ROAR – REFRESHING RIVERS

Rolling Out All Resources – Refreshing Rivers Program on ground works project

ROAR REPORT

Rolling Out All Resources (ROAR) on ground works project and case study site revitalised a prominent waterway site, fostering community involvement in restoration and supported the 10-year Refreshing Rivers Program. Through riparian and instream revegetation, targeted carp control, and native fish reintroduction, ROAR captured community, stakeholder and media attention. Key actions included removal of 737kg of carp from Billabong Creek, two planting days with local schools, and releasing over 27,000 golden perch and 240 endangered eel-tailed catfish fingerlings. Educational activities and site signage with QR codes provided further engagement, emphasising waterway friendly management practices and highlighted the importance of local stewardship in environmental conservation.

Andrea Mitchell

YACTAC & Refreshing Rivers - Central Billabong Project Officer

YACTAC

Yanco Creek and Tributaries Advisory Council Inc.

NSW GOVERNMENT

refreshing rivers Central Billabong

YACTAC

Yanco Creek and Tributaries Advisory Council Inc.

ROLLING OUT ALL RESOURCES (ROAR) project Final Report 2024

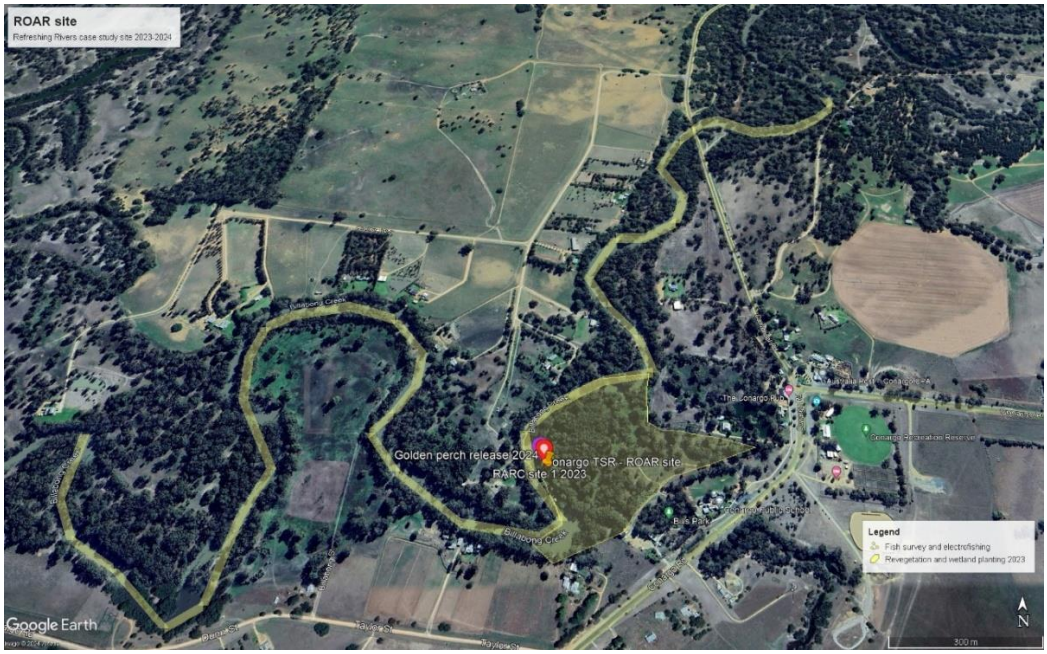
Andrea Mitchell MOB: 0419 841 834 EMAIL: env@yactac.org.au May 2024

Summary

Rolling out all resources (ROAR) project aimed to restore one publicly visible case study site, encourage community participation in waterway restoration and promote the 10-year Refreshing Rivers Program loudly and widely. Through extensive revegetation efforts, targeted carp control, fish surveying and native fish reintroduction the project has drawn significant community interest and media coverage. Educational components, such as school events and public demonstrations, have further engaged the community, fostering discussions about waterway health and environmental stewardship.

Project elements included: electrofishing targeting carp (*Cyprinus carpio*), on five kilometres of the Billabong Creek, Conargo, in September and December 2023 (737kg carp removed); planting native plants with Conargo Public and Deniliquin High schools; wetland and creek instream planting (approx. 300m creek line) with Deni-Kolety Lagoons Landcare and Deniliquin High school; releasing 27,273 golden perch (*Macquaria ambigua)* fingerlings; releasing 240 eel-tailed catfish (*Tandanus tandanus*) fingerlings, a NSW Endangered Population; and site signage with QR code to promote Refreshing Rivers.

The project's success in involving local stakeholders and emphasising sustainable waterway management highlights the critical role of case study sites have to the broader Refreshing Rivers Program.



Map ROAR case study site, Conargo NSW. Sourced https://earth.google.com/web/@35.30206494,145.1791542,98.84741361a,1646.07255027d,35y,0.0994872h,44.66470412t,359.80668666r/data=OgMKATA

1. MONITORING: Fish and vegetation survey of 5 - 10km stretch of waterway. Baseline for the Billabong Creek with survey contractor. NSW DPI in kind staff to support survey work.

"Undertake research to identify, prioritise and improve understanding of the threatening processes and causes of decline of Eel-Tailed Catfish" (High priority DPI – Priority Action Statement (PAS) Actions for Murray-Darling population of eel tailed catfish (DPI, 2023)).

Dr John Conallin was engaged with developing the experimental design and monitoring of the Billabong Creek, Conargo case study site. He surveyed the creek on September 2nd and 3rd and December 11th, 2023, submitted two reports and made a presentation to the YACTAC board on the 5th of February, 2024. His recommendations in summary are:

1) Continue carp removal with monitoring to assess benefits to native fish establishment.
2) Prioritise planting of emergent/submergent vegetation.
3) Implement a catfish re-establishment program.
4) Continue golden perch stocking program between Wanganella and Jerilderie.
5) Implement a silver perch (*Bidyanus bidyanus*) re-establishment program.

Photo 1: Emptying fyke net

Photo 2: Monitoring Billabong Ck, shrimp, Sept 2023

Photo 3: Dr J Conallin with carp

Photo 4: Electrofishing and monitoring site, Billabong Ck, Conargo

Case study baseline monitoring

The riparian habitat at the ROAR case study site was assessed in August 2023 using the Rapid Appraisal of Riparian Condition for the southern tablelands of New South Wales (RARC) method. This method evaluates the ecological health of riparian habitats. The site's indicators yielded an index score of 37 out of 50, indicating reasonably good riparian condition.

Habitat received high marks for riparian width and featured stands of river red gum (*Eucalyptus camaldulensis*) and cooba wattle (*Acacia salicina*) in the overstorey. Vegetation cover also scored well, with substantial ground, understorey, and canopy coverage. The prevalence of native vegetation contributed significantly to the high scores.

Debris, including standing dead trees, fallen logs, and leaf litter, scored lower due to evidence of fallen timber harvesting. Additionally, the site had low scores for features such as bare riverbanks and a lack of abundant large native tussock grasses, reeds, or other instream plants.

Table 1. RARC assessment for ROAR case study site

BENCHMARK	SCORE	DESCRIPTION
Habitat	10/11	Longitudinal continuity of riparian canopy vegetation
Cover	10/12	Vegetation cover within each layer
Natives	7.8/9	Native vegetation cover within each layer, excluding exotics
Debris	6.5/10	Cover of leaf litter
Features	2.6/8	Abundance of native canopy species regeneration
TOTAL	37	RARC Index score 25 very poor 25-30 poor 30-35 average 35-40 good Above 40 - excellent

2. CONTROL: Carp control through electro-fishing 5-10km waterway. NSW DPI in kind staff to support and measure fish during this process.

Electrofishing targeting carp over more than five kilometres of Billabong Creek in Conargo took place in late 2023, resulting in the removal of 737 kg exotic fish biomass. This effort aligned with fish monitoring, occurring shortly after the September monitoring and concurrently with the December monitoring. On September 6th and 7th, 471 kg of carp were removed, followed by an additional 267 kg of exotic fish biomass on December 11th, 2023. NSW Department of Planning and Environment provided in kind support of one officer to monitor and measure fish whilst electrofishing occurred in September. All removed carp were transported to Charlie Carp in Deniliquin for processing into fertilizer.

The electrofishing contractor, Keith Bell, also gave a demonstration to the local Conargo Public School students, showcasing electrofishing and fish anatomy. Back at school, the students incorporated this hands-on experience into their STEM program by drawing a diagram of fish parts and especially the swim bladder. Through the ROAR project local children have gained valuable insights into their local waterway.

Photo 4: Carp caught through electrofishing

Photo 5: Electrofishing Billabong Ck, Conargo, Sept 2023

3. REVEGETATE: In stream wetland plantings (for eel-tailed catfish) 2023.

"Work with community groups, relevant natural resource management agencies, local councils, landholders etc. to identify, restore and protect known and potential Eel-Tailed Catfish habitats and address key threats such as habitat degradation and water quality decline from expanding development" (High priority. (DPI, 2023).

Instream planting at the case study site aimed to restore and protect habitat for the eel-tailed catfish and address key threats such as habitat degradation and water quality decline. The planting also showcased methods for broader use across the Central Billabong. On November 8th, 2023, Murray Local Land Services, Deniliquin High School, and Deni-Kolety Lagoons Landcare collaborated in planting over 300 meters of Billabong Creek with five emergent species—jointed twig rush (*Baumea articulata*), river club rush (*Schoenoplectus validus*), water ribbons (*Cycnogeton procerum*), giant sedge (*Cyperus exaltatus*), and grey sedge (*Lepironia articulata*). Most plants were sourced and harvested from the Deniliquin Lagoons nursery site for replanting.

The success of the planting can be seen in the amazing growth over the past six months improving biodiversity and habitat in the case study area.

Photo 6: Plants sourced Deni-Kolety LC

Photo 7: Planted rush, Billabong Ck Conargo Nov. 2023

Photo 8: Deniliquin High School and Deni-Kolety Lagoons Landcare volunteers, Nov. 2023

4. RE-INTRODUCTION: Release eel-tailed catfish (Tandanus tandanus) fingerlings 2024.

After a formal letter from YACTAC to NSW Fisheries, follow-up written response and Teams meeting, permission was granted to release eel-tailed catfish in the Central Billabong. Piggybacking on the work of Dr John Conallin, and being added to his REF permit, 240 eel-tailed catfish fingerlings were released at Conargo on April 14th, 2024.

There were two community events marking only the second release of eel-tailed catfish fingerlings in Australia's history, both involving enthusiastic participation from children. On Sunday, April 14th, 160 eel-tailed catfish were released in Billabong Creek, Jerilderie, NSW. Attended by 10 people, the event aimed to bolster the threatened catfish population. The Jerilderie Fishing Club and Murrumbidgee Council supported the effort, with some local boys excitedly releasing the catfish while older fishermen reminisced about catching 50 catfish in a

night many years ago. Later that afternoon, 240 catfish were released in the Conargo case study site, where previous instream planting in November 2023 had created a suitable habitat. This event drew about 15 attendees, with children eagerly releasing the catfish with assistance from their parents. The benefits of the new habitat and ROAR project were discussed emphasising the funding from YACTAC and Refreshing Rivers which made it possible. The community was highly engaged and eager to learn how to restore their local environment.

Photo 9: Community release of 240 eel-tailed catfish at Billabong Ck, Conargo, April 2024

Photo 10: Gently releasing catfish fingerlings

Photo 11: Catfish fingerlings, approx. 10cm long

5. Addition of Golden perch fish 2023/2024 through DPI's Dollar-for-Dollar scheme.

Golden perch (27,273 fingerlings) were released officially at Billabong Creek, Conargo on January 4th, 2024, through $12,000 from the Fish Stocking Program and $6,000 ROAR funding. This release coincided with releases either side of Wanganella weir, Conargo, Jerilderie and Colombo Creek.

A key benefit of this release was the collaboration with local organisations, such as the Edward River Council and the Jerilderie Fishing Club, which with Refreshing Rivers collectively released over 50,000 golden perch fingerlings across the Central Billabong.

Photo 12: K Charlton releasing golden perch fingerlings, Jan. 2024

Photo 13: Bucket of fingerlings

Photo 14: L Logan, Tara Fish Farm and A Mitchell, YACTAC releasing golden perch, Jan 2024

6. INSTREAM and riparian weed control – YACTAC in kind support using regular contractor to scope area and provide necessary weed control works.

"Undertake priority rehabilitation, restoration and enhancement work (e.g. rehabilitating riparian vegetation… removal of willows from riverbanks, sediment and erosion control measures) at key sites known to support Eel-Tailed Catfish populations" (High priority DPI, 2023).

YACTAC employed contractor Matt Wooden to inspect and spray weeds at the case study site, Billabong Creek and across the whole Yanco Creek System in January and February of 2024.

Lessons learned

- Early September is slightly early for monitoring fish as water temperatures are cooler and fish are less mobile.

- November is an excellent time to plant instream plants as the water is warm with subsequent fast growth rates over summer.
- A good project will draw further collaboration and in-kind support from stakeholder organisations and community.

Conclusion

The ROAR project not only met its planned objectives but also exceeded them. A particularly notable achievement was the unexpected release of eel-tailed catfish, marking only the second such occurrence in Australia, thanks to the efforts of Dr. John Conallin. This success generated significant momentum, encouraging greater community, government and stakeholder involvement, which in turn attracted additional funding. This enabled the completion of further restoration work, garnering great support from stakeholders and community.

Recommendations

- With community consultation consider removal of local willows once the case study site has increased in overall instream and riparian vegetation.
- Continue instream planting with a greater diversity of species.
- Control rabbit numbers along case study site as there has been damage to many of the planted seedlings.
- Implement Dr J Conallin's recommendations (see report 2).
- Establish a nursery site for wetland plants to provide a sustainable harvestable source for future waterway revegetation efforts.

Photo 15: Growth of wetland plants, May 2024

Appendix

2. Table of ROAR outputs

Item	Deliverable/outcome	Outputs
Vegetation riparian monitoring surveys	Baseline vegetation monitored to determine whether the management is correct over time.	1 RARC survey
Wetlands monitoring method	Baseline vegetation monitored to determine whether the management is correct over time.	1 RARC survey
Fish monitoring	Determine catfish numbers and age before treatment (of electrofishing etc)	No catfish found surveying (see J Conallin reports x2).
Carp removal	Removal of European carp from one stretch of waterway. Measure and count carp collected to compliment scientific survey.	Three days removal of carp and monitoring (see J Conallin reports x2)
Riparian planting	Promoting WMP, RRCB project and case study area. Community event.	5 events • Instream planting • Riparian planting • Electrofish/fish anatomy demonstration • Golden perch release • Catfish release
Wetland planting	Introduce and increase emergent species to provide habitat for catfish.	300 m x 3 rows deep (500+ plants approx.)
Fingerling release	Boost numbers and therefore breeding capacity of native fish. Interim measure as currently catfish are not permitted to be released.	27,273 golden perch fingerlings 240 eel-tailed catfish
Fish monitoring follow up – Carp and natives	Determine catfish numbers and age after treatment (of electrofishing etc)	Contracted monitoring (see J Conallin reports x2)

3. Table of actions

DATE	ACTION	PARTICIPANTS	EVENT	VALUE
15/8/2023	RARC survey at case study site	2	Survey	1
17/8/2023	YACTAC to DPI NSW Fisheries re "Catfish in the YCS and co-contribution"	2	Letter	1
2/9/2023 – 3/9/2023	Dr John Conallin surveyed Conargo Creek	4	Monitoring	2 days
6/9/2023 – 7/9/2023	Carp electrofishing X 2 days by Bell Carp P/L	2	Carp removal	2 days and 471kg carp
6/9/2023	Conargo TSR planting with Conargo PS and Deniliquin HS	7?	Community planting	200+ tubestock, 10ha
6/9/2023 – 7/9/2023	In-kind support from project officer, NSW Department of Planning and Environment.	1	Monitoring fish and carp	5-10km
7/9/2023	Bell Carp, Conargo Public School and NSW DPI	10	Educational electrofishing and fish anatomy demonstration	
22/9/2023	Letter to YACTAC response from DPI NSW Fisheries re "Catfish in YCS and co-contribution"		Letter	1
8/11/2023	Deniliquin High School, Deni-Kolety Lagoons Landcare, Murray LLS	12	Community instream planting	300 m x 3 rows deep (500+ plants approx.)
27/11/2023	NSW DPI Fisheries, YACTAC and Dr J Conallin re introduction of eel-tailed catfish. YACTAC and YCS added to Dr John Conallin's "Review of Environmental Factors" (REF) NSW Fisheries permit	6	Teams meeting	
1/12/2023	Dr J Conallin, D Hutton, Joint Indigenous Group and Edward-Wakool Angling Association REF permit: Proposal and REF for stocking of Eel-Tailed Catfish, *Tandanus tandanus* into the Mid-Murray, Edward -Wakool River system, NSW.	1	Review of Environmental Factors (REF) Permit	1
6/12/2023 & 12/12/2024	C Roemer SM@G re signage	2	Teams meeting	

20/12/2023	Carp control electrofishing, Bell Carp P/L	2	Carp removal	5-10 kms and 267kg biomass/carp
20/12/2023	Dr John Conallin surveyed Conargo Creek	2	Monitoring	5 kms
Jan-Feb 2024	Weed control contractors for YACTAC		Instream weed control	10km +
4/1/2024	Release golden perch fingerlings	5	Fish reintroduction	27, 273 fingerlings
5/2/2024	Dr J Conallin survey presentation, YACTAC board	10	Meeting	
14/4/2024	Release eel-tailed catfish fingerlings, Conargo and 160 in Jerilderie	15	Fish reintroduction	240 fingerlings
20/5/2024	Sign designed, built, printed and erected	6	Sign erected	1

4. Stakeholder organisations and groups
   - ❖ Yanco creek and Tributaries Advisory Council
   - ❖ Murray Local Land services
   - ❖ NSW Department of Planning and Environment
   - ❖ NSW DPI Fisheries
   - ❖ Deni-Kolety Lagoons Landcare
   - ❖ Deniliquin High School
   - ❖ Conargo Primary School
   - ❖ Edward-Wakool Angling Association
   - ❖ Dr John Conallin and Dan Hutton
   - ❖ Edward River Council

Photo 16: Refreshing rivers sign, Conargo, NSW

Refreshing the Central Billabong is part of the Refreshing Rivers Program, a collaboration between government, industry, research, and,community organisations, led by Local Land Services. This Program has been assisted by the New South Wales Government through its Environmental Trust.