Fish movement and sensitivity to contaminated mine water

Project update, August 2019

David Crook, Charles Darwin University

Northern Australia Environmental Resources Hub

National Environmental Science Programme

World class research to support sustainable development in northern Australia

This project is combining fish tracking and imaging technologies to count and characterise fish migration and residence in Magela Creek both upstream and downstream of Ranger uranium mine. We're linking this fish movement information with modelling of water flow to assess likely effects of mine-water discharges and how we can improve monitoring.

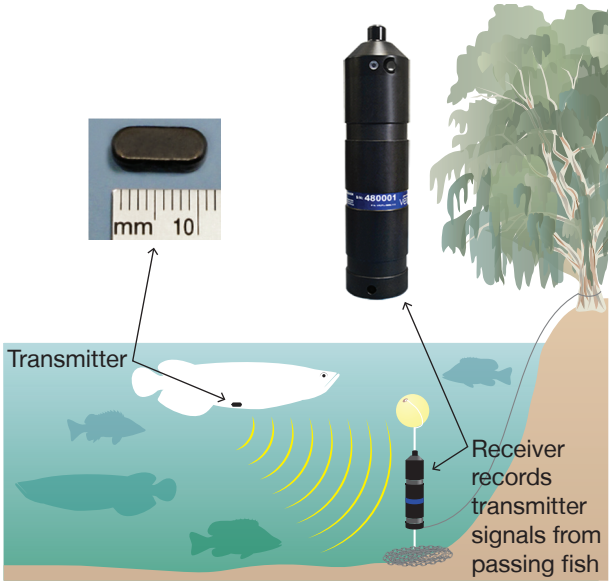
What's new?

- Following consultation with Traditional Owners, the project team and Djurrubu Rangers commenced fieldwork in December 2018. Although there was a delay with some essential fieldwork equipment, we were able to complete all planned activities before the first rains of the 18/19 wet season.
- Sonar fish surveys conducted in Bowerbird (upstream of the mine) and Mudjinberri (downstream) Billabongs in December 2018, February 2019 and May 2019 are giving us highly detailed information on fish species, size and behaviour.
- In November and December 2018, 55 fish (sooty grunter, saratoga, sharp-nose grunter) were tagged with acoustic transmitters in Bowerbird Billabong and 10 acoustic receivers were installed across the study area.
- In March 2019, an additional 45 small-bodied fish (sooty grunter, catfish, spangled grunter) were tagged in the lower reaches of Magela Creek below the mine site.
- Data downloaded from the listening stations so far have revealed that, despite the poor wet season and intermittent peak flows through Magela Creek, some fish migrated past the mine site from Bowerbird and into Mudjinberri and beyond, with several returning to Bowerbird during recessional flows.

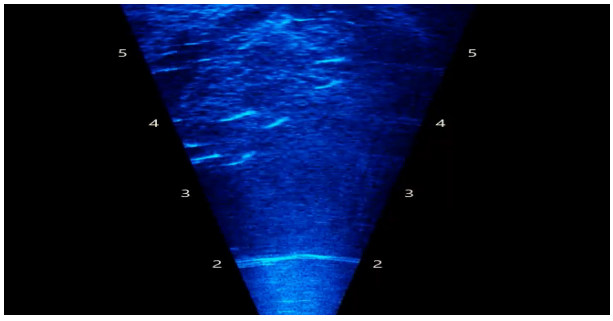
What's next

- Additional sonar surveys are planned for Bowerbird and Mudjinberri Billabongs over the 2019 dry season and coming wet season.
- We are continuing to collect, download and analyse the sonar data and acoustic receiver information.
- We will be presenting the ongoing findings of this research to partners and stakeholders, as well as offering insight into the use of the sonar data to the broader scientific community.

Magela Creek is in Kakadu and runs through the Ranger uranium mine lease, photo Brendan Adair.



Acoustic transmitters give information on fish movement.



Sonar gives detailed information on fish, such as identifying species (catfish) in this scan.

Project summary

Flowing through the Ranger uranium mine lease and into Kakadu National Park, Magela Creek is home to important populations of native fish species that need to be able to move between the river, floodplain and escarpment country at different times of the year. Weathering of waste rock from the Ranger mine releases contaminants, primarily magnesium sulfate. These contaminants are washed out by the rain and are predicted to move through the local groundwater towards Magela Creek. Depending on the concentration, the magnesium sulfate (a salt) has the potential to affect fish, trees and other ecosystems in and near Magela Creek downstream from the Ranger mine site.

This project focuses on Magela Creek, both upstream and downstream from Ranger uranium mine.

Tagging fish with acoustic tags is a precise task requiring patience and finesse, often in challenging field situations, photo Brendan Adair.

Further information

Contact project leader Associate Professor David Crook, david.crook@cdu.edu.au

This project is a collaborative partnership between Charles Darwin University and the Australian Government's Supervising Scientist Branch.

The project page can be found on the Hub website, along with the project start-up factsheet.

This project is due for completion in June 2020.


Northern Australia Environmental Resources Hub
Fish movement and sensitivity to contaminated mine water
Start-up factsheet
Salty water from mine waste rock may affect fish movement and other ecosystem processes
Overview

This project is supported through funding from the Australian Government's National Environmental Science Program

Northern Australia Environmental Resources Hub
National Environmental Science Programme
nespnorthern.edu.au
nesp.northern@cdu.edu.au
/NESPNorthern
@NESPNorthern

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