SAVING OUR SPECIES

Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion

2022-2023 annual report card

Summary

Management sites	Big Scrub 2; Bongil Bongil National Park; North Creek; NSW North Coast; Tuckers Island
Action implementation	14 (of 14) management actions were fully or partially implemented as planned for the financial year.
Total expenditure	$538,008 ($410,264 cash; $127,744 in-kind)
Partners	Big Scrub Foundation; Big Scrub Rainforest Conservancy; Environment and Heritage Group; Firewheel Rainforest Nursery; Jaliigirr Biodiversity Alliance; North Coast Local Land Services; North Coast Regional Landcare; NSW Environmental Trust; OzFish Unlimited; private consultant; Royal Botanic Gardens Sydney

Photo: Shane Ruming

Name:
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion

NSW status:
Endangered Ecological Community

Commonwealth status:
Not listed

Management stream:
Ecological community (widespread)

Priority management site: Big Scrub 2

Local government area:
Byron; Lismore

Partners:
Big Scrub Foundation; Big Scrub Rainforest Conservancy; Environment and Heritage Group; Firewheel Rainforest Nursery; NSW Environmental Trust; private consultant; Royal Botanic Gardens Sydney

Ecological community outcome

On track

On track (inferred)

Not on track (inferred)

Not on track

The viability of the ecological community is inferred to be off track based on threat management being off track. The trend in viability is unknown at this time.

Monitoring

Ecological community viability monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Understanding of genetic resilience
Monitoring result	Year 1 of the project included baseline data collection. We are currently awaiting results of DNA sequencing/genome analyses to determine appropriate individual trees/populations across the range of Stage 1 species from which to collect propagules from. It is anticipated that the first batch of results will be available late September 2023.
Scientific rigour of monitoring method	Not applicable
Conducted by	Big Scrub Rainforest Conservancy

Investment

Participant	Cash	In-kind
Big Scrub Foundation	$83,410	$0
Big Scrub Rainforest Conservancy	$6,444	$35,680
Environment and Heritage Group	$42,117	$0
Firewheel Rainforest Nursery	$0	$2,060
NSW Environmental Trust	$137,210	$0
private consultant	$0	$17,500
Royal Botanic Gardens Sydney	$0	$64,700

Management actions

The following actions are those identified as being required in financial year 2022-2023 to maximise the viability of the ecological community.

Threat	Management action	Implemented as planned?
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	25%: Progress this genetic resilience research understanding from baseline of 0% at beginning of research project 25% each year to 100% over 4 years of project.	Partial implementation - logistical delays
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	1,800 leaf samples (average 150 samples by 12 species). Up to 12 species sequenced and individuals/populations with optimal genetics identified.	Partial implementation - logistical delays
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	Cuttings trial 2022-23 financial year.	Conducted, but not as planned - A cuttings trial was implemented to help inform the methodology for taking cuttings from various rainforest tree species and determine their strike success/viability in the nursery environment.
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	Sow one green cover crop (Autumn) at Living Seedbank Plantation (LSP) and one green cover crop (Autumn) at Demonstration Site (DS). Complete 2 x slashings at LSP.	Partial implementation - logistical delays
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	Distribute one article communicating importance of addressing lack of genetic diversity in lowland rainforest through social media, newsletter, website to broader community.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Patches of Lowland Rainforest that may be subject to biogeographic homogenisation and inbreeding depression and/or not have genetic fitness to survive predicted climate change conditions and emerging pests and diseases.	This action item not required until 2024-25 and 2025-26.	Not assessed

Site summary

This site is part of a *Saving our Species* co-investment partnership project led by Big Scrub Landcare.

Project progress during 2022-23 was hampered due to severe flooding events in February/March 2022 with leaf sample collection work delayed due to many collection locations experiencing landslides, log jams, fallen trees and extensive road infrastructure damage. However, our leaf collection team was able to build momentum in its efforts towards the end of 2022, and by early June 2023 more than 7,500 leaf samples in total were collected for 32 rainforest tree species across their entire New South Wales and Queensland distribution range. These leaf collections represent 23 key structural species and 9 threatened species that occur in both the Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions and Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion endangered ecological communities.

As of mid-June 2023, DNA extraction and sequencing was underway for 13 of the above-mentioned 32 species, with the remaining 19 species requiring additional samples to be plated by our project partner, Royal Botanic Garden Sydney, before being sent for DNA extraction/sequencing. The first genome analyses will be undertaken by Royal Botanic Garden Sydney once DNA results are received back from the contracted sequencing laboratory, with expected results being communicated to Big Scrub Rainforest Conservancy by the end of September 2023. These results will guide Big Scrub Rainforest Conservancy on which individual trees/populations are best to collect propagules (or seed, or wild seedlings where appropriate) from that collectively comprise optimal genetic diversity to best cope with future climate change conditions, new pests and emerging diseases.

Additionally, our specialist rainforest nursery team has undertaken a cuttings pilot project to determine the viability of propagating from cuttings for 60 rainforest tree species. Results of the pilot project indicated positive results for more than half of the species and has helped inform the selection of the best type of cuttings material to collect (for example, soft, hard, semi-hard cuttings). This work guides the selection of appropriate propagule material collection at future stages of the project. DNA sequencing and analysis is also being undertaken on leaf samples that were taken from propagated cuttings and compares them to wild seedlings collected from the same populations, results of which will also help guide future decisions on appropriate propagule collection.

Soil improvements using regenerative agriculture techniques and maintenance have been an ongoing task at the Living Seedbank Plantation to assist in building soil conditions and ensure the best possible growing conditions for planting about 20 individual genetically-optimal rainforest trees per species into when propagated trees become available.

Minimal improvements were applied to the Demonstration Site during the past financial year given the location has a history of more than 5 years application of regenerative agricultural practices. Our team continue to develop the planting layout design for the Living Seedbank Plantation and Demonstration Site and we have adjusted layouts accordingly as new insights come to hand.

Numerous opportunities have been embraced to communicate the importance of improving genetic diversity in Lowland Rainforest to ensure its long term survival and persistence. Throughout the past year we have communicated this message through our various social media platforms, newsletters, online presentations through the Australian Association of Bush Regenerators and events such as Big Scrub Rainforest Day and the Regeneration Festival.

We thank *Saving our Species* for their ongoing support with the project and also wish to acknowledge the numerous organisations and individuals who have provided substantial in-kind work and cash contributions including Big Scrub Foundation, Big Scrub Rainforest Conservancy, Royal Botanic Garden Sydney's Research Centre for Ecosystem Resilience, NSW Environmental Trust and Firewheel Rainforest Nursery.

Priority management site: Bongil Bongil National Park

Local government area:
Bellingen; Coffs Harbour

Partners:
Environment and Heritage Group; Jaliigirr Biodiversity Alliance

Ecological community outcome

On track

On track (inferred)

Not on track (inferred)

Not on track

Monitoring

Ecological community viability monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Monitoring metric	Species richness
Annual target	Increase richness by 3%
Long term target	Increase ecological community richness (by 10%) over 5 years.
Monitoring result	Weed cover reduced and recruitment of native species richness has increased by 3%
Scientific rigour of monitoring method	Moderate
Conducted by	Jaliigirr Biodiversity Alliance

Monitoring metric	Percent native cover
Annual target	Increase cover by 7%
Long term target	Increase ecological community canopy cover (by 30%) over 5 years.
Monitoring result	Native canopy cover has increased by 7%
Scientific rigour of monitoring method	Moderate
Conducted by	Jaliigirr Biodiversity Alliance

Monitoring metric	Extent of occurrence
Annual target	0.5 ha
Long term target	Increase extent of the ecological community area by 0.5 ha over 5 years.
Monitoring result	The extent of ecological community has increased by 0.5ha.
Scientific rigour of monitoring method	Moderate
Conducted by	Jaliigirr Biodiversity Alliance

Investment

Participant	Cash	In-kind
Environment and Heritage Group	$10,900	$0

Management actions

The following actions are those identified as being required in financial year 2022-2023 to maximise the viability of the ecological community.

Threat	Management action	Implemented as planned?
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	4 landholders/land managers informed about weed management issues in lowland rainforest on floodplain.	Yes
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	Local nursery engaged to propagate and supply suitable native plant stock for revegetation activities at the project site.	Yes
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Primary and secondary weed control activities implemented covering 2 ha.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Remove 90% of weeds in 5.38 ha to improve recruitment over 5 years.	On track
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	5 private properties (adjoining or in the vicinity of threatened ecological community) informed and engaged.	On track
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	100 seedlings planted.	On track

Site summary

This site is part of a *Saving our Species* co-investment partnership project led by Jaliigirr Biodiversity Alliance.

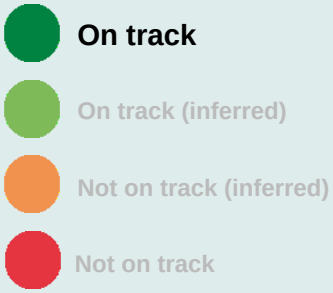
Primary and secondary ecological restoration activities have been implemented at the site resulting in a reduction in weed cover and an increase in species richness through the recruitment of lowland rainforest species.

Priority management site: North Creek

Local government area:
Ballina

Partners:
Environment and Heritage Group; OzFish Unlimited

Ecological community outcome



Monitoring

Ecological community viability monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Monitoring metric	Habitat condition
Annual target	The overall health score is expected to increase from year 1 baseline monitoring.
Long term target	To be determined.
Monitoring result	The North Creek site saltmarsh health score (using the wetland assessment technique developed by WetlandCare Australia) has increased from 72% health to 92% health since the beginning of the project.
Scientific rigour of monitoring method	Low
Conducted by	OzFish Unlimited

Investment

Participant	Cash	In-kind
Environment and Heritage Group	$9,181	$0
OzFish Unlimited	$0	$150

Management actions

The following actions are those identified as being required in financial year 2022-2023 to maximise the viability of the ecological community.

Threat	Management action	Implemented as planned?
Browsing by deer leading to removal of understorey and suppression of regeneration as plants are eaten.	Monitor and track pest species.	Yes
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Primary and follow up weeding.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Browsing by deer leading to removal of understorey and suppression of regeneration as plants are eaten.	Undertake repeat sampling of saltmarsh assessments. The overall health score is expected to increase from year 1 baseline monitoring.	On track
Invasion and establishment of transformer weed species changing community structure and floristic composition.	By the 6th year of the project, there will be at least 75% reduction in weed species.	On track

Site summary

This site is part of a grant project administered by the NSW Environmental Trust and led by OzFish Unlimited.

All planned activities were conducted and the site has improved since the project's inception. The site is on Jali Aboriginal Land and has been restored with the help of Jali Local Aboriginal Land Council. The site is also used by campers and fishers. Rubbish is illegally dumped periodically; however, our installation of a locked gate has reduced access and dumping of rubbish in the saltmarsh. Primary and follow-up weeding has been conducted and the site has been well restored. Ozfish volunteers have been involved in the sampling.

Priority management site: NSW North Coast

Local government area:
Ballina; Bellingen; Byron; Clarence Valley; Coffs Harbour; Dungog; Kempsey; Kyogle; Lismore; Mid-Coast; Nambucca Valley; Port Macquarie-Hastings; Port Stephens; Richmond Valley; Tweed

Partners:
Environment and Heritage Group

Ecological community outcome

On track

On track (inferred)

Not on track (inferred)

Not on track

The viability of the ecological community is inferred to be on track based on threat management being on track. The trend in viability is unknown at this time.

Monitoring

Ecological community viability monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Baseline monitoring conducted.

Monitoring metric	Habitat condition
Monitoring result	Baseline habitat condition was established, with an average of 52.76% exotic cover and 55.5% native cover across 5 locations (approximately 24 ha assessed).
Scientific rigour of monitoring method	Moderate
Conducted by	Environment and Heritage Group

Investment

Participant	Cash	In-kind
Environment and Heritage Group	$113,002	$4,550

Management actions

The following actions are those identified as being required in financial year 2022-2023 to maximise the viability of the ecological community.

Threat	Management action	Implemented as planned?
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	Undertake weed control and supplementary planting at locations in order to increase extent and area of TEC. Weed control methods may include manual removal, splatter, broad scale spraying and control of native vines impacting on TEC structure and extent.	Yes
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Undertake weed control and supplementary planting at locations in order to increase extent and area of the threatened ecological community. Weed control methods may include manual removal, splatter, broad scale spraying and control of native vines impacting on threatened ecological community structure and extent.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Determine baseline abundance of transformer weeds.	On track
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	No evidence of clearing in sites from rural, agricultural and urban development.	On track

Site summary

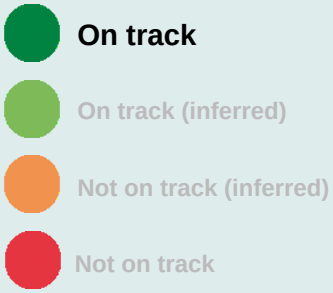
Saving our Species-managed locations within this management area are highly complex and host a significant number of threatened species. The threatened ecological community is mostly cleared, with less than 10% of it remaining across its known range and subject to significant fragmentation. Despite this, the threatened ecological community is growing in area at all management locations as a result of management actions and will expand and develop further structural and functional complexity with time and ongoing management.

Priority management site: Tuckers Island

Local government area:
Not specified

Partners:
Environment and Heritage Group; North Coast Local Land Services; North Coast Regional Landcare

Ecological community outcome



Monitoring

Ecological community viability monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Monitoring metric	Habitat condition
Annual target	Vegetation Integrity Score (BAM calculator): >= baseline (69.7)
Long term target	Maintain lowland rainforest on floodplain complexity, integrity, and abundance.
Monitoring result	Vegetation Integrity Score (BAM calculator): 70.3
Scientific rigour of monitoring method	High
Conducted by	North Coast Local Land Services; North Coast Regional Landcare

Investment

Participant	Cash	In-kind
Environment and Heritage Group	$8,000	$0
North Coast Local Land Services	$0	$3,104

Management actions

The following actions are those identified as being required in financial year 2022-2023 to maximise the viability of the ecological community.

Threat	Management action	Implemented as planned?
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	Increase awareness of the values of the site where the opportunity arises.	Yes
Invasion and establishment of transformer weed species changing community structure and floristic composition.	Bush regeneration in agreed zones across different threatened ecological communities.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Invasion and establishment of transformer weed species changing community structure and floristic composition.	<= 5% weed extent for Upper, Mid, Lower and Ground strata	On track
Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.	Not required as Tucker Island is free of these anthropogenic threats.	Not assessed

Site summary

This site is part of a grant project administered by the NSW Environmental Trust and led by North Coast Local Land Services.

Substantial reduction of cat's claw creeper, but ongoing vigilance and effort required in the core and periphery area with the objective of site eradication. Treatment methods included manual removal, cut/paint and foliar application. Other vines requiring ongoing treatment are balloon vine and Madiera vine. During 2022-23, the project consolidated existing work areas and modestly expanded primary areas as weed regeneration is significant.

Saving our Species 2022-2023 annual report card for Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion. For more information refer to the specific strategy in the Saving our Species program.