



# Impacts and Achievements of the MTSRF

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2010 Annual Conference of the  
Marine and Tropical Sciences Research Facility (MTSRF)  
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Showcasing the Australian Government's investment  
in the MTSRF for improved sustainability of the  
North Queensland region, and Australia

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Pullman Reef Hotel & Casino  
Cairns, North Queensland



## Abstract

### [MTSRF Project Number 3.7.2s](#)

## Refining Water Quality Objectives in the Tully Basin through a Community Based Approach

Julie H. Tsatsaros<sup>1,3</sup>, Jon E. Brodie<sup>1</sup>, Iris C. Bohnet<sup>2</sup>, Peter Valentine<sup>3</sup>

<sup>1</sup>Australian Centre for Tropical Freshwater Research, James Cook University, Townsville, Queensland, Australia, 4811; <sup>2</sup>CSIRO Sustainable Ecosystems, Tropical Forest Research Centre, Atherton, Queensland, Australia; <sup>3</sup>School of Earth and Environmental Sciences, James Cook University, Townsville, Queensland; Australia

A national priority of the Australian Government is to help local communities rehabilitate and better protect coastal catchments and critical habitats in the Wet Tropics and Great Barrier Reef (GBR). The Wet Tropics in northeast Queensland contains the highest biological diversity in Australia, has outstanding environmental values (EVs), and is economically important. This research project focuses on engaging local stakeholders in a tropical rainforest basin in the development of a water quality framework for freshwaters draining to the GBR. The development of a comprehensive water quality framework can provide a template for use in other tropical rainforest basins in the future.

The Tully basin in northeast Queensland was chosen as a case study for this research as it is biophysically and economically representative of other Wet Tropics basins in the region, is in close proximity to the GBR, and is a pollution hot spot in the GBR lagoon. Increasing agricultural and urban growth within this region is likely to degrade water quality to freshwaters, estuarine and marine environments. There is a need to develop community based Water Quality Objectives (WQOs) in the Wet Tropics to conserve, protect, and improve water quality for the freshwater reaches draining to the GBR. Main research goals include explaining a process for obtaining EVs from all user groups in the basin, outlining the steps needed to interpret these EVs into the development of a WQOs framework, and describing a methodology that incorporates biophysical data and local traditional/ecological knowledge into Wet Tropics WQOs. This research is expected to assist in providing positive steps in determining the essential processes or components in the development of a successful stakeholder based water quality improvement strategy in the Wet Tropics.



Australian Government

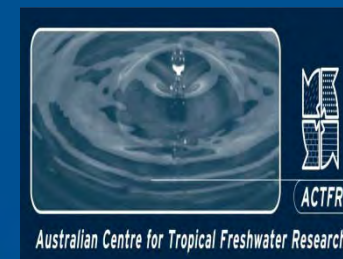
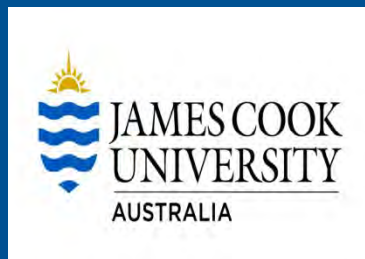
Department of the Environment, Water, Heritage and the Arts



Marine and Tropical Sciences Research Facility

# Refining Water Quality Objectives in the Tully Basin through a Community Based Approach

Julie Tsatsaros, James Cook University





## Background

- Local, national, international priorities for managing natural resources and engaging stakeholders to better protect World Heritage Areas (WHAs)



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## Tully Basin

- 2787km<sup>2</sup>
- Wet Tropics WHA (65% of the basin)
- Tully River
  - 130 km
  - least variable
- Close proximity to GBR

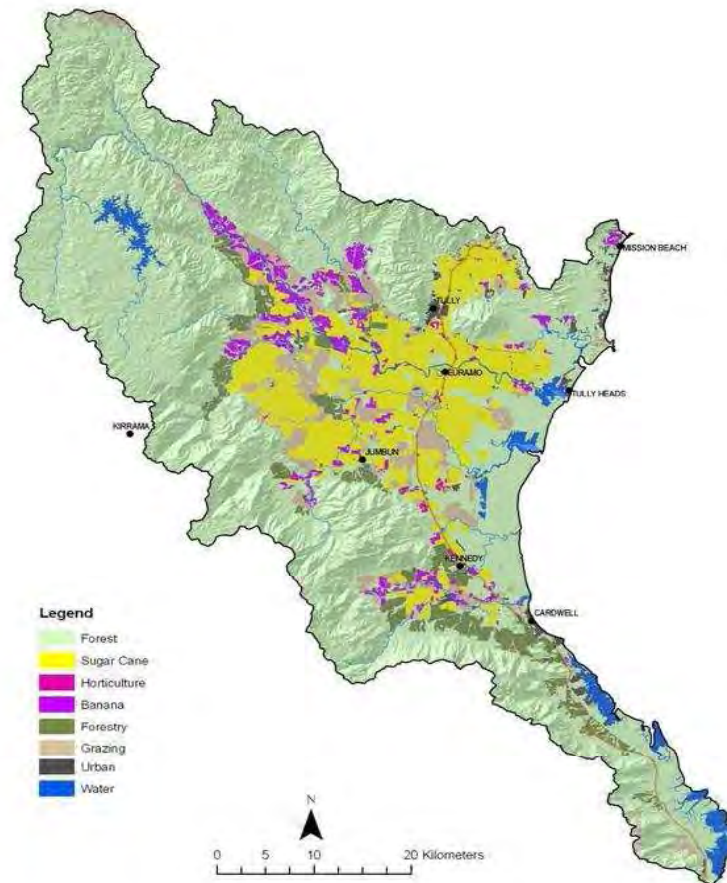




## Study Area



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## Traditional Owner Groups

Three Aboriginal  
Traditional Owner  
Groups Live in the  
Area:

- **Girramay**
- **Jirrbal**
- **Gulnay**





## Tully Catchment Water Quality Improvement Plan (WQIP)

In 2007, Tully WQIP developed to reduce loads to GBR:

- Sediment
- Nutrients
- Pesticide Loads



Establish Environmental Values (EVs) & WQOs to protect GBR

**\*\*\*Focus was not on WQOs for freshwaters within the basin**  
– targeted downstream GBR



## Tully WQIP cont'd...

There were freshwater issues of concern:

- Safety of drinking water
- Limited/no access cultural/spiritual significance
- Loss of waterbodies

Community supported setting WQOs to protect EVs for *freshwaters*

\*\*\*Research gap exists





## Benefits of Developing Regionally Specific WQOs

- Representative local water quality conditions into realistic WQOs for freshwaters in Wet Tropics
- Potential for greater management, restoration of natural resources in Wet Tropics
- Strengthen/engage local communities to improve WQ conditions
- Future opportunities for co-management by user groups



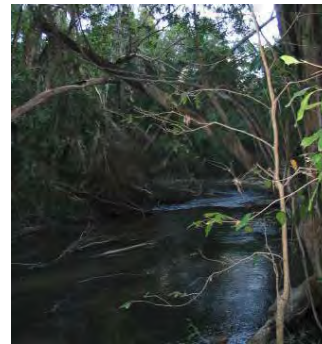


## Main Research Goal

### *Goal:*

Engage local stakeholders in the development of a WQ framework to improve water quality conditions for freshwater reaches

- Explore potential co-management opportunities for all stakeholders
- Framework can provide template for other Wet Tropics catchments





## Main Research Question

How can local EVs from a community be incorporated into a WQO framework, and what methodology is best suited to achieve this?





## Methodology

- Water Quality Research Methods (biophysical science)



- Social Science Research Methods





## Methodology









- **Step 1.** Document/verify (EVs) from all user groups in the Tully Basin.
- **Step 2.** Design a community based water quality monitoring program.
- **Step 3.** Develop framework to interpret EVs & water quality information into WQOs.
- **Step 4.** Identify factors supporting/inhibiting establishment of WQOs.





## Research Methods Step 1

Document/verify (EVs)\* from all user groups in the Tully River Basin

- Aquatic ecosystems 
- Primary industries 
- Recreation and aesthetics   
- Drinking water 
- Industrial uses 
- Cultural and spiritual values 





## Research Methods Step 2

Design a community based water quality monitoring program to provide additional local water quality knowledge to fill in gaps





## Research Methods Step 3

Outline Steps to Interpret EVs and WQ Information into WQOs

- A. Broad Framework for Establishing WQOs
- B. Refining WQOs
- C. Developing a Framework for Establishing WQOs





## Step 4

Identify Factors Supporting/Inhibiting Establishment of WQOs





## Progress To Date:

- Review of Water Quality Conditions in the Wet Tropics

Julie H. Tsatsaros, Jon E. Brodie, Iris C. Bohnet, Peter Valentine. A General Overview of Current Water Quality Conditions in the Wet Tropics Region, Australia. *Marine and Freshwater Research*. To Be Submitted.

- Engage with local stakeholders:

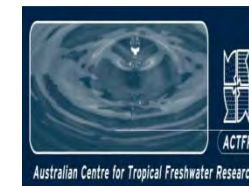
- Cassowary Coast Regional Council
- Girringun Aboriginal Corporation
- Researchers working in Basin





## Acknowledgements

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## Marine and Tropical Sciences Research Facility (MTSRF)



James Cook University

CSIRO

