



Butler's dunnart. (Photo Alaric Fisher)



**Northern Australia  
Environmental  
Resources  
Hub**

National Environmental Science Programme



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IMPACT STORY 2018

# Modelling and mapping for conservation outcomes across the north

This successful collaboration between researchers and government has produced over 1500 maps of threatening processes, species' distribution and species vulnerability to extinction. These maps are already being integrated into government workflows to deliver conservation outcomes across the north.

► [Find out more about this project](#)



Anna Pintor presenting at Canberra research forum.  
(Photo NESP Northern Hub)

This project is responding to the increasing pressure for agricultural expansion and other development across northern Australia by generating maps of ‘conservation concern’ species, threatening processes and species’ vulnerability to threatening processes, that are relevant at this scale and finer scales. Though the project is not yet complete, the research is already starting to inform development and conservation planning and prioritisations through, for example, protected area evaluation and investment, strategic regional assessments, catchment level development guidance, land rehabilitation and several research projects. In doing so it is helping to achieve biodiversity outcomes across northern Australia and beyond.

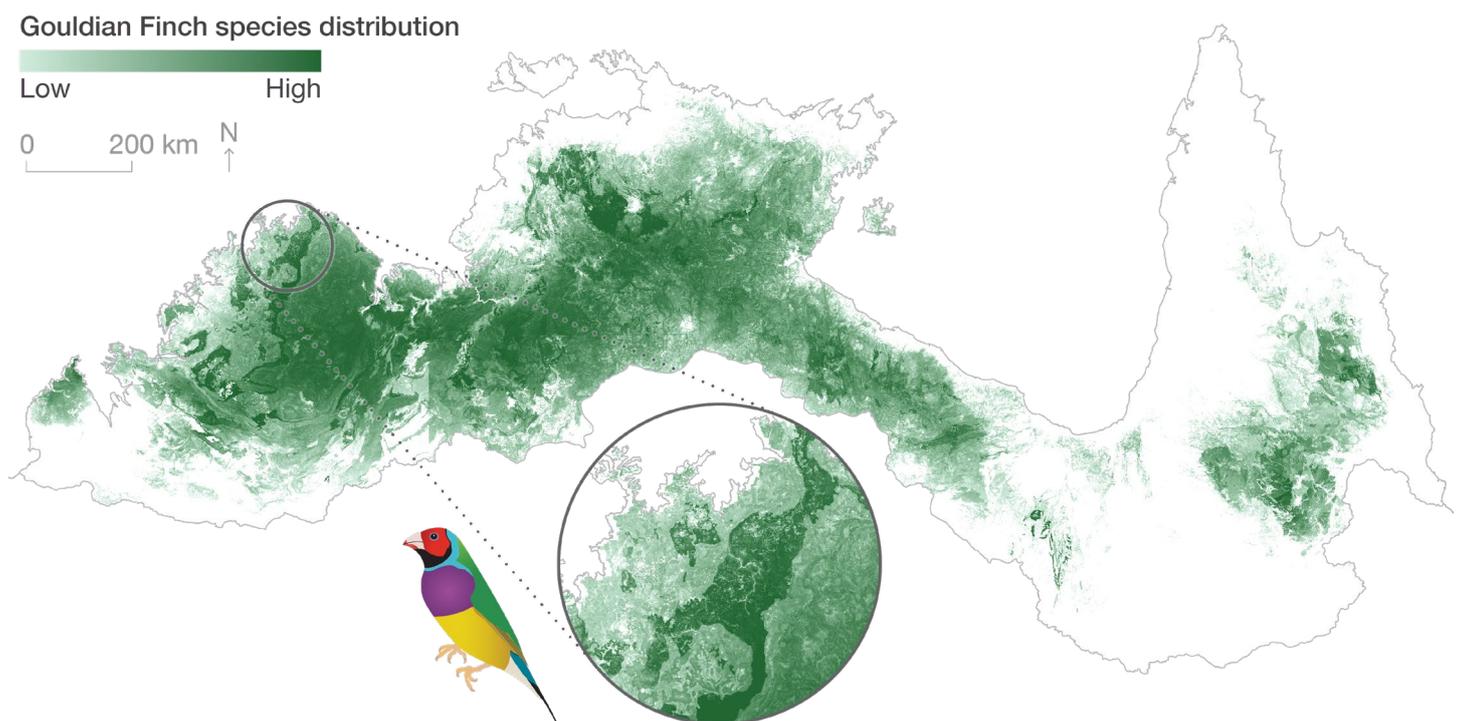
The examples below show how the project is having an impact.

Staff in Queensland’s Department of Environment and Science are using the project’s spatial data layers for multiple purposes, such as to investigate the extent to which current Protected Areas reflect the locations of biodiversity hotspots and vulnerable species, where to best acquire new properties, and conservation values at property scale. In the near future they plan to use the maps, especially the threat maps and species sensitivity maps, to guide

on-ground management activities. Adding to the project’s benefits, researchers and department staff are also using the maps to co-develop a system to report biodiversity losses that have been avoided thanks to initiatives such as environmentally sensitive development planning. Staff regard the models that the researchers used to generate the maps as ‘best practice’ and want to use these across the state to continue to progress the activities above. A senior staff member here attested:

*“To date the NESP Northern Hub data has been invaluable for incorporating priority species matters into assessing the performance of Queensland’s protected area system, prioritising expansion of the protected area system, and assessing properties and sites for potential conservation values. Moving forward we expect to be using this information, particularly with the NESP threat mapping and species sensitivities, to guide investment in management activities to maximise conservation outcomes. We also view the Northern Hub methodology as best practise for estimating species and threat distributions.... We will be looking to find resources and/or create partnerships to apply these methods throughout Queensland”.*

Example of one of the mapping outputs from the project.



The project is also contributing to significant work funded by the Department of the Environment and Energy and the Department of Agriculture and Water Resources. Through the co-chaired Physical Environment Analysis Network, a CSIRO project is applying Hub data sets to agricultural development scenarios in four river catchments in the Darwin region as part of the Sustainable Regional Development (Northern Australia) project. This work builds on significant government investment in improving knowledge of agricultural resources (e.g. soils, land suitability, water availability) and aims to now consider environmental factors in its analyses to guide development. To achieve this goal, NESP outputs will be used to overview biodiversity and threatened species and these map layers will be integrated with other data sets (e.g. ABS datasets) to address key questions related to northern development. There's also potential for the project data and integration techniques used here to be applied in other parts of Australia.

Gamba is a weed of national significance that transforms northern Australian landscapes. Photo (NESP Northern Hub)



Other major Australian Government projects such as the Geological and Bioregional Assessments, and the Natural Capital Accounting in the Primary Industries, may also use the maps for supporting sustainable development in northern Australia and beyond: “It looks like it is a very useful piece of work” and “I’d expect that your work could be potentially quite impactful” (CSIRO Team Leader, March 2019).

The work is well supported by the Department of the Environment and Energy’s Environmental Resources Information Network (ERIN) staff who have been engaged with the project from its outset. Comments from a key user here include “It’s provided some real tangible outputs for us”, “We’re getting ahead of the game”, “Another exciting aspect is for us to learn new species distribution modelling techniques”. ERIN are reviewing outputs from the project with a view to incorporating the data into their species distribution modelling which supports decision-making under the *Environment Protection and Biodiversity Conservation Act*.

Finally, the maps and related analyses have informed research and conservation of Wet Tropics plants (Australian Tropical Herbarium), threatened birds (PhD research) and invasive deer (PhD research), and more requests for spatial data have been received for other research purposes.

As the project wraps up, we’re looking forward to promoting the maps more broadly to scale up these already significant impacts!

## Research outputs

### Factsheets

- [Prioritising threatened species in northern Australia](#) (project update, Oct 2018)
- [Prioritising threatened species in northern Australia \(start-up factsheet\)](#) (start-up factsheet, Oct 2016)

### Presentation

- [Prioritising threatened species in northern Australia](#) (Feb 2019)

### Project webpage

- [Prioritising threatened species in northern Australia](#)

## Attributions

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