

Applied Aquatic Ecology

Arthur Rylah Institute for Environmental Research

Spring 2018 Update

About Us

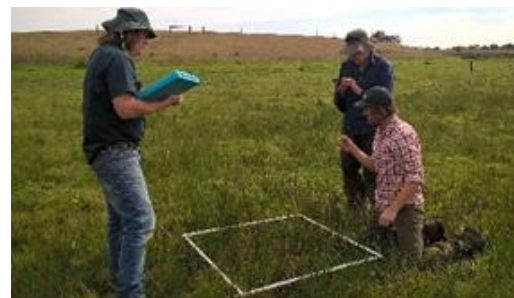
The Applied Aquatic Ecology group aims to generate and share knowledge, through world-class, applied, ecological research, which supports and guides sustainable ecosystem policy and management to ensure healthy, resilient ecosystems. We work collaboratively with national, state and local agencies, research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

Highlights

1. **LTWRA** ([Long-Term Water Resources Assessment](#)) occurs every 15 years, helping government monitor the state of our water resources. ARI is involved in a LTWRA waterway health sub-project, collating statewide data on 12 waterway health indicators for all 28 river basins since 1990. A novel data-analysis approach has been developed and applied to test for any trends and their relationships with flow. The first draft of the technical report is being reviewed by an EPA expert panel and waterway managers. Public consultation on the whole assessment findings occurs in early 2019.
2. The **VEFMAP** (Victorian Environmental Flows Monitoring and Assessment Program) vegetation theme has been busy: new grazing exclosures (Glenelg and Yarra rivers) and a Carp exclosure (Campaspe River) were established; two student projects a) an inundation experiment found high tolerance of young and mature grasses (native and exotic) to extended inundation but mortality increased in turbid conditions; b) an experiment on soil moisture data (Campaspe and Goulburn rivers), showed flows are a more important contributor to shallow soil moisture recharge than rain or groundwater. Six flyers have been prepared for fish and vegetation: [VEFMAP's 2017-18 field program](#).

Output Highlights

- [Tonkin](#) et al. (2018) Spawning-stock characteristics and migration of a lake-bound population of the endangered Macquarie perch *Macquaria australasica*. Fish Biology 93(4): 630-640
- [Lyon](#) et al. (2018) Conservation implications of angler misidentification of an endangered fish. Aquatic Conserv: Mar Freshw Ecosyst (early view).
- [Lintermans, Koehn and Lyon](#) (2018) Trout Cod in south east Australia (Chapter) in: Global Reintroduction Perspectives 2018: Case studies from around the globe.
- New fact sheets:
 - [Rehabilitation Decision Support Tool for instream habitat](#)
 - [The Native Fish Report Card](#)
 - [Fish response to new instream habitat in the Merri Estuary](#)
 - [Promoting genetic health for long term viability of fish populations](#)
 - [Re-establishing Macquarie Perch in the Ovens River](#)



Photos: ARI staff gave 13 talks at the ASFB conference; many vegetation surveys are underway across projects (e.g. WetMAP, WIMP, RIMP); Lungfish; Fish earbone field day; Carapugna wetland

Influencing change

- ARI has started a project to define the **northern Murray-Darling Basin system scale connectivity** (SSC) requirements to support the recovery of Golden Perch, a flow pulse specialist. A two-day workshop of experts was held in Sydney to develop a northern Basin specific conceptual life history model for this species. This project will identify management strategies to achieve SSC requirements under several scenarios.
- [WetMAP](#) (Wetland environmental flow Monitoring and Assessment Program) has been working closely with CMAs to schedule field monitoring of its four themes: birds, frogs, fish and vegetation. Methods have been peer reviewed and a methods manual will be released shortly. The program aims to fill knowledge gaps about the water requirements of wetland biota and to inform management of environmental water. Stakeholders receive field updates and fact sheets for each theme will also be released soon.
- ARI is developing a **population model for the Queensland lungfish**, the world's oldest vertebrate, in collaboration with SE Qld Sunwater.
- Following the success of breeding [Murray Hardyhead](#) in captivity (as part of a DELWP Biodiversity Onground Actions project), 500 fish were reintroduced into Lake Hawthorn. This action aims to re-establish the population at the site, decreasing the likelihood of extinction of this nationally threatened species (collaboration with Mallee CMA).

Knowledge transfer and engagement

Presentations and participation - stakeholders and community groups:

- **Conferences** – Australian Society for Fish Biology (Melbourne) 13 papers delivered by ARI staff. Ecological Society for Australia (Brisbane) – “The long and the short of riparian monitoring” (Jones); Australian Freshwater Science Society (Adelaide) (Papas, Amtstaetter, Morris); Codference (Shepparton) “Victoria’s native fish recovery: the last 20 years” (Lyon)
- **Presentations, workshops and forums** - Let’s talk Bass EGCMA forum “Australian Bass – fish stocks, habitat and river health” (Lyon); Wimmera Biodiversity Forum “Wimmera fish surveys (VEFMAP)” (Sharley); Angler Scientist field day (VEFMAP) (Aysons Reserve) (Clunie, Tonkin), “Freshwater fish and waterways in Victoria” (VFA) (Ayres)