MMCP Collaboration

Education capacity building through Postgraduate studies

Student support is an important component of MMCP Collaboration, with postgraduate students able to carry out high-quality research at a reasonable cost and make an important contribution to the development of aquatic research capability. Student support was provided through the provision of competitive (merit-based) PhD ‘top-up’ scholarships, which was advertised nationally and internationally to attract suitably qualified candidates. These positions were at either the Albury-Wodonga or Bundoora campuses of La Trobe University.

Lorena Nogueira

Completion date: 2019

Supervisors: Amina Price¹, Susan Lawler¹, Paul Humphries² and Lee Baumgartner²

Water infrastructure and challenges for fish conservation: A trait-based analysis to foresee fish recruitment in regulated rivers

Objective:

Improve the understanding of larval dispersal in three Australian freshwater fish Golden perch (Macquaria ambigua Richardson), Murray cod (Maccullochella peelii), and Trout cod (Maccullochella macquariensis Cuvier, 1829), by investigating ontogenetic shifts in swimming behaviour under a range of simulated flow conditions.

Manisha Skakya

Completion date: 2020

Supervisors: Ewen Silvester¹, Gavin Rees³ and Aleicia Hollands¹

Impact of environmental stress on the protein and amino acid composition of freshwater organisms

Objectives:

⇒ Explore the variation in the amino acid composition of macroinvertebrate taxa collected from seven sites along the Murray River, Australia.

⇒ Investigate how metal contamination within river systems alter the amino acid composition of freshwater organisms.

Further information

MMCP Collaboration (MMCP) is a project supported by the Joint State Governments and the Murray-Darling Basin Authority to generate and adopt freshwater ecological knowledge through collaboration, to maintain research capability and contribute supporting science to underpin the Basin-Wide Watering Strategy.

MMCP Collaboration Final report: doi.org/10.26181/5d19927544b20

Thesis will be available on completion: Online repository

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Flows for fish: Using water flow to promote connectivity, recruitment and genetic diversity for Australian fish species

Objectives:

⇒ Use population genomic information to investigate the current state of population structuring and connectivity in four key Australian fish species, Common galaxias (*Galaxias maculatus* Jenyns, 1842), tupong (*Pseudaphritis urvillii* Valenciennes, 1831), Australian grayling (*Prototroctes maraena* Günther, 1864) and Murray cod (*Maccullochella peelii*).

⇒ Provide a detailed genomic exploration of breeding and recruitment dynamics of Murray cod populations and their interaction with river flow.

Completion date: 2021

Supervisors: Nick Murphy⁴, Katherine Harrisson⁴ and Zeb Tonkin⁵

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The influence of water chemistry on zinc bioavailability and toxicity in Australian freshwaters

Objective:

⇒ Collate water quality data from across Australia to determine median, 10th and 90th percentiles for pH, DOC and hardness within each state and territory.

⇒ Exposing the microcrustacean *Ceriodaphnia dubia*, to Zn²⁺ in artificial and natural freshwaters, simulating realistic ranges for: DOC, hardness and/or pH in Australians rivers, to determine how changes in water chemistry will influence Zn²⁺ toxicity to this aquatic organism.

Completion Date: 2020

Supervisors: Ewen Silvester¹

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Legacy effects of historical gold mining on floodplains of Victorian rivers

Objectives:

⇒ Investigate the characterization of the physical and geochemical changes that occurred in mine tailings after re-deposition on downstream floodplains and comparison of these tailings with the (relic) underlying floodplain sediments.

⇒ Understanding the chemical form of the re-deposited tailing in order to evaluate their potential bioavailability and environmental fate in these deposits of freshwater organisms.

Completion date: 2021

Supervisors: Nick Murphy⁴, Katherine Harrisson⁴ and Zeb Tonkin⁵

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Supervisor affiliations

¹La Trobe University, Wodonga Vic.  ²CSIRO Land & Water, Albury NSW  ³Charles Sturt University, Albury NSW  ⁴La Trobe University, Bundoora Vic.  ⁵Arthur Rylah Institute for Environmental Research, Heidelberg, Vic.