

Applied Aquatic Ecology

Arthur Rylah Institute for Environmental Research

Autumn 2015 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

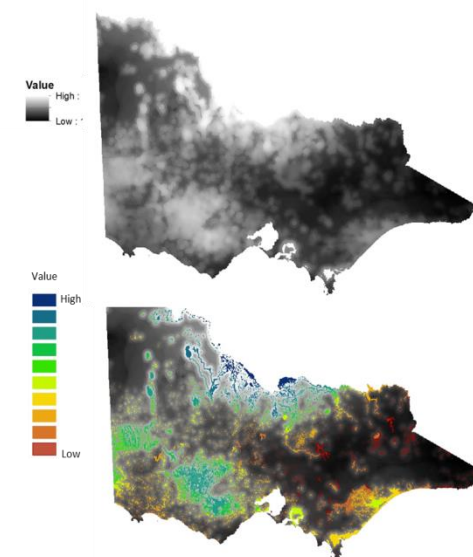
1. Survey data for **Macquarie perch** populations in the Yarra River (2007-15) and 4 other Victorian sites was analysed to compare reproductive success over time, and potential relationships with factors such as flow and temperature. In addition to identifying how these drivers govern reproductive success, the study found astounding similarity in patterns of recruitment between populations over time. Importantly, all populations have exhibited strong reproductive success the past 2-3 years - great news for the species as a whole!
2. ARI is leading the **Victorian Environmental Flows Monitoring and Assessment Program (VEFMAP) Stage 5**. This large-scale, long-term monitoring program is assessing ecosystem responses to changes in flow regime in several regulated, Victorian rivers which receive environmental water. Results are used to inform and support decision-making for environmental water. Stage 5 will include a focus on sharing stories and results, and using complementary data to strengthen links between environmental water and ecological outcomes.
3. ARI is involved in a Fisheries Research Development Corporation (FRDC) project '**Integrating fishery-derived and fishery-independent survey data to better understand and manage the Murray Cod fishery in the Murray-Darling Basin**'. This involves anglers catching and tagging Murray cod and scientists undertaking complementary electrofishing surveys, at selected sites, using specific protocols. This project will provide insights into how angler data can support management.
4. One new population for each of 2 **threatened galaxiids** (East Gippsland galaxias and McDowall's galaxias) were established in East Gippsland by translocation (Improving Native Vegetation & Threatened Species Management program). A new species of galaxias was discovered in East Gippsland during post-fire monitoring in the Snowy River National Park.
5. A population model has been developed for the **Murray cray** to evaluate different management scenarios, as well as the effects of natural catastrophes such as blackwater events.

Outputs

7 published & accepted journal articles (Aquatic Conservation: Marine & Freshwater Ecosystems, Environmental Management, Fisheries Management & Ecology, Proceedings of the Linnean Society of NSW, Ecological Modelling, Marine & Freshwater Research).



A new species of galaxiid from East Gippsland



Waterbird connectivity scores assigned to wetlands in Victoria



A Murray cray

Influencing change

- ARI has developed **wetland connectivity models** (for waterbirds, amphibians and wind dispersed seed) for Water and Catchments Group, DELWP (a users' guide is also being developed). This will help guide prioritisation of onground activities that support high value wetlands, restore degraded wetlands and protect wetlands from the spread of weeds and pathogens/diseases. A case study applied these models to assess the connectivity of wetlands west of Lake Wellington, Gippsland Lakes (in collaboration with Greening Australia).
- ARI is contributing to the **Murray-Darling Basin Environmental Water Knowledge and Research (EWKR)** project. This 5 year project aims to improve the science supporting environmental water management. ARI is represented on the leadership group and will be contributing to the data analysis and research components of the program for wetland vegetation and fish.
- Following the **2014 Orbost fires**, monitoring of the Orbost Spiny Crayfish, McDowall's galaxias and River Blackfish was undertaken. While there is evidence of recovery of the galaxiid, and persistence of the crayfish, the blackfish has disappeared from the area of the fire, and declined more broadly across East Gippsland. This highlights the need for a broader assessment of the status of River Blackfish within eastern Victoria.

Knowledge transfer and engagement

Presentations and participation - stakeholders and community groups:

- ARI worked with the local community and the Wangaratta Sustainability Network to **remove over 4 tonnes of Carp** (Upper Ovens River Carp Removal program). Other activities along Ovens River - a presentation to school children, electrofishing demonstrations and release of Macquarie perch (with NECMA).
- **Native fish migration** talk to State Wide Information Flora and Fauna Teams.
- **Fish and flows** talk at Euroa Water Forum.
- **Demonstration Reach Toolbox** presentation to Victorian Waterway Managers Forum and South Australian river managers meeting.

Congratulations

Wayne Koster received his PhD thesis from Deakin University – '**Movement Ecology and Conservation Implications for Riverine Fishes of SE Australia.**'