WATER SECURITY FOR NORTHERN AUSTRALIA PROGRAM (WSNA)

DALY RIVER CATCHMENT

Northern Territory

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WSNA program locations

The Daly River catchment is one of the four nodes in the Water Security for Northern Australia program. This project aims to enhance our understanding of the water origins of springs that discharge into the Daly River, understand the factors influencing agricultural growth and water use policies. The project will look into improving our understanding of ecological functioning to guide decisions on water management that safeguard the region's biodiversity and promote sustainable water use. The project is also investigating the potential impacts of climate change on both groundwater and surface water resources across Northern Australia.

research topics

- Investigating multi-catchment climate change models.
- Improved understanding of the Oolloo Dolostone springs and the coupled groundwater-surface water model.
- Investigation of wet season water take on floodplains and water requirements of ecosystems.
- Cropping systems in the Daly River catchment, present and future.

what's happening

- The study is investigating the potential impacts of climate change on both groundwater and surface water resources.
- Enhance our understanding of the water origins of springs that discharge into the Daly River in the Northern Territory.
- Investigate potential implications of recent changes to surface water extraction policy on the Daly River's floodplains, using remote data to review rainfall, river flow, and floodplain water interactions.
- Assess potential interest and barriers in diversifying to higher value crops.

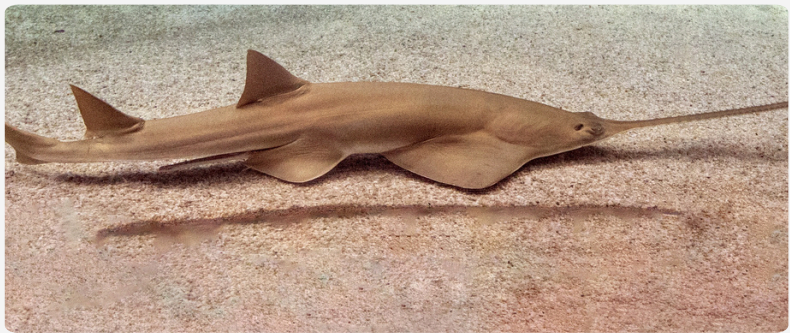
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did you know?

The Daly River is home to one of the largest remaining populations of freshwater sawfish in the world. With over 100 different fish species recorded, the Daly River plays an integral role in sustaining the NT's aquatic ecosystem.





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research topics the detail..

2.1 Investigating multi-catchment climate change models

Produce temporally downscaled projections of key hydrological drivers including rainfall, temperature and evapotranspiration at sites across Northern Australia.

Identify optimal models to project hydrological impacts from global climate change.

Identify potential changes to diffuse groundwater recharge using soil-vegetation-atmospheric simulations.

Conduct case studies to identify the range of future hydrological conditions of catchments and their associated groundwater resources.

With climate change some regions that receive less rainfall may actually see an increase in groundwater recharge, while others may receive more rain, but less recharge. Rainfall intensity, and evapotranspiration are important factors in influencing groundwater recharge.

2.2 Improved understanding of the Oolloo Dolostone springs and the coupled groundwater-surface water model

Document water requirements to maintain the health of springs in the region.

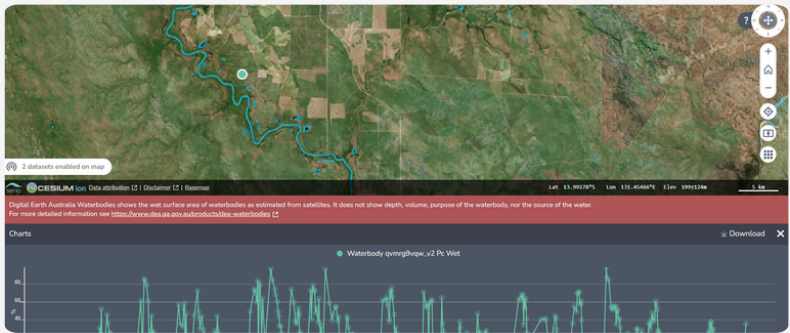
Explore the use of a wide range of groundwater tracers, including radioisotopes and microbial source tracking to determine water origins.

Analysis of surface and groundwaters to inform water resources management of the area.

Work with Traditional Owners for two-way learning on interactions between the Oolloo Dolostone and the Daly River, and inform the water requirements of culturally significant sites.

The Daly River is fed by 100s, if not 1000s of springs and flows all year round.





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2.3 Investigation of wet season water take on floodplains and water requirements of ecosystems

Review of the implications of surface water extraction on riverine floodplains and wetlands.

Use of remote sensing products to document the extent of floodplain ecosystems over time.

Explore relationships between floodplain area, rainfall and river flow.

Investigate potential impacts of surface water extraction on floodplain area, and the potential implications that this may have on ecosystems.

2.4 Cropping systems in the Daly River catchment, present and future

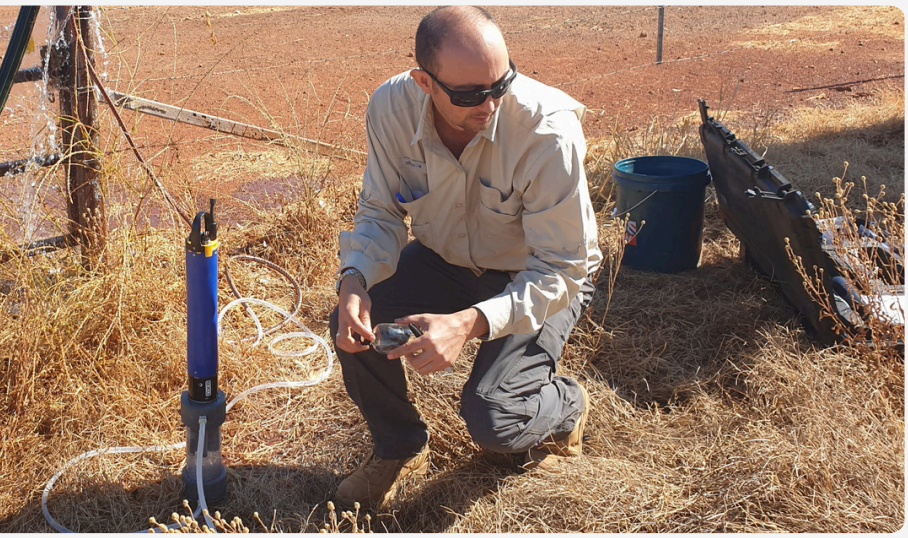
Gain a deeper understanding of what factors influence current farming systems, using interviews, questionnaires and a review of existing reports and literature.

Explore barriers and facilitators for crop diversification in the Daly River catchment.

Delve into the basis of current agricultural practices, currently focused on hay, cotton seed, melon and mango crops.

Understand the implications from the introduction of a price on water and other potential water policy changes.

The Daly River catchment is one of the most important agricultural regions in the NT. It's known for its mango production, growing around 3.5 million trays of mangoes annually, contributing significantly to the Australian mango industry.



> "We aim to inform water management strategies, focusing on biodiversity conservation and sustainable water use, amidst increasing demands and changing climate conditions."

Dr Dylan Irvine
Charles Darwin University

WATER SECURITY FOR NORTHERN AUSTRALIA (WSNA) PROGRAM

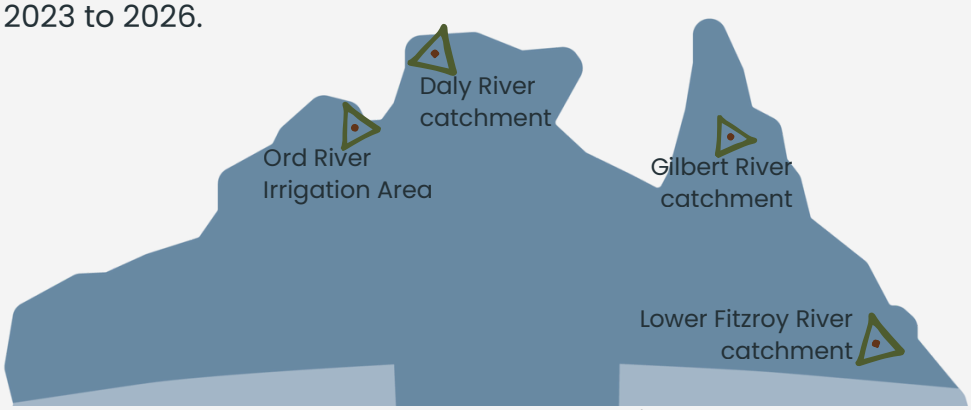


The WSNA program is being delivered through a partnership between the Cooperative Research Centre for Developing Northern Australia (CRCNA) and the Northern Australia Universities Alliance (NAUA) from 2023 to 2026.

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.

Gilbert River catchment (Qld)

- Conservation value of aquatic species.
- Contribution of groundwater to waterhole persistence.
- Drought vulnerability
- Ecosystem services (e.g. carbon storage) for proposed development.
- Indigenous values and potential of water enterprise products.

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.

Proudly supported by: CRCNA, Northern Australia Universities Alliance, CQUniversity Australia, Charles Darwin University Australia, James Cook University Australia