



## Return of the Freshwater Catfish

ARI's Renae Ayres and Andrew Pickworth were closely involved in the planning and relocation of 60 Freshwater Catfish from a drying refuge at Barham Lake in NSW to Mullinmur Billabong on the Ovens River. This effort to re-establish a locally extinct species represents a long-term, strong collaboration between many interest groups including Wangaratta Landcare and Sustainability Inc, local angling clubs and schools, state government agencies (Vic and NSW) and the Commonwealth Environmental Water Office. Prior to the release, works at the billabong included planting of native vegetation, removal of Carp, delivery of environmental water and placement of pebbles as nesting material for the catfish (see [CEWO media release](#)).

Freshwater catfish, once common within the Murray-Darling Basin, are now considered endangered in Victoria. Reasons for their decline include habitat degradation and modification; altered flow regimes; barriers to movement; predation; and competition with invasive species, such as Carp, that occur in similar habitats.



Freshwater catfish release

### ▶ About us

The Applied Aquatic Ecology section aims to generate and share knowledge, through world-class, applied, ecological research, which supports and guides sustainable ecosystem policy and management to ensure healthy, resilient ecosystems. We work collaboratively with national, state and local agencies, research institutes, universities, interest groups and the community.



Catfish release Mullinmur



## News

The recent bushfires in Victoria, in particular East Gippsland and the North East, have significantly impacted biodiversity.

ARI staff are closely involved in many aspects of the Victorian Government's response

([Victoria's bushfire emergency: Biodiversity response and recovery](#)).

This includes:

- providing strategic input and advice on appropriate actions
- reconnaissance of priority species and sites
- emergency extractions, translocation and ex situ management to prevent extinctions and limit decline.



Specific actions in North East Victoria have included:

- moving Macquarie Perch from fire affected sites in the Buffalo River to nearby rivers and to the Victorian Fisheries Authority hatchery at Snobs Creek ([see DELWP Hume video](#)).
- moving Murray Cod in the Ovens River upstream to areas unaffected by fire ([see video](#))



Specific actions in East Gippsland have included:

- preparing rescue plans for 15 critical target species. Many aquatic species of fish, crayfish and mussels have >80% of their distribution in the Gippsland fire affected areas and are at risk of extinction, as many of these exists as a single, small population.
- extracting galaxiids, crays and mussels from the wild and their temporary maintenance at the ARI aquarium. To date, this has included [Dargo Galaxias](#), East Gippsland Galaxias, Yalma Galaxias, McDowalls Galaxias, East Gippsland Spiny Crayfish, Orbost Spiny Crayfish, Arte Spiny Crayfish and Depressed Freshwater Mussels.



Glenelg Freshwater Mussels from a fire affected area in South West Victoria have also been extracted and are being temporarily housed at the ARI aquarium. ([see video](#))



ARI staff from across the institute also participated in an East Gippsland CMA boat trip for Mallacoota locals to talk about bushfire recovery.





## Influencing Change

### Counting Carp

ARI has completed a project under the [National Carp Control Plan](#) to determine a [national estimate for Carp](#). This estimated Carp biomass across a diverse range of aquatic environments, from individual wetlands to large river reaches. It was a unique collaboration of scientists and government agencies across the country and brought together a wealth of information - fish survey data from over 150 studies and 4831 sites, across 24 years!

The biomass estimate represented a single 'point in time', recognising biomass varies significantly between years, depending on how wet conditions are. During a single wet year, such as May 2011, the Carp biomass estimate was 368,357 tonnes, with a lower and upper limit of 184,234 and 705,630 tonnes, respectively. After a series of three flood years, additional modelling suggests Carp biomass may reach a maximum of 1,200,000 tonnes. This work builds our understanding of how this highly adaptable pest responds to different environmental conditions.



### A perfect perch

We set up a motion camera on a fence post at a wetland at Tiverton and it turned out to be the perfect perch! Check out how many bird species we recorded on this video [Who's on my post](#). This is part of our [Wetlands Intervention Monitoring Program \(WIMP\)](#), which is assessing how different grazing practices can enhance wetland vegetation.



### Protecting the rediscovered Purple-spotted Gudgeon

Excitingly, in late 2019 the [Purple-spotted Gudgeon was rediscovered](#) in Victoria, at Third Reedy Lake in Kerang. ARI is a member of an Advisory Group, which will now guide management of this single known population of the species in Victoria. The Advisory Group has representatives from DELWP, Goulburn-Murray Water, North Central Catchment Management Authority and Parks Victoria.

Surveys by ARI are planned for other wetlands, streams and rivers in the Reedy Lakes area, most likely during spring. This will provide time to check eDNA in the water samples that have already been collected from the area. An Action Statement for the species is also being prepared by ARI.





## Outputs

- [Stoessel et al. \(2019\)](#) Salinity tolerance during early development of threatened Murray hardyhead (*Craterocephalus fluviatilis*) to guide environmental watering. *Aquatic Conservation* 30 (1): 173-182.
- [Tonkin et al. \(2019\)](#) Climate variability regulates population dynamics of a threatened freshwater fish. *Endangered Species Research* 40: 257-270.
- [ABC Radio National OffTrack interviewed Di Crowther](#) about the Dandenong Burrowing Cray.
- Fact sheets summarising VEFMAP 2018/19 fish monitoring [northern Victoria](#), and [southern Victoria](#)) and vegetation monitoring ([Glenelg](#), [Campaspe](#), [Wimmera](#), [West Gippsland](#) and [Yarra](#)).
- We've brought together a range of projects and their outputs under one ARI webpage: [Population models to inform fish and waterway management](#).



Talking Wild Trout panel discussion

## Knowledge transfer

- Australian Freshwater Sciences Society Conference, Warrnambool: [How many carp are there in Australia?](#) (Jarod Lyon); [Quantifying links between discharge, temperature and recruitment dynamics of Murray cod to inform flow management in the southern Murray-Darling Basin](#) (Zeb Tonkin); [Recovery: moving beyond fish kills in the Murray-Darling Basin](#) (John Koehn); [Sink or swim? The intersecting roles of hydrochory and structural connectivity in shaping floodplain metacommunities](#) (Kay Morris); [Using behavioural information to inform conservation of the threatened dwarf galaxias](#) (Rob Hale).
- Talking Wild Trout conference, Mansfield, and ARI seminar – Trees for Fish: Angler Riparian Partnership Program (Renae Ayres)
- Murray Codference, Shepparton – Evidence driven management is crucial (Jarod Lyon)
- ARI Seminar – Salinity tolerance during early development of the threatened Murray Hardyhead to guide environmental watering (Dan Stoessel)
- DELWP Science Symposium: Tracking Australian eels to crack the mystery of their migration (Wayne Koster)
- Wise Waterways 21st year Celebration, Beechworth – Fish Habitat (Jarod Lyon)
- Floodplain Ecology Course, Barmah – Fish and floodplains in the mid-Murray region (Matt Jones)
- ABC Bendigo interview – Purple Spotted Gudgeon rediscovery (Tarmo Raadik)

Subscribe to any of ARI's communications at [www.tiny.cc/ARISubscribe](http://www.tiny.cc/ARISubscribe)