

Improved detection of non-native freshwater fish species in northern Australia

Project information



National Environmental Science Program



The Mozambique Tilapia is an invasive freshwater fish. Photo: Destinationkho / CC-BY-SA 3.0.

This project will investigate the proliferation of non-native freshwater fish species in northern Australia. To achieve this, project researchers will examine where invasive species enter freshwater systems, as well as review and improve upon existing environmental DNA (eDNA) detection tools. This will provide valuable information to waterway managers.

Project details

The introduction of non-native freshwater fish poses significant risks to native biodiversity and ecosystems in northern Australia. Many of these species, primarily from the aquarium trade and low-intensity aquaculture, have established populations in urban areas like Townsville and Cairns, where they can outcompete native species for space and resources. Identifying pathways for these introductions and developing effective detection methods are crucial for managing their impact. The project will focus on assessing the status of non-native fish species in northern Australian waterways, including potential threats they pose to native species and habitats.

Through a combination of desktop research, threat assessments, and field surveys using eDNA technology, the project will enhance detection capabilities for high-priority pest species. Existing eDNA tools will be evaluated and refined to improve rapid screening methods. The research will support the development of policies to prevent the spread of invasive species and provide essential data for the DCCEE Live Import List team to manage the risks posed by non-native fish to Australia's environment.

Key research areas

To help protect Australian aquatic ecosystems and native freshwater fish from non-native invasive fish, this project is:

- evaluating existing eDNA detection tools and developing an improved eDNA-based tool (and recommendations for further improvement) for rapid screening of water samples for non-native fish
- surveying priority sites for the presence of non-native fish
- informing DCCEE regarding management of the aquarium trade Live Import List.



Non-native freshwater fish can out-compete native species for food and space. Photo: Curtis Meyers / CC-BY-SA 4.0.

What is the NESP Resilient Landscapes Hub?

The Australian Government's National Environmental Science Program (NESP) funds environment and climate research. NESP currently supports 4 multi-disciplinary research hubs, each hosted by an Australian research institution. The program:

- provides evidence for the design, delivery and on-ground outcomes for environmental programs
- helps decision-makers, including those from Indigenous communities, build resilience
- supports positive environmental, social and economic outcomes.

This project is funded by the NESP Resilient Landscapes Hub, which is hosted by the University of Western Australia. The Resilient Landscapes Hub's research supports the management of Australia's terrestrial and freshwater ecosystems and makes them more resilient to extreme events and pervasive pressures.



Mozambique Tilapia are known to uproot aquatic vegetation, increasing bank instability. Photo: Greg Hume / CC-BY-SA 3.0.

Further information

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