WATER SECURITY FOR NORTHERN AUSTRALIA PROGRAM (WSNA)

GILBERT RIVER CATCHMENT

North Queensland

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WSNA program locations

The Gilbert River catchment is one of the four nodes in the Water Security for Northern Australia program. The catchment holds environmental, cultural and economical values, which is mostly attributed to the river system and permanent waterholes that stretch the length of the catchment. The floodplain and estuary support a rich diversity of wildlife, a thriving economy and tourism sector for the region. Protection of these values is important, so the outcomes of this project will support informed development decisions in the catchment, to ensure the natural values are protected into the future.

research topics

- Floodplain, rivers and tributary aquatic flora and fauna inventory.
- Persistence and extent of waterholes in the catchment and tributaries, and groundwater contribution.
- Examining the ecosystem services gained and loss for proposed development areas.
- Indigenous values mapping and water resource enterprise production identification.

what's happening

- Detailed assessment of aquatic flora and fauna in the catchment.
- Examining ecosystem services under threat with development planned in the catchment.
- Indigenous cultural values and opportunities for water development in the catchment.
- Collecting scientific data for priority knowledge gaps identified by a Technical Reference Group and Traditional Owners.

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did you know?

Waterholes, especially permanent ones, in the Gilbert River catchment are critical habitats for aquatic species. They also provide seasonal watering holes for many terrestrial species.


Image credit G. Cranitich Qld Museum


Tagalaka Country, credit Jeanie Govan, Tagalaka Aboriginal Corporation

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Image credit N.Waltham

research topics the detail..

1.1 Floodplain, river and tributary aquatic flora and fauna inventory



Field surveys on floodplain, rivers and tributaries to identify aquatic species range using a combination of traditional, digital technology and eDNA sampling.

Map the distribution of sawfish in the catchment using eDNA sampling technology.

Define waterhole types based on limnology, water quality, persistence, and species present.

The freshwater sawfish can grow up to 6m in length and has a lifecycle requiring it to move between rivers and estuaries. Impediment to this movement requirement, from man-made barriers, has impacted the protection of this species in Northern Australia.

1.2 Waterholes and groundwater



Using spatial satellite data and river system hydrology data to examine the size ranges between wet and dry season waterholes.

Examine the water quality and ecology in waterholes with different dry-down rates to understand the underlying processes and responses to changes.

Using tracers in water chemistry like stable isotopes and radioisotopes, define the groundwater contribution to waterhole permanency.

The permanency of waterholes in the north is a response between groundwater and surface water inputs. We can examine this relationship, and changes by using water chemistry tracers to decipher groundwater from surface contribution to waterholes.


Image credit N.Waltham


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1.3 Ecosystems in proposed development areas

Examine local agricultural development considerations in the catchment and implications on environmental services.

Habitat provision by agricultural development land use, e.g. farm dams as productive habitat for aquatic and terrestrial species.

Examine data requirements for development to recognise the approval barriers in the catchment.

Partnering with farmers to measure environmental services gained and lost in developed areas of the catchment.

Water extraction for agricultural development in the Gilbert River catchment is approximately 10% of the total allocation. This means more agricultural development is possible in the catchment, utilising the remaining water allocation.

1.4 Indigenous values mapping + water resource enterprise product identification

Understanding and mapping of the cultural values within the catchment.

Understanding the potential for water resource development by Indigenous groups in the catchment.

Ensuring appropriate two way knowledge sharing in line with the 'Our Knowledge Our Way' guidelines for genuine research co-design.

Train Indigenous Ranger groups in water sampling and monitoring to examine changes in nutrients, turbidity and groundwater trace elements.

Waterholes in dry tropical rivers in Northern Australia are culturally important – they are places for meeting, resting, celebrations and for food resources.



Image credit N.Waltham

"The Gilbert River Catchment floodplain and estuary supports a rich diversity of wildlife, a thriving economy and tourism sector for the region. Protection of these values is important."

Assoc Prof Nathan Waltham
TropWATER

WATER SECURITY FOR NORTHERN AUSTRALIA (WSNA) PROGRAM

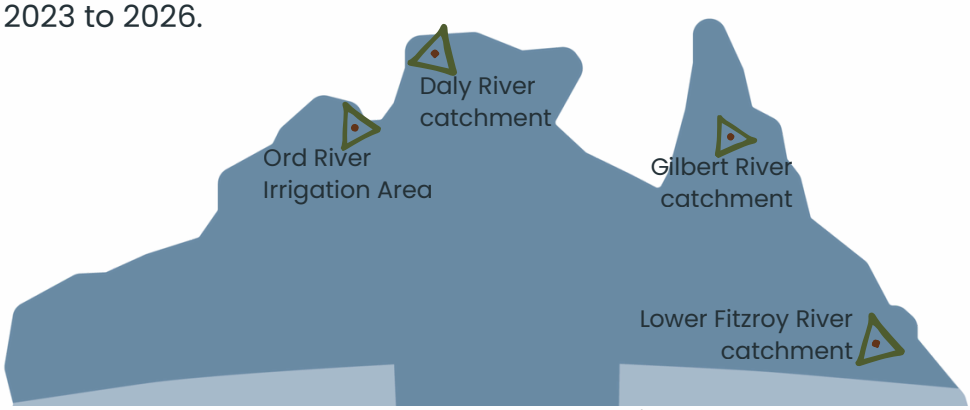


The WSNA program is being delivered through a partnership between the Cooperative Research Centre for Developing Northern Australia (CRCNA) and the Northern Australia Universities Alliance (NAUA) from 2023 to 2026.

WSNA is a research-focused approach to demonstrating that economic growth and environmentally healthy and sustainable eco-systems can co-exist.

The program consists of 15 projects (research topics) co-designed with stakeholders in each focal node that look into issues that prevent or restrict development of water resources, effective use, equitable access and environmental outcomes of water use.

The four focal nodes were developed through a 5-month engagement phase and now report to regional stakeholder advisory groups.



WSNA program locations

WSNA work packages

- Research across Northern Australia
- Water quality and the environment
- Water availability and the environment
- Cropping systems and new crops
- Supply chain and alternative economies

Research focus

- Water resource availability and allocation
- Environmental impacts and management
- Improved economic returns from the use of water resources
- Greater Indigenous benefit from water resources

Topics for other WSNA program nodes

Lower Fitzroy catchment (Qld)

- Prospects for new agricultural technology across the north.
- Optimising environmental water quality monitoring.
- Prospects for specialty crops.
- Modelling the upstream and downstream supply chain needs for efficiencies.

Daly River catchment (NT)

- Investigation of multi-catchment climate change models.
- Improved understanding of the sources of springs that feed into the Daly River to assist water management.
- Wet season floodplains and water requirements of ecosystems.
- Cropping systems in the catchment, present and future.

Ord River Irrigation Area (WA)

- Review of water/catchment management in tropical environments.
- Assessing agricultural runoff and impacts to the Keep River.
- Understanding the values of water in the Ord River Irrigation Area.

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