TRaCK
Tropical Rivers and Coastal Knowledge

Assets and Values

The value of Australia's tropical river ecosystem services

Australia's Tropical Rivers – How Much Are They Worth?
Summary of Project Findings

What is this project about?

Northern Australia's tropical rivers are of great value to the people of the region as well as people in other parts of Australia. This value can be seen in the contribution that these rivers make to:

- life, culture and lifestyles;
- economic activities such as agriculture, pastoralism and tourism;
- social and/or cultural activities such as camping, recreational fishing, hunting and customary activity; and
- environmental outcomes such as healthy floodplains, productive fisheries and biodiversity.

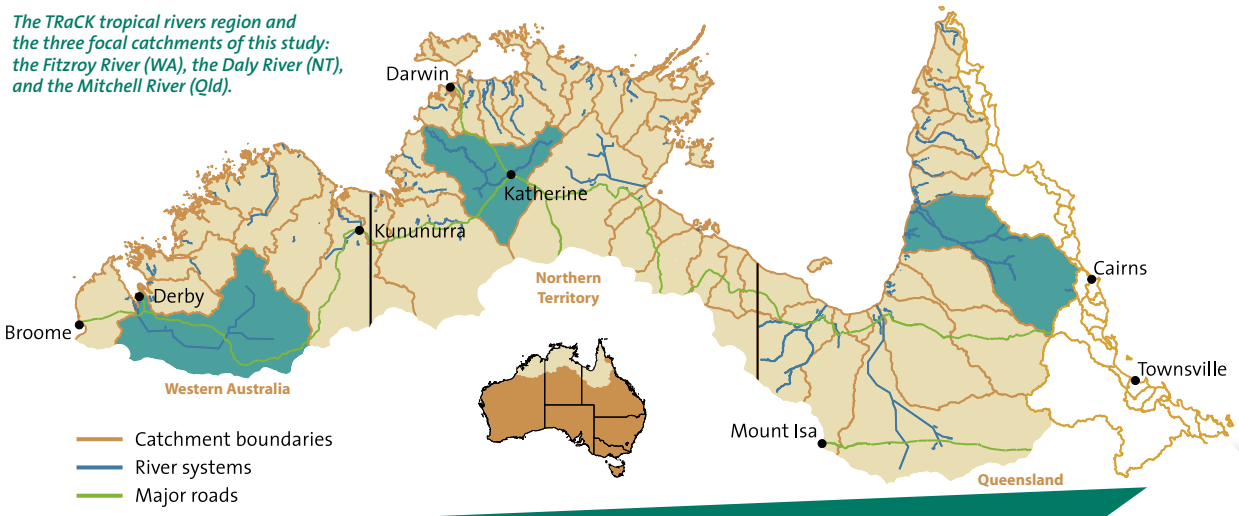
These are all examples of the goods and services provided by ecosystems that benefit, sustain and support the well-being of people. These are known as 'ecosystem services'.

Many ecosystem services are difficult to see and measure, and so are often not included in planning and decision-making. We can start to correct this by identifying ecosystem services, and assessing their value to communities in dollar terms.

This project estimates the economic value of the 'ecosystem services' of three tropical rivers in Northern Australia – the Fitzroy River (WA), the Daly River (NT), and the Mitchell River (Qld). By placing a dollar value on tropical river ecosystem services we can provide communities, industries and decision-makers with information about some of the benefits and costs of development that has previously been unavailable. This is especially important given increasing interest in the potential for development in northern Australia.

Waterhole on the Mitchell River floodplain. Photo by Jonathan Marshall

The TRaCK tropical rivers region and the three focal catchments of this study: the Fitzroy River (WA), the Daly River (NT), and the Mitchell River (Qld).



TRaCK – *Research to support river and estuary management in northern Australia*

TRaCK brings together leading tropical river researchers and managers from Charles Darwin University, Griffith University, University of Western Australia, CSIRO, James Cook University, Australian National University, Geoscience Australia, Environmental Research Institute of the Supervising Scientist, Australian Institute of Marine Science, North Australia Indigenous Land and Sea Management Alliance, and the Governments of Queensland, Northern Territory and Western Australia.

Assets and Values

What did we ask?

We asked people from around Australia (including people living in the river catchments, and also Darwin, Perth, Brisbane, Canberra, Sydney and Melbourne) about their values for changes in four tropical river ecosystem services:

1. healthy floodplain habitat;
2. good quality recreational fishing;
3. healthy waterholes that are important to Aboriginal people; and
4. production from irrigated agriculture.

April Mirindo interviews William Shaw for the project at Gillarong community near Fitzroy Crossing. Photo by Anna Straton.

What did we find?

From the responses, we estimated the benefit Australian communities receive in dollar terms from each ecosystem service being in a fair condition and in its best condition, as compared to being in its worst condition.

The following graphs show the average economic value (measured as a once-off payment per household) of the two levels of each ecosystem service to different groups of people for all three river systems.

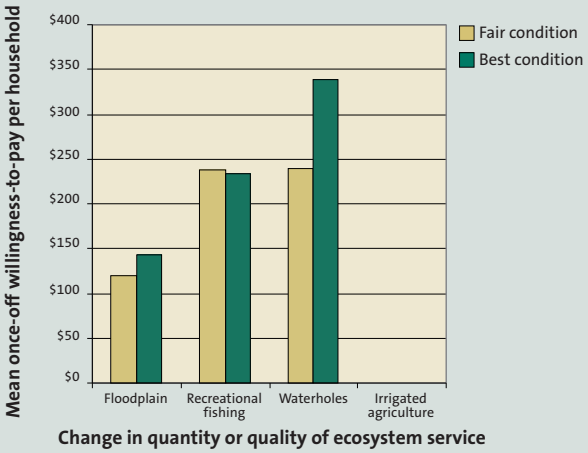
Notes

The residents of each river catchment include Indigenous and non-Indigenous people. Where there are missing values for ecosystem services or groups of people this is because there was too much variation in people's responses so we couldn't find a meaningful average.

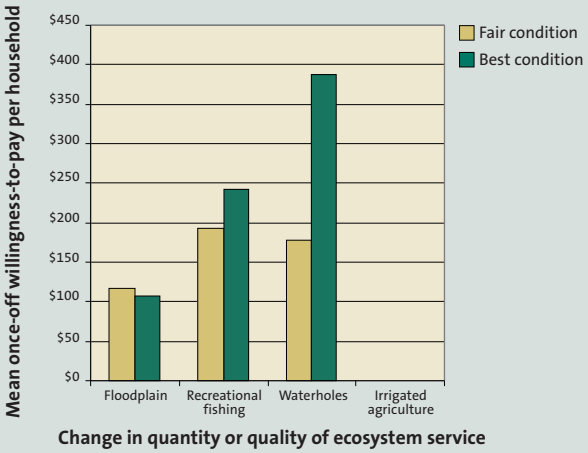
For every graph, "floodplain" means the area of floodplain in good environmental condition; "recreational fishing" means the quality of the river for recreational fishing; "waterholes" means waterholes important to Aboriginal people; and "irrigated agriculture" means the income from irrigated agriculture."

Fitzroy River

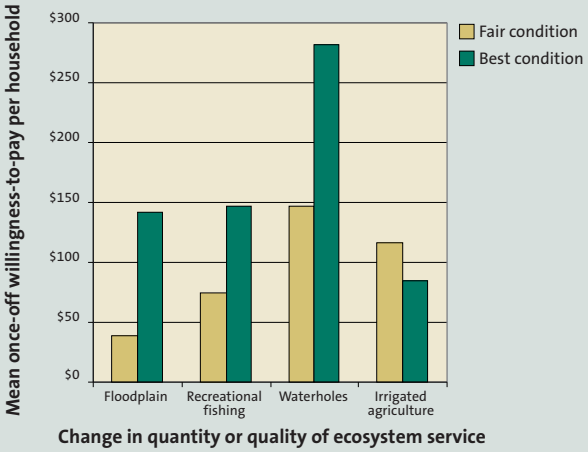
Value of changes in Fitzroy River ecosystem services to residents of the Fitzroy River catchment



Value of changes in Fitzroy River ecosystem services to Indigenous residents of the Fitzroy River catchment

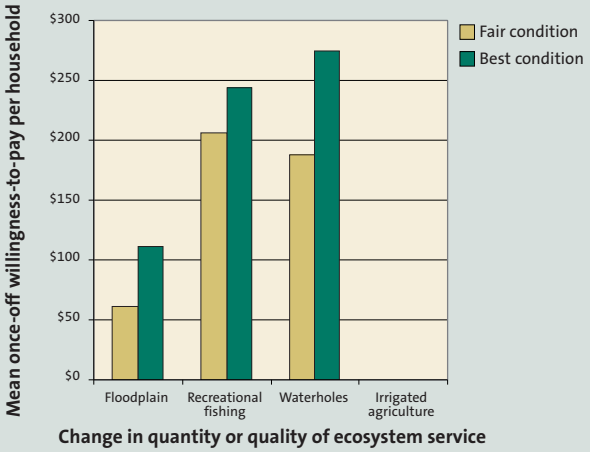


Value of changes in Fitzroy River ecosystem services to residents of Perth and Melbourne

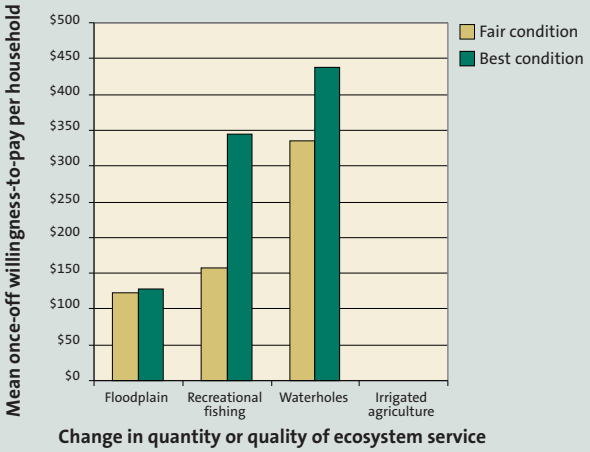


Daly River

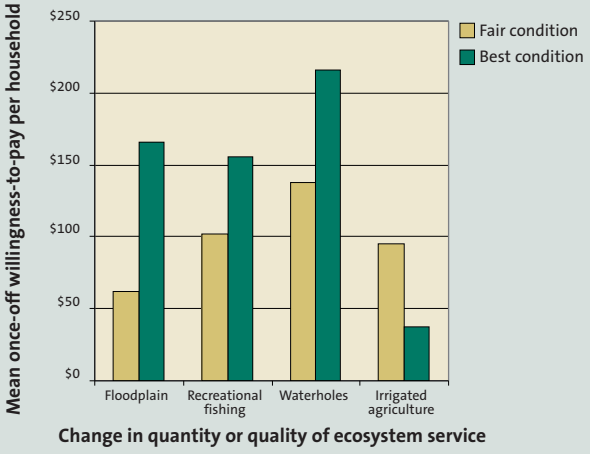
Value of changes in Daly River ecosystem services to residents of the Daly River catchment



Value of changes in Daly River ecosystem services to Indigenous residents of the Daly River catchment

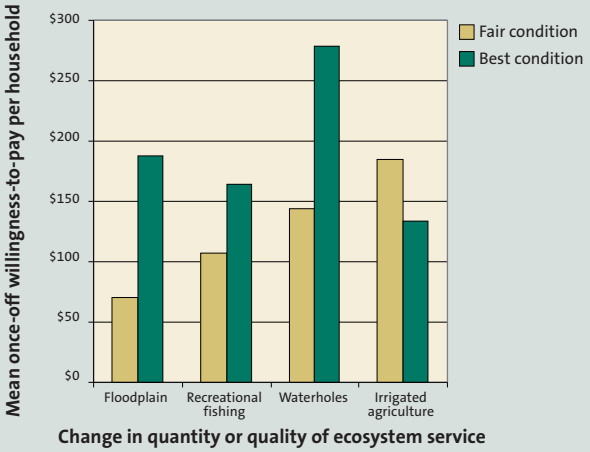


Value of changes in Daly River ecosystem services to residents of Darwin and Sydney



Mitchell River

Value of changes in Mitchell River ecosystem services to residents of the Brisbane and Canberra



The key findings are:

People generally value the best condition of floodplain health, recreational fishing and waterholes important to Aboriginal people more than they value the fair condition, so they get more benefit out of high levels of these environmental, recreational and cultural ecosystem services than they get out of medium levels.

In comparison, people generally value the medium level of production from irrigated agriculture more than they value the highest level. This means that while people value some expansion of irrigated agriculture, they prefer a medium expansion rather than a large expansion.

People value the highest level for the condition of waterholes important to Aboriginal people the most out of all of the ecosystem services. In other words, people have a strong preference for seeing waterholes that are important to Aboriginal people in the best possible condition.

While there weren't consistent similarities or differences between the values of different groups of people for all rivers, some findings specific to each are:

- For the Fitzroy River, city residents (from Perth and Melbourne) tend to place less value on healthy floodplain, recreational fishing and waterholes than local residents.

- For the Fitzroy River, Indigenous residents of the catchment tend to value healthy floodplain and recreational fishing slightly less than all residents together (Indigenous and non-Indigenous people), and value waterholes more.
- For the Daly River, city residents (from Darwin and Sydney) value services differently to local residents. Local residents tend to place higher value on recreational fishing and waterholes while city residents place more value on the highest level of floodplain health.
- For the Daly River, there were some differences between the values of Indigenous residents versus all residents (Indigenous and non-Indigenous people). Indigenous residents tend to place more value on recreational fishing and waterholes then residents as a whole.

In interpreting these figures, there are a few important things to consider. First, some parts of these ecosystem services cannot be captured in dollar terms, i.e., things like spiritual values, cultural identity and peace of mind are priceless. Second, these estimates of value don't include things like expenditure on equipment for recreational fishing, the time spent undertaking customary activity, and the gross value of production and contribution to employment by irrigated agriculture. This means that **the economic values that we calculate are underestimates of the true or full value of these ecosystem services.**

How can these findings be used to support decision-making about tropical rivers?

These numbers can now be used in further calculations that policy-makers might be interested in. For example, they can be used to provide estimates of the benefits of projects to improve ecosystem services, or they can be used to provide estimates of the costs of actions that degrade ecosystem services. To make these calculations, we aggregate the values per household across a proportion of the total number of households in the region/s where the costs or benefits will fall. This must be done with great care and with attention to the assumptions that are being made and the estimates of value that are chosen for use.

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A copy of the full report can be downloaded from the publications section of **www.track.gov.au**

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National Water Commission

To find out more about TRaCK

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