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Collaborative research on fish passage and movement in Gayini Wetlands

By Hiruni Kammanankada and Samuel Nolan

Fish in Gayini Wetlands have become of particular importance to a group of researchers from the University of NSW.

The fish research team comprised of PhD candidates Hiruni Kammanankada and Samuel Nolan, and Dr Jasmin Martino from the Centre of Ecosystem Science and Water Research Laboratory from UNSW visited the region recently and was supported by Jamie Woods from the Nari Nari Tribal Council and his Rangers, particularly Cody Cosson.

Over the month of October, their key focus was investigating the movement and upstream passage of fish inside the Gayini Wetlands.

The first project centred on transporting fish over in-stream barriers, like dams and weirs. These structures interrupt the natural flow of the river, preventing the natural migration of fish. These obstructions have contributed to a decline in freshwater fish populations world-wide.

Fishways exist to try and help fish navigate these barriers, such as the Denil Fishway at Mildura Weir. UNSW has been experimenting with an innovative fishway concept to transport fish through tubes. The Tube Fishway works by attracting fish into a pipe downstream of a weir, and then uses the energy of a hydraulic surge to lift fish up and over a barrier.

This type of fishway may require less installation and maintenance costs due to the relatively simple design of the structure, which is primarily achieved using two valves and some pipe. A field Tube Fishway was temporarily installed and operated at Bala regulator in the Gayini Wetlands, and valuable data was collected that will be used to improve the design and operation of the fishway. The healthy and diverse fish stock at Gayini allowed the team to better understand how native fish interact with the current fishway design, so the team can continue perfecting a fish passage solution for Australian freshwater fish.

The second project focused on tracking the movements of native Golden Perch (yellowbellies) and invasive Common Carp through the floodplain system. Fish were netted, surgically implanted under anaesthesia with radio tags, and released back into the system to be tracked with a drone mounted receiver system.

The Gayini wetlands contain a diverse range of habitats for fish, from rivers and channels, to floodplains, swamps, and lakes. Many of these habitats are ephemeral and are dependent on seasonal flows and rainfall.

During prolonged dry periods, these habitats begin to dry up, trapping fish who are unable to navigate back into the main channels. Flows into Gayini are controlled by a series of regulators, starting up near Maude, and occurring in the channels throughout the property.

This research will work closely with the Nari Nari Tribal Council to target the release of water into an ephemeral lake and then track the movement of the fish up through the system. In doing so, we will save these fish from a drying lake, and return them to the main rivers and channels.

Through this research, we hope to provide insights into targeting the release of water through the system to benefit natives, whilst minimising the movement of Carp.

Our research team has greatly appreciated the opportunity to work in such a unique part of the country, benefiting from the support of the Nari Nari Tribal Council, as well as the hospitality of the people of Hay and Maude.

We look forward to coming back soon!