



# Going, going, and almost gone. Current efforts to save the Macleay Floodplain Rainforest.



## Rainforest Connections 2024

The Macleay Floodplain Rainforest Project 2024 is supported by NCLLS and Macleay Landcare Inc.

Andy Vinter  
Senior Land Services Officer  
North Coast Local Land Services  
Louis Marree  
Landcare Coordinator  
Macleay Landcare Network Inc

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# The Macleay River Floodplain Rainforest

The Macleay River coastal floodplain covers an area of approximately 50,000ha on the mid-north coast of NSW.

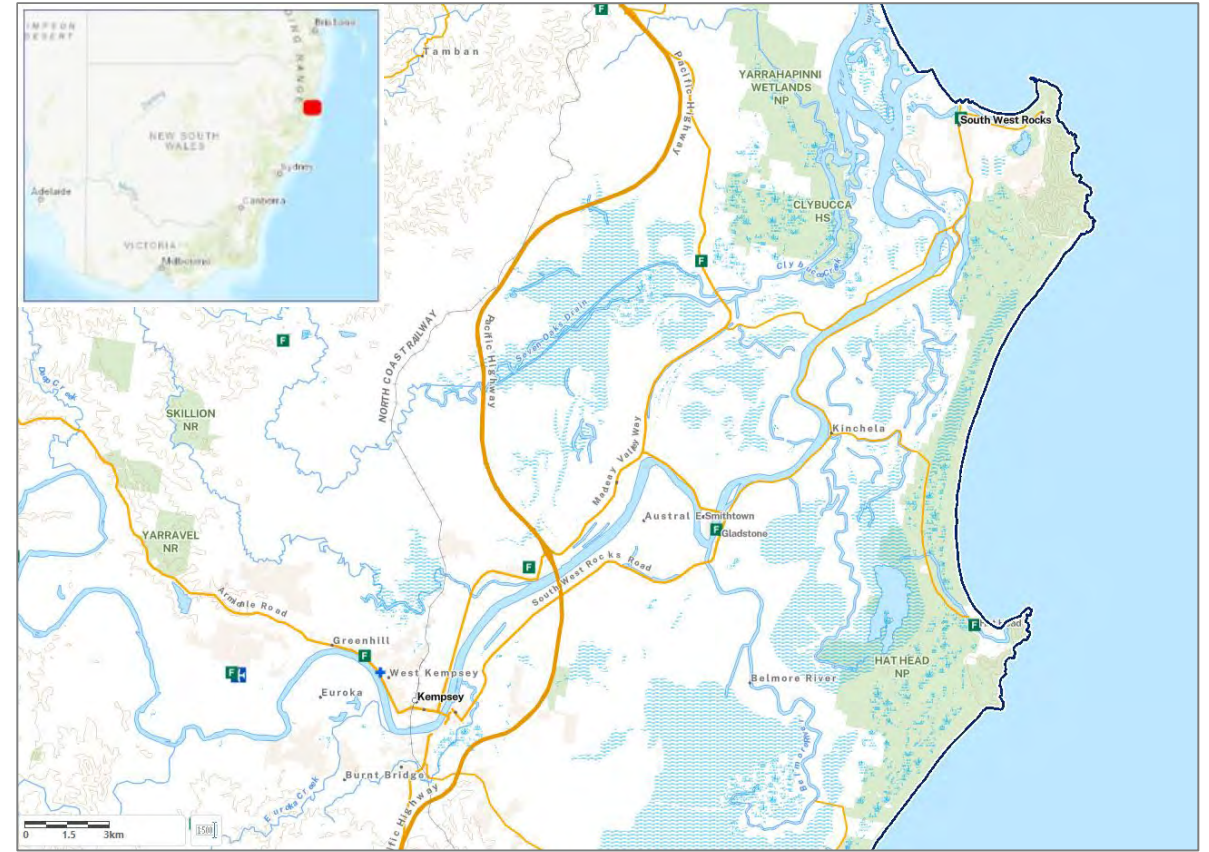
It sits within the lands of the Thunggutti / Dunghutti Nation.

The cover of lowland rainforest has been considerably reduced by agricultural development and settlement.

The remaining patches of rainforest have intrinsic value as assemblies of plant species and genetic populations, and conceivably of heritage value.

A restoration program is needed to maintain their value into the future.

Tree planting programs can facilitate the expansion of lowland rainforest on the floodplain.





# Extent of lowland rainforest on the Macleay Floodplain

The Austral Eden soil landscape appears to be the best predictor of floodplain rainforest in the Macleay.

It comprises alluvial levees of the lower Macleay River at elevations from 10m at Kempsey to <1m at Jerseyville.

Lowland rainforest was likely preferentially cleared as it occupied the more elevated lands suitable for settlement and agriculture.

Based on soil landscapes mapping lowland rainforest may have previously occupied 6340 ha.

Now less than 15 ha or 0.24% remains.

A survey report of three rainforest remnants by Alex Floyd in 1984 is the only reference describing this vegetation type on the Macleay floodplain.



Map (left) Likely distribution of Lowland Rainforest and Wetland plant communities on the Macleay River Floodplain based on Soil Landscapes (LLS 2024). Austral Eden Factsheet: Eddie, M.W. 2000, Soil Landscapes of the Macksville and Nambucca 1:100 000 Sheets - Department of Land and Water Conservation, Sydney.



# What remains of the Macleay Floodplain Rainforest today?

11 sites identified from aerial imagery.

1250 m<sup>2</sup> to 2 ha in size.

All on private property with cattle grazing.

Mostly continuous patches but often partially cleared with isolated trees.

Intergrades with Paperbark, Swamp Oak, and Forest Red Gum.

Relatively unchanged (from 1956 at least).

Small remnants in paddocks.



A vital seed resource.

Fig trees provide the canopy architecture and food resource to attract seed dispersers.



Only three of the eleven remnants are like this.

One of the few Forest Red Gums left on the floodplain.



# The Macleay Floodplain Rainforest Project 2024

- Engaging with remnant landholders.
- Surveys and assessment.
- Negotiating restoration programs.
- Remnant restoration plans.
- NCLLS funding initial fencing and Macleay Landcare funding on-going vegetation works.
- Expert advice and Scientific Licencing.



Kinchela remnant 1956 to 2024.



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# Kinchela remnant





# Kinchela Remnant

Remnant 2 ha in size.

Another 3ha of fragmented remnant on adjoining property.

59 native species (Floyd 1984 & 2023 survey).

Large Figs (Superb, Strangler, and Small-leaved Fig) and Bangalow Palm dominate the upper canopy.

Rough-leaved Elm, Whalebone, and Giant Water Gum are most common.

Myrtle Ebony, Snow Wood, and Hard Quandong less common.

Silver Myrtle, Coogera, Yellow Tulipwood, Native Pomegranate, Pepperberry in very low numbers.

Wetland trees surround the rainforest.

16+ weed species (2023)

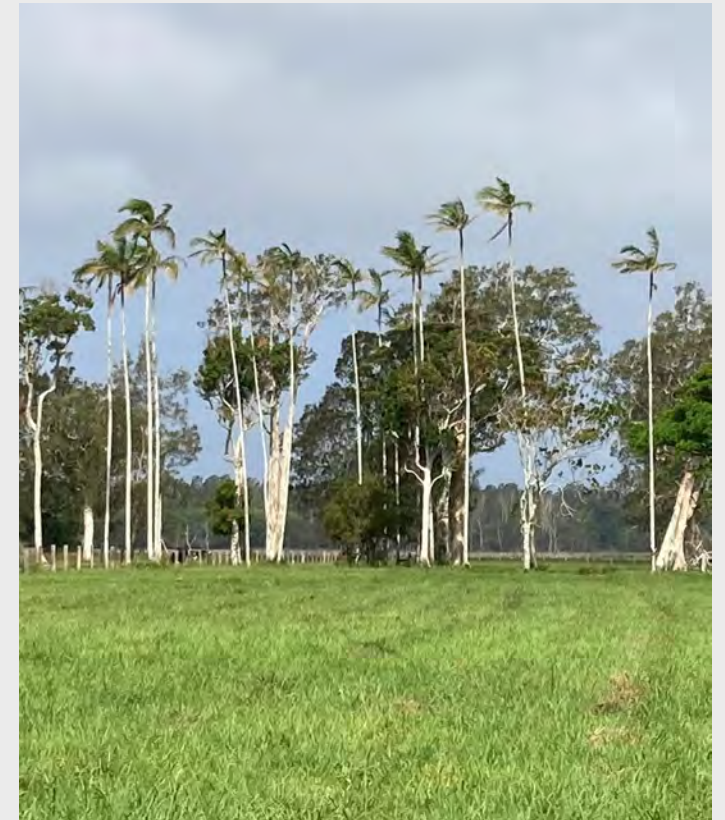
Weeds are common but not dominant.



One of a kind: Yellow Tulipwood  
(*Drypetes deplanchei*)



Isolated Bangalow Palms.





# Kinchela remnant - 20x50m plot survey



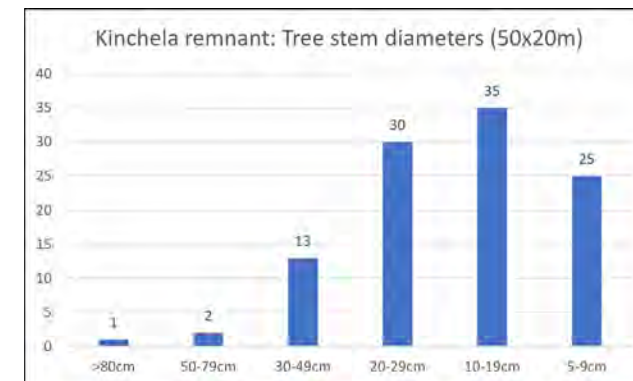
Remnant surveys by observation and a 20x50m plot (NSW Biodiversity Assessment Method).

Tree size classes dominated by <30cm DBH (85%).

Low recruitment (<1cm dia.) of native trees, shrubs, and vines (n=9).

Weeds comprise 30% of regenerating and understorey plants (<1cm dia.).

High grass cover due to relatively high light levels.





# Kinchela Remnant Restoration Plan

Identifies work areas including expansion.

Sets site specific bush regeneration objectives.

Recommended species selections for rainforest and wetland plantings.

Planting of under-represented or identified missing species.

Rainforest plantings proposed at 2m density.

Successional mix:

- 20% pioneers;
- 15% early secondary;
- 15% late secondary;
- 50% mature.

Monitoring protocol.



Management areas and planting sites 1-4. Key: Blue - Fencing and bush regeneration; Green - Rainforest plantings; Red - Wetland plantings. Plot size not to scale



# Rainforest revegetation at Summer Island Rd

Initiated by Macleay Landcare with small scale funding.

Over 1km of Macleay River frontage (860m of plantings).

Plantings started in 2018 at #361.

Expanded to include four adjoining properties by 2022.

Approximately 1500 seedlings planted in total.

600 plantings on Site #361 (at 16/5/24).

Regular volunteer events.



Photo-monitoring: 2019 (left); 2024 (right).



# Species selection at Summer Island Rd

Audit of Site #361:

- 568 plantings
- 65 species used.

Genetic diversity (by growers):

- 28 spp. 3+ sources.
- 40 spp. < 3 sources.

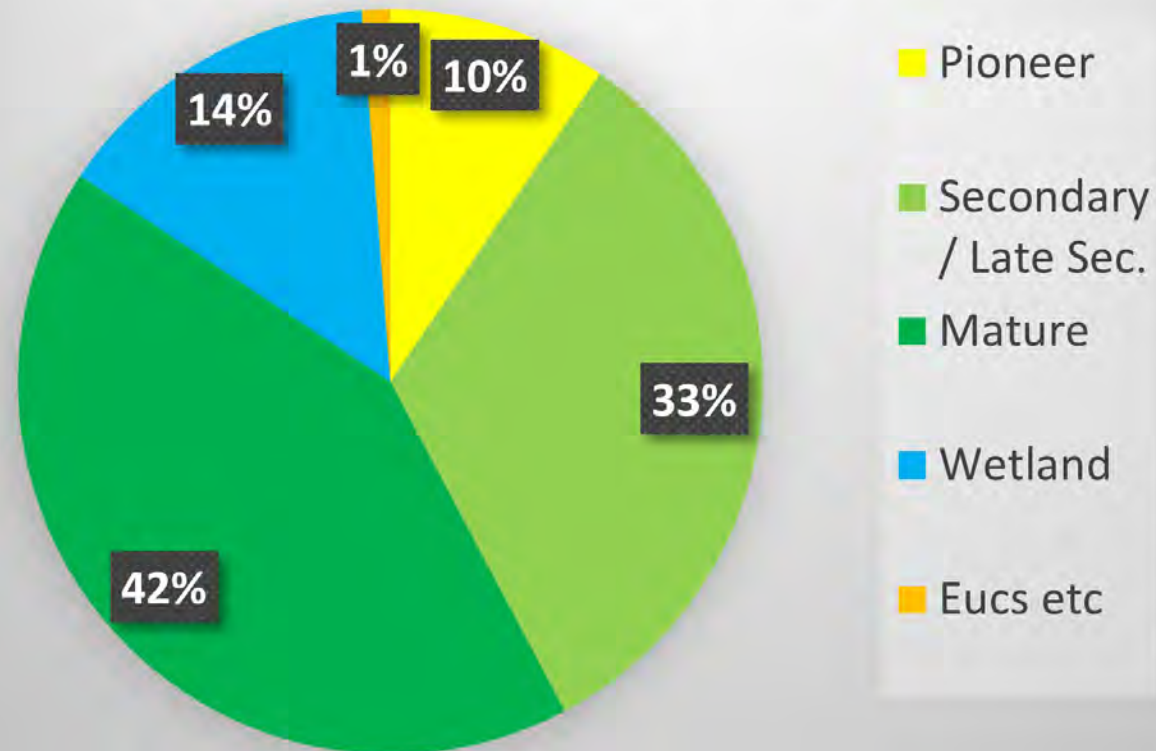
Rainforest, wetland (inc bank), Euc spp.

Rainforest species composed of a mix of pioneers, secondary, and mature phase species.

Selected from Floyd species list.

Placement based on site conditions.

**Summer Island Site #361 plantings by successional stage and type (n=586)**



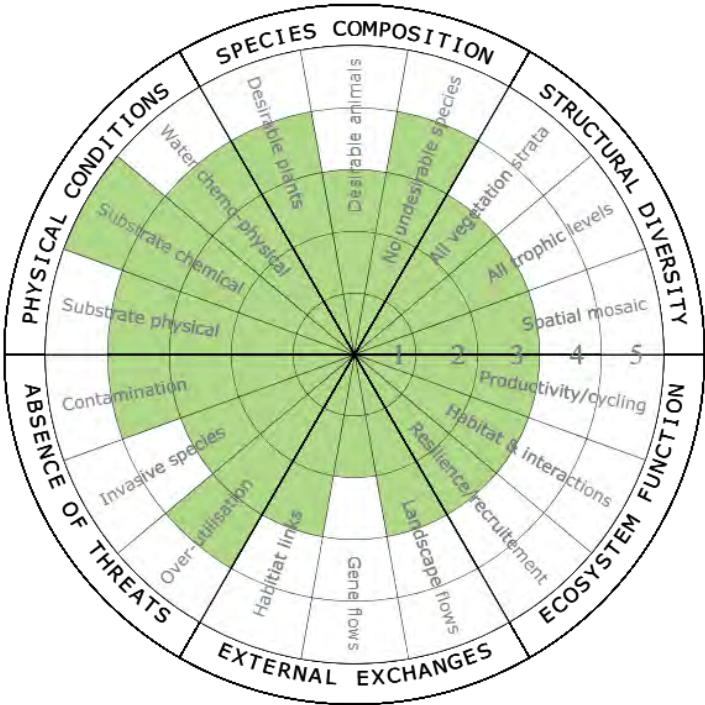
Above: Planted Swamp Turpentine.  
Other selective re-introductions: Forest Red Gum, Swamp Turpentine, Cabbage Tree Palm, White Booyong, Black Booyong, Yellow Carabeen, and Rosewood.



# Using the Recovery Wheel to evaluate ecosystem recovery at Summer Island Rd 2018-2024



Category	% improvement	Potential for improvement
Absence of threats	57%	Improve flood resilience by extra planting of flood tolerant species on lower bank. Treat weed populations upstream (limited control).
Physical conditions	8%	Support revegetation of slumping sites.
Species composition	175%	Re-introduce absent rainforest species (compared to reference site). Control Fox. Native fauna species likely to improve.
Community structure	125%	Re-introduce native understorey and groundcovers (Lomandra, ferns etc) as canopy develops. Continue maintenance and infill plantings.
Ecosystem function	125%	Maintain site management to allow ecosystem functions to improve over time.
External exchanges	33%	Continue to maintain and expand links with neighbouring sites/properties with Landcare support.



ASSESSOR: Andy Vinter  
 SITE: Summer Island

DATE: 2028-09-21

2024: 3.38 Stars ★ ★ ★

# Restoring the floodplain rainforest as a network of sites.

The conservation of the Macleay Floodplain Rainforest is about the conservation of plant populations and a genetic resource.

It needs connectivity for the exchange of genetic material.

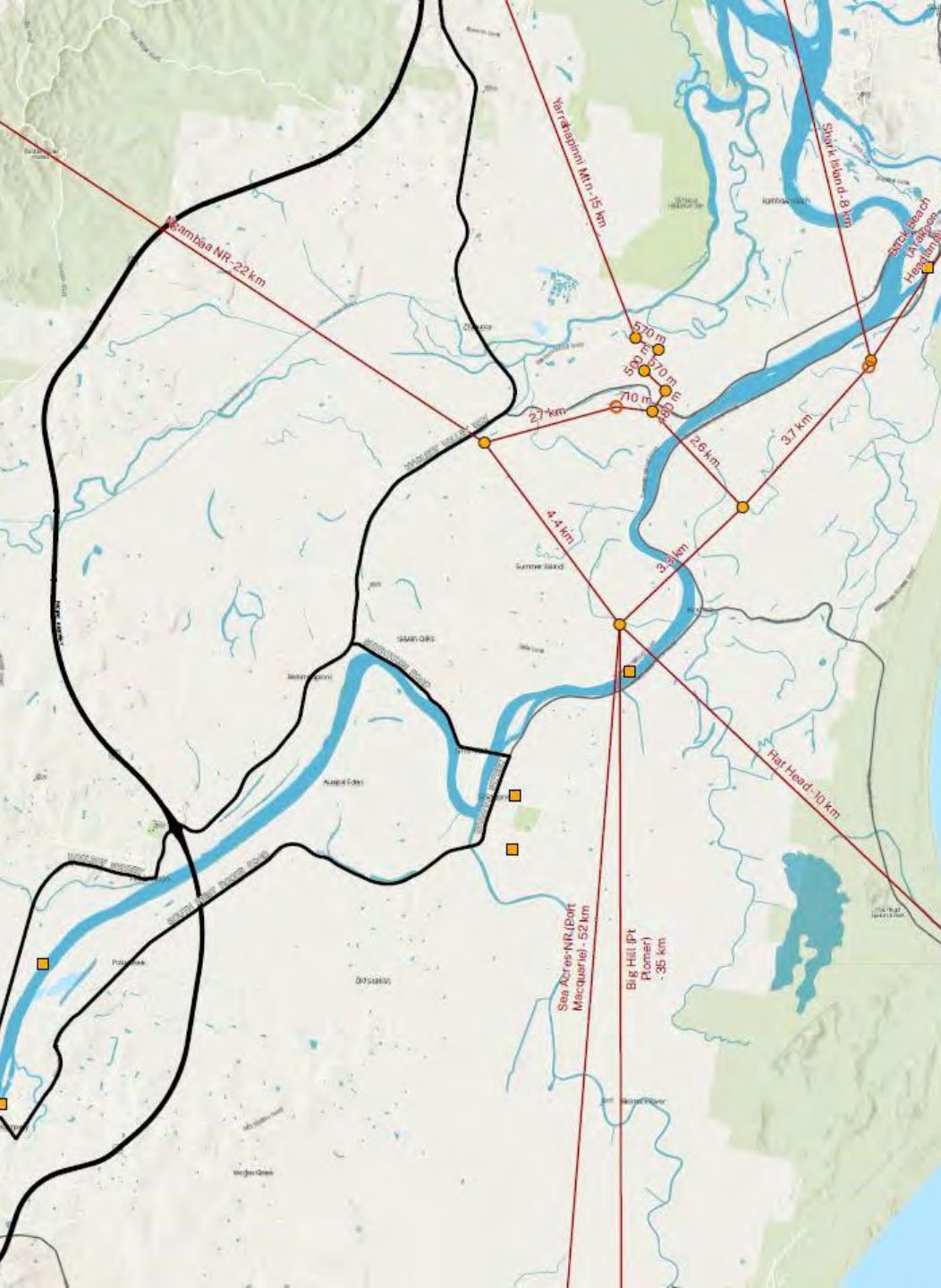
Sites are physically separated, but connected by the movement of fauna and insects, wind and water.

Active management can also facilitate connectivity through seed collection and plantings.

Every remnant, no matter how small, and every tree is of value to the greater network.

Revegetation sites can act as stepping stones between the remnants and add to the population network.

Map (left): Distances between remnant and revegetation sites on the Macleay floodplain (LLS 2024).





# Future directions for the Macleay Floodplain Rainforest

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## What we know or are learning:

- List of species for the Macleay Floodplain Rainforest (99 spp; 70 trees and shrubs).
- Species that are locally rare and at risk of local extinction.
- What sites support lowland rainforest on the Macleay floodplain.
- Which landholders are willing to restore remnants on their property.
- How to plan and deliver a successful restoration program.

## Challenges ahead:

- Conservation and restoration of the Macleay Floodplain Rainforest genetic resource.
- Accessing propagation material for lowland rainforest expansion.
- Following provenance strategies and keeping records.
- Engaging with remnant property owners.
- Resourcing a 5 - 10year restoration program.
- Maintaining the initiative over the long term.

# Thank you



## Acknowledgments:

Our volunteer champions: David Adams, Caroline Adams, Wendy Kaczan, Chris Kaczan, Graeme Carrad, Bernard Musgrave, and Cath Ireland.

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