



National Environmental Research Program

NORTHERN AUSTRALIA HUB

Improving biodiversity conservation in northern Australia

Planning for the Daly catchment

Research update

A new type of plan for the Daly catchment

The Daly catchment is highly valued by the local and regional community for recreation and Indigenous values; has high conservation values; and also has the potential for further agricultural development, due to its water resources and suitable soil.

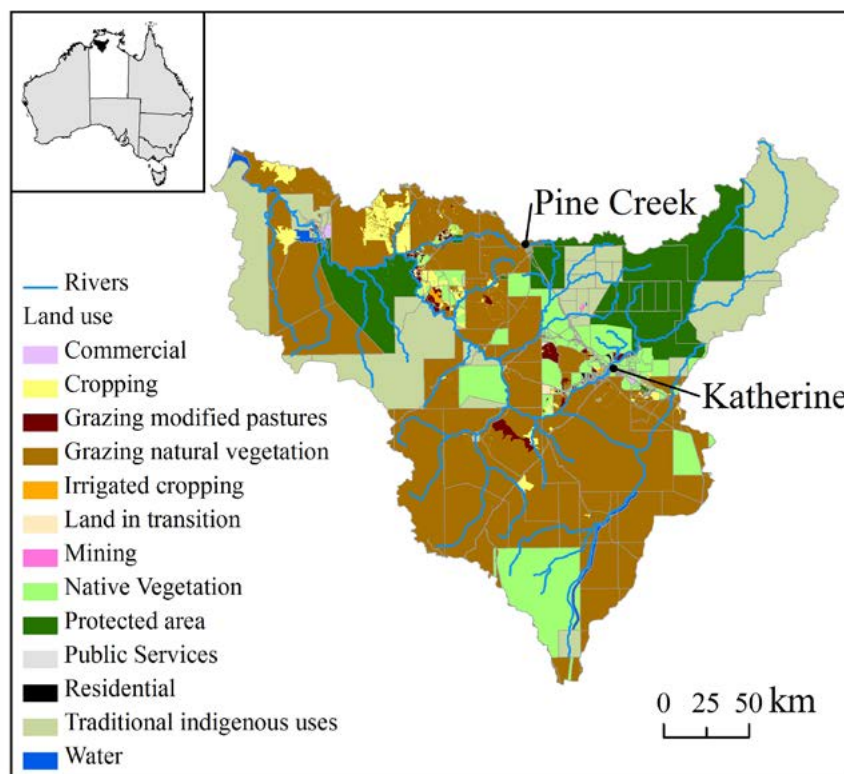
It is vital to have a plan to guide future changes in the catchment, like land clearing for agricultural development, if we want to protect the things that people value and give developments the best chance of success.

In the past, it has been difficult to bring together environmental, social and economic values into a single plan that covers freshwater and terrestrial environments.

This project has developed a framework that can be used to compile all of the available information for a catchment across all of these areas. The framework also allows planners to test different strategies and to see the trade-offs.

In the Daly catchment we have used this framework to develop a plan that can guide both development and conservation priorities for the catchment.

Our team has worked closely with the Daly River Management Advisory Committee (DRMAC) and extensively consulted the local community to ensure that the plan reflects community values.



The Daly catchment (NT) covers 5.2 million ha, from the coastline south-west of Darwin to 250 km inland. 13% is currently protected by national parks and Indigenous protected areas while 5.4% is cleared.





Many areas within the Daly catchment are highly valued for fishing and camping



The land and water systems of the Daly sustain important cultural activities like collecting bush tucker



Pastoralism is the primary land use in the catchment

How the plan was created

The planning process had three major stages:

1. gathering data and setting objectives;
2. engaging the community; and
3. revising priorities across the catchment and exploring different land use scenarios.

The objectives identified for the region were grouped into four broad categories of values: Commercial, Social-Cultural, Biodiversity, and Recreation. For each category all available information was collected and measurable targets were set. Examples of targets include; maximizing clearing of vegetation for agricultural potential; development of economically viable savanna burning abatement programs; and protecting high value conservation

regions that contribute to fresh water biodiversity and downstream water quality.

Community consultation included;

- presenting to community forums and media stories to let people know about the project and to get feedback about the intent of the project;
- holding focus groups to provide input about the topics and wording of the survey, so that the survey could capture the range of community views; and finally
- sending the survey to all residents of the catchment.

The purpose of the survey was to identify what aspects of life in the catchment are most important to people, what they like to do there and how satisfied they would be with environmental changes in the future like clearing vegetation.

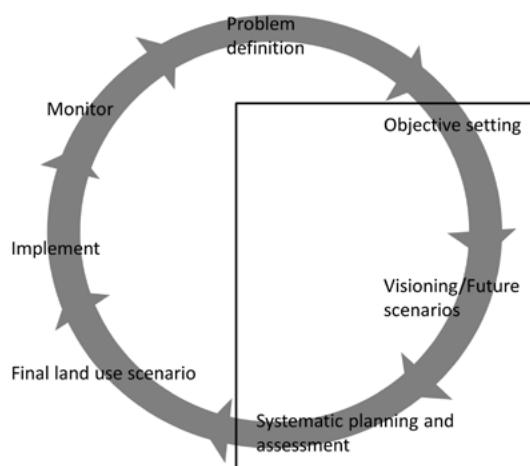
Who participated in the survey?

Over 200 residents participated in our survey. This is about 10% of the households in the catchment. In general, people who completed the survey were representative of the industries and household types in the catchment and there were equal numbers of males and females. On average people who completed the survey had above average household income and education.

Approximately 1 in 4 people in the survey group were Indigenous and 1 in 10 people worked in agriculture (including grazing).

What we found out from the survey

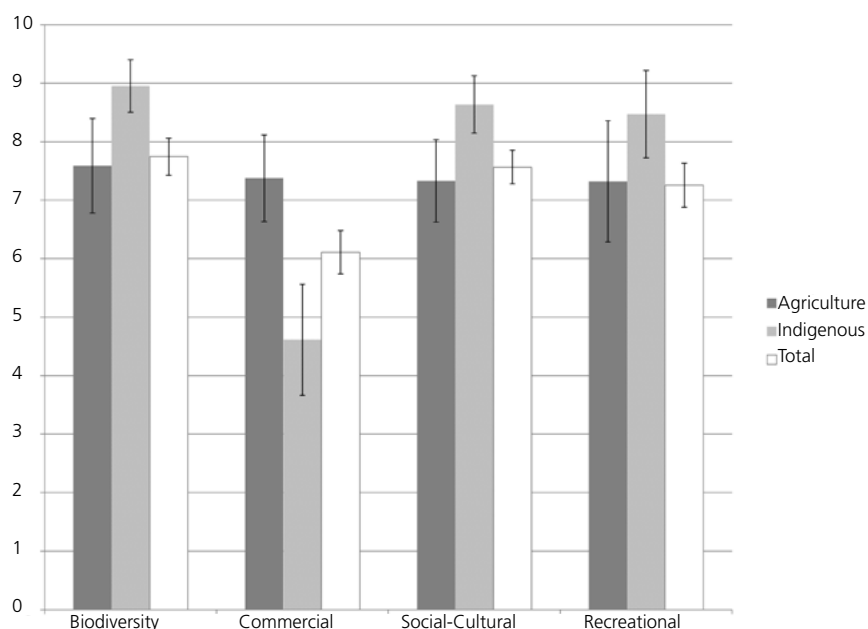
We asked people to rate how important 19 different aspects of well-being were to them. Overall people ranked biodiversity and socio-cultural aspects of life in the catchment the most highly. For example, the statement 'It is important to keep the area in good condition for future generations' was the most strongly agreed to across the group. Commercial values were ranked the least important across the group. These results reflect what we heard from residents in community forums: that having a livelihood is important but there are other reasons people like to live in the catchment.



This figure describes the general planning process. Community consultation occurred during the stages within the box.

The survey identified that some different stakeholder groups had different priorities. In particular, people who earn an income from agriculture and Indigenous people had different priorities: agricultural people ranked commercial values much higher than Indigenous people did and Indigenous people ranked biodiversity and social-cultural values higher than people who worked in agriculture. These different priorities should be considered when bringing together stakeholder groups to evaluate land use scenarios or to negotiate different land uses.

We also asked residents to tell us how satisfied they would be with different types of environmental changes, for example different levels of clearing across the catchment. People were most satisfied with clearing up to 10 per cent of the catchment (500,000 ha) but would accept up to 20 per cent of the land being cleared. People were increasingly dissatisfied with levels of clearing beyond 20 per cent. This finding is interesting because it is well aligned with existing clearing guidelines for the catchment which cap total clearing at 20 per cent.



The average importance scores given to different aspects of well-being are shown for the whole group (total), people who earn an income from agriculture (agriculture) and Indigenous people (Indigenous).

We further investigated how the land clearing guidelines would affect development and conservation by looking at how different ways of implementing the guidelines would affect clearing of suitable soils as well as retaining different types of vegetation.

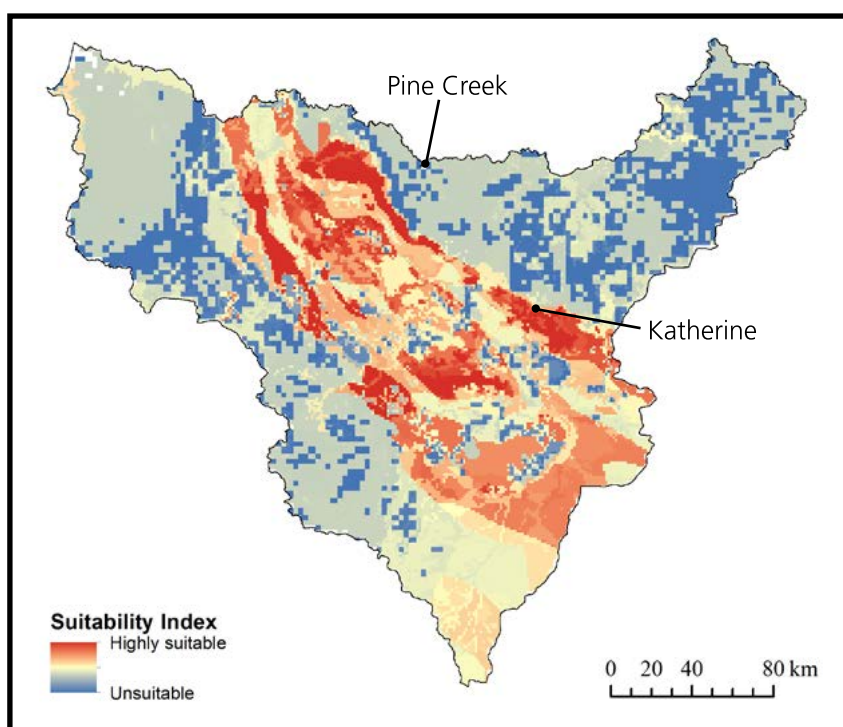
We found that if the guidelines were implemented to guide clearing to suitable soils that the 20 per cent limit

would not constrain development because only approximately 20 per cent of the catchment's soil is highly suitable for agricultural development. Furthermore, the guidelines support conservation by ensuring that clearing does not exceed 30 per cent of any one vegetation type.

Land use scenarios

The final stage of the plan was to bring together the objectives set by DRMAC and the findings from the stakeholder engagement to propose different future land use scenarios. We used the decision support tool Marxan with Zones, to optimally plan for different land uses across the catchment. This means that we are placing each land use where it will best deliver on meeting the plan objectives.

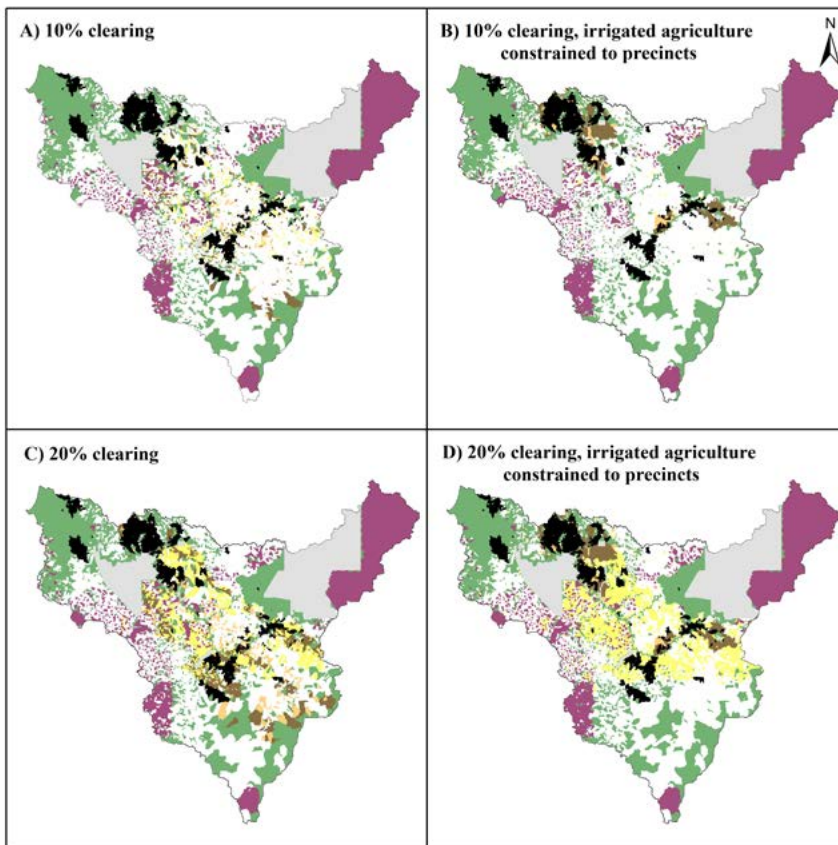
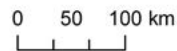
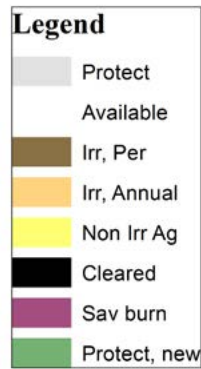
We designed the scenarios to meet the objectives set by DRMAC. We modeled clearing 10 and 20 per cent of the catchment because this reflected the clearing levels that were acceptable to the community. We also modelled scenarios that limited irrigated agricultural development to agricultural precincts in order to build critical mass for communities and infrastructure to support.



This map shows the red areas as being the most suitable for agricultural development and the blue areas the most unsuitable for development.

These scenarios provide decision makers with examples of what different configurations of land uses that meet objectives look like – and can be used to help direct future development and conservation decisions.

The important final step of the planning process will be to evaluate how these land use scenarios impact water values in the catchment. We will do this by coupling these land use scenarios with water-use profiles for agricultural land and assess the scenarios for a range of social, economic and environmental indicators using an existing management scenario evaluation tool.



The optimal land use maps for four possible scenarios are shown above. Each scenario meets the plan objectives (e.g., clearing limited to suitable soil, 17% of all vegetation types protected).

Further information:

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For more information visit
<http://www.nerpnorthern.edu.au/research/projects/11>

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