bele, breadfruit, vanilla

- Conclusions

- Rainforests in the South Pacific are under threat as a result of on-going logging, clearing for agriculture or mining, introduced species and other anthropogenic activities.

- Ex situ conservation offers a means to prevent the extinction of rainforest plants and provide a source of material for ecosystem restoration.

- Research to determine which species are suitable for seed banking, and which require alternative conservation methods, is urgently required.

Meeting GSPC targets

1. Foster regional collaboration on research and germplasm conservation of rainforest species
2. Focus on taxa common across the region to get best value out of research e.g. Citrus (crop wild relatives) or Myrtaceae species affected by Myrtle Rust, an emerging disease threat in the region.

Saplings (l) and conservation stand (r) of Whitewood (*Endospermum medullosum*).
Photo credit: J Doran

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