



Lyndsey Vivian monitoring vegetation in the mallee as part of VMFRP (Victorian Murray Floodplain Restoration Program)

## Discovery of a new species of freshwater crayfish

A new species of freshwater crayfish, known as the Swamp Yabby, has been described for the Murray-Darling Basin. It's only the third species known to naturally occur in the Basin and the first new species for 80 years.

The Swamp Yabby occurs in northern Victoria's Goulburn, Broken and Ovens River catchments, and as far north as Deniliquin in New South Wales. Its distribution overlaps with the widespread and well-known Common Yabby (*Cherax destructor*). While both species look quite similar, the Swamp Yabby is much larger and has uniquely shaped, broad claws.

The species spends most of its time deep underground in extensive burrow networks in clay soils. These burrows occur in temporarily wet areas (e.g. drainage lines, roadside drains, swamps and cleared areas of pastures in lowland and foothill areas). The yabby is rarely found in permanently wet streams or billabongs.

The existence of a 'larger yabby' species has long been known by some in areas such as the Barmah-Millewa Forest. When digging drains, or in 'crab-hole country', farm machinery can sometimes break through the top of a burrow system.

Formally describing new species such as the Swamp Yabby is an important step in biodiversity conservation. It allows researchers to share biological information with scientists, government agencies, land managers and landowners. This also assists in considering its management needs, including regarding groundwater and surface water, particularly during drought.

The formal identification of the Swamp Yabby followed 15 years of rigorous fieldwork led by Dr Tarmo Raadik from ARI and Robert McCormack from Australian Aquatic Biological.

See [DELWP media release](#) and [The Age](#) story.

### 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.

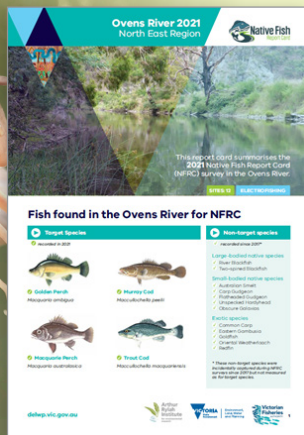


Swamp Yabby  
(Photo Tarmo A Raadik)

## News



Freshwater catfish



### Native Fish Report Cards

[Native Fish Report Cards](#) have been created for 10 priority rivers across the State. They provide brief overviews of the health of target fish populations (threatened species and those popular with anglers) and present survey summaries and three key indicators (evidence of recent recruitment; presence of multiple size classes and presence of mature fish). They also include information about each river's fish community. Monitoring of these sites began five years ago and is building a picture of the status of these fish species and trends over time. This project is a collaboration between DELWP and the Victorian Fisheries Authority (VFA), in partnership with recreational fishing license holders, Catchment Management Authorities (CMAs) and Melbourne Water.

### Encouraging signs at the Koondrook fishway

Two new fishways at weirs in Koondrook and Cohuna were recently completed to benefit the native fish community. The fishways will reconnect 140 km of the Gunbower Creek with the Murray River. ARI monitored the effectiveness of the Koondrook fishway in mid-December 2021. Excitingly, large numbers of juvenile Silver Perch were passing through the fishway, as well as Bony Bream and small-bodied species including Murray-Darling Rainbowfish, Australian Smelt,

Carp Gudgeon and Unspecked Hardyhead.

Koondrook weir includes dual fishways to operate at high and low flows. The recent monitoring indicates the low flow fishway entrance is working well. Further monitoring later in 2022 will test the effectiveness of the high flow entrance at Koondrook and the Cohuna fishways.

Improving fish passage is a core part of the North Central Catchment Management

Authority's Native Fish Recovery Plan. The fishway construction was funded by the Victorian Environmental Water Holder and DELWP, in partnership with Goulburn-Murray Water.



Matt Jones raises cage at the Koondrook fishway

### Educational resources about invasive species in waterways

Six educational resources have been developed about invasive species in waterways, their impacts and management, and how people can help stop their introduction and spread as well as report sightings. DELWP (ARI and Waterway Health) collaborated with Agriculture Victoria and the VFA to create these products.

Victoria's waterways face an increasing threat from invasive species, such as exotic fish, turtles, crayfish and aquatic plants. Management of invasive species is complex, and needs cooperation between Government, community, and industry. Improving stakeholder awareness of invasive species will help strengthen our biosecurity approaches and protect environments.

See the DELWP Water and Catchment's [webpage](#); or contact [Renaeyres@delwp.vic.gov.au](mailto:Renaeyres@delwp.vic.gov.au)



Snakehead (photo - Gunther Schmida)



Water Hyacinth (photo - Agriculture Vic)

## Influencing Change

### John Koehn recognised for his contribution to freshwater management

ARI's Dr John Koehn received a Public Service Medal for his outstanding public service to conservation and freshwater management. A fitting acknowledgement of his many contributions to freshwater ecology within Victoria and across the Murray-Darling Basin (MDB). John led ARI's aquatic team for many years, guiding the direction of strategic and innovative research, ensuring science quality and mentoring many staff. With >250 scientific publications, he is internationally recognised. John has focused on applying his knowledge to address management issues, including environmental flows, climate change, river restoration, population recovery and pest species including Carp. ARI thanks John for his exceptional contribution to our institute.



John Koehn



John Koehn at a forum

### Spreading the risk: Identifying management options to help threatened species

ARI is synthesizing knowledge of the current and future threats to several threatened fish species: galaxiids in East Gippsland, Southern Pygmy Perch and Macquarie Perch. This work, funded by DELWP Biodiversity, will support informed and robust decision-making about how to best manage these species.



Southern Pygmy Perch



Trout predation can affect threatened galaxiids with limited distributions in upland streams



Fire and subsequent sediment entering streams is a threat to many fish species

### Monitoring of larval fish yields interesting results

ARI has been monitoring larval fish in three areas over early Spring through Summer: within the mid-Murray River (SCBEWC – Southern Connected Basin E Watering Committee), Barmah (MDBA – The Living Murray Program) and the Goulburn River (Flow-MER). Several of these monitoring programs have run for almost 20 years, and together they provide an invaluable data set. This information has shaped our understanding of the response of fish to environmental flows and helped guide flow management to achieve spawning outcomes for native fish.

Interestingly, following high flows, monitoring detected large numbers of Golden Perch eggs early in the season at the Murray River sites. The highest numbers of Murray Cod larvae were also detected very late in the season, suggesting spawning was delayed for this species.

Follow up surveys to monitor fish recruitment will occur in late Autumn 2022. Along with other surveys occurring across the MDB by our other state agency collaborators (SARDI and NSW DPI), this data will provide amazing spatial coverage to help understand the recruitment dynamics of these key species in the southern MDB. Working together also enables more coordinated approaches to manage freshwater fish within a landscape context.



Golden Perch eggs



Murray Cod larvae

## Outputs

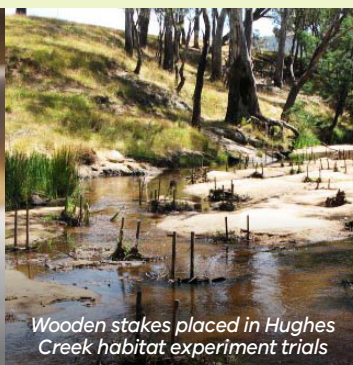
- [Cornell et al.](#) (2022). Experimental increases in detritus boost abundances of small-bodied fish in a sand-affected stream. *Freshwater Biology* (early view)
- [Jones et al.](#) (2022) Permanent removal of livestock grazing in riparian systems benefits native vegetation. *Global Ecology and Conservation* 33: e01959
- [Koster et al.](#) (2021). First tracking of the oceanic spawning migrations of Australasian short-finned eels (*Anguilla australis*). *Scientific Reports* 11, Article number: 22976
- [Koehn](#) (2021). Key steps to improve the assessment, valuation and management of fish kills. Learnings from the Murray-Darling Darling River system, Australia. *Marine and Freshwater Research* 73 (2) 269-281
- [Lyon et al.](#) (2021). Does life history mediate discharge as a driver of multi-decadal changes in populations of freshwater fish? *Ecological Applications* 31 (8) e02430
- [Stuart and Sharpe](#) (2021). Ecohydraulic model for designing environmental flows supports recovery of imperilled Murray cod (*Maccullochella peelii*) in the Lower Darling–Baaka River following catastrophic fish kills. *Marine and Freshwater Research* 73 (2) 247-258
- [Tonkin et al.](#) (2022) Movement behavior of a threatened native fish informs flow management in a modified floodplain river system. *Ecosphere* 13 (1): e3916.



Kay Morris talks to landholders at a wetlands field day



A Short-finned Eel (Photo Doug Gimesy)



Wooden stakes placed in Hughes Creek habitat experiment trials



Livestock grazing can significantly impact riparian areas

## Knowledge transfer

Presentations and meetings: ARI seminar: [An overview of environmental DNA detection and its application at ARI](#) (Shelley); Flow-Mer Webinars: [Fish and flows in the MDB: Learnings from the Fish Theme Basin-Scale Evaluation](#) (incl. Hladyz, Stuart); [Fish population diversity and abundance in the Murray-Darling Basin](#) (incl. Todd and Stuart); Finterest: [Native fish recovery in the mid-Murray Floodplain](#) (incl. Stuart); Melbourne Water - Managing aquatic fauna: Port Phillip Bay and Westernport catchments (Raadik).

Swamp Yabby: The Age – [What lurks beneath](#); DELWP [Facebook](#); DELWP [LinkedIn](#); DELWP [Twitter](#); [Shepparton News](#); Riverine Herald, Yarrawonga Chronicle; Yea Chronicle, Myall Coast News, News of the Area – Swan Bay; Triple M radio; ABC Central Vic radio

Interest in our eel research continues: The Age - [Uncovered: the mysterious journey of the short-finned eel](#); Cosmos – [The great eel odyssey](#); Australian Geographic – [In world first, scientists track eels’ mysterious route](#); ABC News [Eels can travel](#); [ABC Gippsland Saturday breakfast](#); ABC radio Capricornia, Warrnambool Standard; 3MDR radio; [RBMS Podcast](#)

Work that ARI has been involved in has also been shared by our collaborators including CMAs: EGCMA – [Bass in the Snowy – video](#), [Native Fish Report Card](#); GBCMA – [Murray Cod larval catch](#); [Southern Pygmy Perch translocations](#); GHCMA – [Wetlands field day](#) with Kay Morris; MCMA [Native Fish Report Card](#); NECMA – [Scott Raymond webinar about Southern Pygmy Perch](#); WGCMA [Native Fish Report Card](#); Victorian Fisheries Authority: [Trout Cod collection](#); [Murray Cod collection](#); Tasmanian Inland Fisheries Service - [Victoria comes to the rescue for Tasmanian Carp Management Program](#)

**PLEASE NOTE** that during COVID-19 restrictions, presentations have been given remotely via online platforms and/or aligned with government protocols.

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