



AUSTRALIAN FRESHWATER SCIENCES SOCIETY

Formerly Australian Society for Limnology, Est 1961

May 2023 update from the ACT

Dr James Hitchcock, Prof Ross Thompson and others at the Centre for Applied Water Science (University of Canberra) are working with Ecofutures and Mallee CMA to investigate how wetting and drying of Hattah Lakes influences food resources available for water birds. James has recently been sampling the Huttah Lakes to characterise food webs.



Research technician Gus MacDonald and Dr James Hitchcock and sampling at Hattah Lakes in April 2023.

Prof Fiona Dyer (Centre for Applied Water Science, University of Canberra) has been providing some commentary for the ABC on the launch of the 2022 ACT CHIP report (the Catchment Health Indicator Program) which saw an improvement in water quality across the ACT and region in the past 12 months. The past two years of monitoring as certainly shown the benefits of wetter conditions for our local waterways.

Joseph O'Connell, PhD candidate in the Centre for Applied Water Science (University of Canberra), recently passed his confirmation – congrats Joseph! He is investigating sources of nutrient and metal pollution in urban lakes.

Joseph has also been active in running HDR Engagement and Networking Events for water science students. This includes the HDR Engagement Resilience conference was Wagga (27 and 28 March) and a networking event in Canberra (20 April). There was a very good gathering of HDR students and researchers in both events from universities in the South NSW, and it was a great opportunity for us to broad our network and share our knowledge.

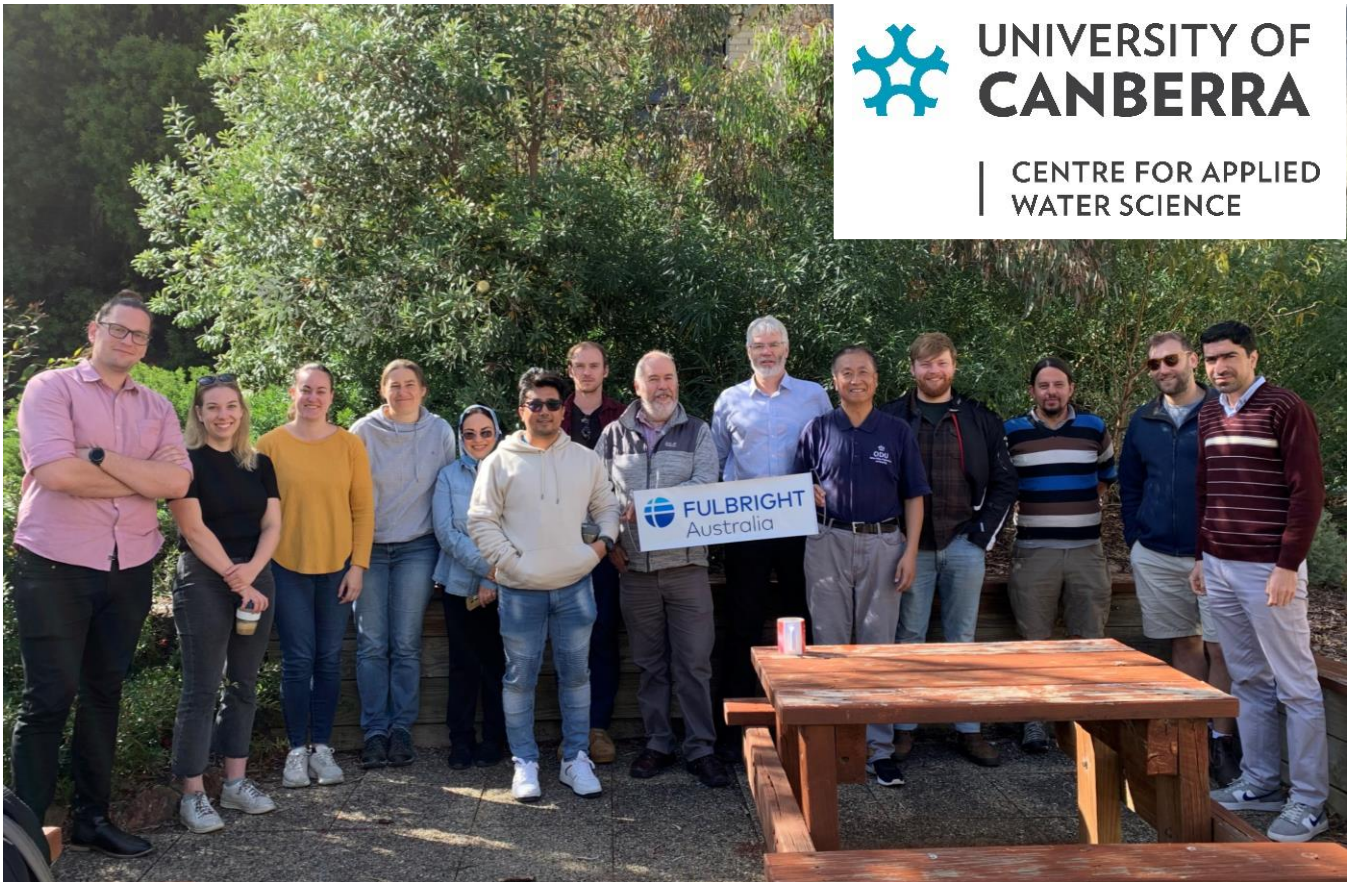


Kyle (UC Hons), Alana (UC PhD), Joseph (UC PhD), Dylan (APS) and Milad (UC PhD) at water science networking event



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WATER SCIENCE



Dr XiXi Wang (Old Dominion University, USA) has been visiting the Centre for Applied Water Science as a 2022-2023 US-Australia Fulbright Scholar.

Xixi Wang, Ph.D., P.E., is a professor in Department of Civil and Environmental Engineering at Old Dominion University (ODU), Virginia, USA, where he is Director of Hydraulics Laboratory. Xixi holds a Ph.D. degree in Agricultural Engineering (minor in Statistics) from Iowa State University of USA and M.S. and B.S. degrees in Hydrology and Water Resources Engineering from Tsinghua University of China. His current research interests include effects of climate change versus human activity on water resources, water-soil-vegetation nexus and equilibrium in changing climate, and watershed hydrology and stormwater management.



Joseph O'Connell, Dr Rod Ubrihien, and Dr XiXi Wang tour of the stormwater infrastructure on campus to get some insights on how to measure/model stormwater flow on campus

Attending the UN Water Conference March 2023, New York

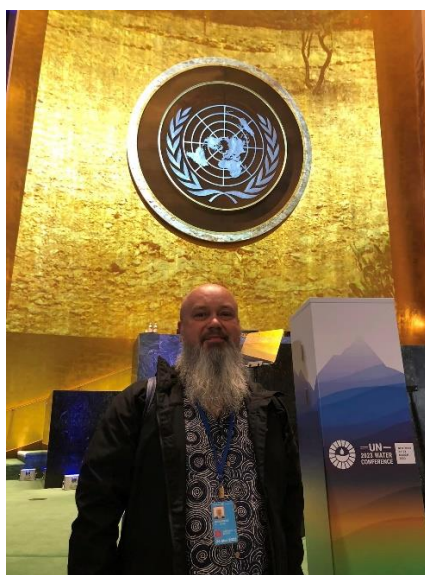
Associate Professor Bradley Moggridge (University of Canberra, AFSS President) and **Dr. Phil Duncan** (NSW) were part of the Australian delegation to attend the UN Water Conference in New York, this is the second conference in 46 years (last one was 1977), so was a big deal for us 2 Murri's to be there. The first commitment was attending the *Indigenous People's Pre-summit for the United Nations Water Conference*. The Summit was held off-site from the UN headquarters. The first day included welcome Chief Dwayne from the Munsee people Traditional Owners of Manhattan (photo right) and a song from Grandmother Lisa of the Anishinaabe Nation as well as other dignitaries.



The event was co-sponsored by the International Indian Treaty Council, Assembly of First Nations, United Confederation of Taino People, the Center for Support of Indigenous Peoples of Northern Russia, and the Indigenous Peoples of Africa Coordinating Committee. With Treaty being front and centre we Australian Indigenous people miss out and are limited in our ability to influence in Global Indigenous affairs in Water as we don't not have a Treaty, this is evident as New Zealand was the only Pacific nation invited to give an update. Day 1 consisted of a presentation/update from the 7 regions across the globe. Phil and I noticed that the Pacific Region had an update from New Zealand only. We approached the organisers and was able to be added to the Pacific Update. This fell at the end of Day 1 and we had 7 minutes between Phil and I. One quote that stuck out was: *"Treaty's don't make Nations, but Nations Make Treaties"*. Day 2 of the *Indigenous People's Pre-summit for the United Nations Water Conference*. There was a panel of high-level UN Indigenous Rapporteur's discussing their roles and how to influence at the UN and discuss their roles. They all were Spanish speaking from mostly South America. I asked a question to Pedro the Rapporteur for Human Right to Water and Sanitation on whether he or his unit had received or was aware or Australian Indigenous peoples plight in accessing safe water or any data on the issues? He didn't answer my question sadly. The second half of day 2 was coordinating the future of the pre-prepared Declaration, Phil and I signed it as Kamilaroi (No. 15) and below is the link.

[INDIGENOUS PEOPLES' DECLARATION FOR THE 2023 UNITED NATIONS WATER CONFERENCE | International Indian Treaty Council \(iitc.org\)](https://www.iitc.org/indigenous-peoples-declaration-for-the-2023-united-nations-water-conference)

Day 1 of the *United Nations Water Conference*. I was invited to be one of the 6 attending the official opening of the conference in the UN General Assembly, this was special, and I felt amazing sitting there for such a significant event 46years since the last one. As it was alphabetical Australia was second row to the left of the main stage see below photo.



Day 2 of the *United Nations Water Conference*. Phil and I were invited to be on a panel off-site at the Nature Hub, Phil and I discussed the importance of Indigenous Water Knowledge and the positives of building research to influence water management.

My main event and intervention occurred at the UNESCO (off-site) session Indigenous Peoples and Water where I presented an Australian case study on the value of Indigenous knowledge and water, this was to a packed room and was chaired by Dr Myrna Cunningham (who quoted me at events post my talk). See pictures below. The session was cosponsored by Australia as well as a number of other countries.

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SAVE THE DATE
UN 2023 WATER CONFERENCE - UNESCO OFFICIAL SIDE EVENT

INDIGENOUS PEOPLES AND WATER

23 MARCH 2023 13:30 – 14:45 (EST)

Doha Conference Room
FF Building, 304 E 45th St, 11th Floor
UNDP, New York, NY, USA

PHYSICAL EVENT AND WEBCAST
Online interpretation in English, French and Spanish

links@unesco.org

LiNKs
Local and Indigenous Knowledge Systems

In collaboration with Indigenous Peoples Organizations, UN Entities, NGOs, and other partners
Co-Sponsored by AUSTRALIA, BOLIVIA, CANADA, CHILE and MEXICO



Day 3 of the *United Nations Water Conference*.

The day Australia provided its update to the UN Water Conference through Minister Moss (NT) as it was every country providing this it was every 5 minutes in the General Assembly. The feedback was that the Ministers intervention was well received by all and was great to hear that Indigenous people were front and centre in her speech. A special moment for the NT Minister no doubt.

The return trip home took over 50hours with an inflight patient medical emergency, the plane turned around and had to unload a sick patient in India, this added an extra day and a half to the total trip but got home safely and tired.



Met with superstar basketballer Patty Mills which was a highlight he humble listened intently.

Dr Will Higginson (Centre for Applied Water Science, University of Canberra) has been busy detecting Lignum on the floodplain using drones and machine learning funded through the Mallee CMA.



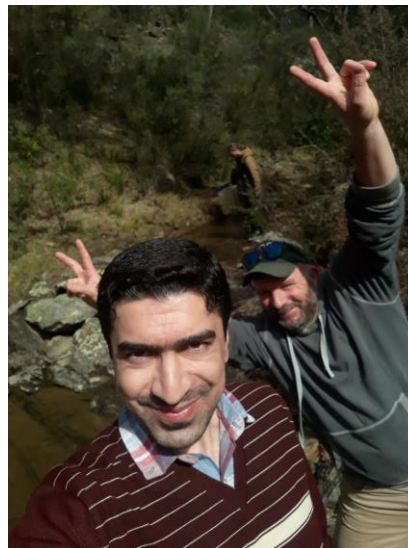
Will Higginson monitoring lignum condition with drone imagery



University of Canberra Professional Practice student Angela Lanspeary monitoring lignum

Milad Esmailbeigi (Centre for Applied Water Science, UC) has also recently been confirmed in his PhD – congrats Milad!

His PhD is examining whether metal contamination has adverse affects on chytrid fungus. Although metal contamination is generally a bad thing for our environment, he want to utilize this environmental challenge to potentially benefit amphibians against the chytrid fungus disease.



Milad and Gus McDonald sampling mine-affected streams



There is a constant permeation of the metal contamination into the water of this stream from abandoned mines that has impacted the biodiversity of this ecosystem.



CSIRO's Flow-MER Basin-scale waterbird ecology research team led by **Heather McGinness** has recently finished an intense fieldwork season. The waterbird team includes **Freya Robinson**, **Shoshana Rapley**, **Louis O'Neill**, **Sophie Gilbey**, **Ruan Gannon**, **Luke Lloyd-Jones**, and new recruit **Micha Jackson**, who will formally start with CSIRO in July. Highlights include:

- The latest technology in satellite-tracking transmitters fitted *for the first time in Australia* to Intermediate Egrets and Great Egrets. Tracking their movements across the Murray-Darling Basin and important Ramsar wetlands will provide critical information to inform environmental water management for these and other highly water-dependent and fish-dependent species and their habitats, building on the information gained by satellite-tracking Royal Spoonbills, Straw-necked Ibis and White Ibis over recent years.
- New and rare measurements, descriptions and biological sampling of Intermediate Egrets, Great Egrets, Yellow-billed Spoonbill, Glossy Ibis, Nankeen Night Heron, Little Black Cormorant, Royal Spoonbill and Straw-necked Ibis. Biological samples taken include blood, oropharyngeal swabs, cloacal swabs, feathers, regurgitate and scats. These will add significant impetus to collaborations and research development efforts looking at factors potentially affecting environmental watering outcomes and evaluation, including disease, energetics, diet, foodwebs, etc.

The team's achievements this breeding season are especially impressive considering repeated cancellations of planned fieldwork due to record flooding etc. and other challenges the team has faced, including unexpected illnesses, accidents, equipment problems and other issues.

If you'd like to know more about the research, check out these websites and articles:

<https://research.csiro.au/ewkrwaterbirds/>

<https://flow-mer.org.au/satellite-tracking-waterbird-movements-what-can-it-tell-us-and-how-does-it-work/>

<https://flow-mer.org.au/sharing-science-guide-satellite-tracking-of-australian-waterbirds/>

Associate Professor Brad Moggridge (University of Canberra) had a fantastic afternoon in late April with Ginninderry Indigenous Ranger Kye and Rehabilitation and Restoration Officer Violet (UC graduate) for a tour of Ginninderry Conservation Corridor with a Canadian Scholar delegation. They were very interested in hearing about the corridors management and Indigenous involvement as in Canada the First Nations are called Guardian's not Rangers. Kye and Violet were very impressive in their knowledge and passion for protecting the corridor.

The delegation included: Assistant Professor Diana Lewis, Dr. Heather Castleden and her son Dylan, Tom Gleeson, Dr Emma Woodward and Associate Professor Brad Moggridge.



Kye explaining the difference between Native Raspberry and invasive Blackberry, near Casuarina Creek

The delegation with a Murrumbidgee River as a backdrop.



Dr Darren Giling (Centre for Applied Water Science, University of Canberra) has been measuring the effect of floodplain inundation on ecosystem metabolism on the Lachlan River, NSW.



Overbank flooding in October 2022



Baseflow in March 2023



Mapping channel complexity and flow habitat with a Acoustic Doppler Current Profiler



Using light and dark bottles and chambers to measure productivity in river and floodplain habitats following widespread flooding.



Lachlan River fieldwork by PhD candidates Alana Cormican and Kishor Maharjan

Alana Cormican (Centre for Applied Water Science, University of Canberra) was recently successful in obtaining funding from the Holsworth Wildlife Research Endowment for her PhD research into decapod abundances in low-lying rivers. Congrats Alana!

Thanks to this, she has been able to start quantifying the biomass of *Macrobrachium australiense* and *Paratya australiensis* per square metre within the Lachlan River, with one trip completed in March and another scheduled for September.



Sampling and electrofishing for decapods



Kishor Maharjan (Centre for Applied Water Science, University of Canberra) continues sampling zooplankton for his PhD project and is currently running an egg incubation experiment.

Seasonal changes in water temperature are vital components affecting both hatching and zooplankton's community dynamics across different river habitats. One of the controlled-temperature experiments is proposed to determine the potential contribution of 'egg bank' to seasonal population emergence. This will be undertaken by taking soil samples from riverbanks and floodplain areas of the Lachlan River in central western New South Wales, Australia, and incubating them at two experimental (controlled temperature) chambers for 4 weeks. Sampling and subsequent counting will be carried out over time to investigate the differences in hatching abundance and diversity patterns of zooplankton.