Boodie warrens improve the health of soils and plants

NESP Threatened Species Recovery Hub Project 4.1.7

Main image: Walking across a boodie warren. Image: Bryony Palmer Inset image: We brought boodies back to Matuwa after they disappeared from here 50 years ago. Image: Bryony Palmer



Why are boodies important to Country?

Boodies help to keep Country healthy by improving the soil where they dig, which helps plants grow better. Their warrens also provide homes for other animals.



What is going on with boodies?

Animals have different connections with their environment. They can be predators, prey or they can eat plants. The roles they play connect them with their environment and help keep Country healthy.

When an animal goes extinct, its connections are lost and its role may go missing. We use translocations to bring species back to places where they used to live. This can grow the numbers of that species and help to stop them going extinct.

Bringing these animals back might also make Country healthier by bringing back the roles the animals used to play. Boodies were once found all over Australia's arid and semi-arid zones. Now they only live on some islands off the coast of Western Australia and in a few places on the mainland where special fences keep out feral cats and foxes.

Boodies used to live at Matuwa but they disappeared about 50 years ago. The reasons they disappeared are probably feral cats, cattle, rabbits and changes to fire on Country.

Boodies dig warrens that they live in. They also dig small, shallow holes looking for food like roots, fungi and insects. When boodies dig, it helps the soil by loosening and mixing it. It may also change the nutrients in the soil and the help plants grow better. Boodie warrens may also be really important for other kinds of animals too.

The Western Australian Department of Biodiversity, Conservation and Attractions (DBCA), with permission from the Native Title owners Tarlka Matuwa Piarku Aboriginal Corporation (TMPAC), brought boodies back to Matuwa in 2010 as part of their restoration program for Matuwa. They released the boodies into a pen where they are protected from feral cats.

We wanted to see if the return of boodies to Matuwa is helping to make the soil and plants in the pen healthier. We also wondered whether any other animals are using the boodies' warrens.









Department of Biodiversity, Conservation and Attractions



Bryony identifying the plants on a boodie warren. Image: Bryony Palmer



Boodie warren seen from the drone. Image: Bryony Palme





LEFT: Bryony flying the drone to take photos of the boodie warrens from above. Image: Bryony Palmer

What did we do?

We walked through the pen at Matuwa and looked for boodie warrens. When we found them we marked them with a GPS. We looked for fresh scat (goona) and tracks to see whether boodies and other animals were using the warren. Then we measured how big the warren was. At some of the warrens, we looked at the soil and plants.

We measured how much water was in the soil, measured how hard the ground was and took small samples of the soil. We sent the samples to a lab that tested the soil to see what nutrients were in them. We figured out what species of plants were growing on the warrens, and how much of the warren they covered.

We used a drone to take pictures of the warrens from above. We then used a special computer program to calculate how green and healthy the plants were.

What did we find out?

The soil that boodies dig up is healthier and better for plants because it traps leaf litter and water, and is looser.

Surprisingly, though, plants grow just as well on and off the warrens. Maybe that is because the boodies eat the plants on the warrens. Also, the kinds of plants that grow on the warrens are the same as those that grow off the warrens. But the drone pictures showed that the plants growing on the warrens were greener and healthier than plants off the warrens.

We recorded a few other animal species using the boodie warrens, including goannas, lizards and snakes as well as mammals like mala, golden bandicoots and common brushtail possums.

We also recorded rabbits at all of the warrens. Rabbits compete with other animals for food and can damage plants. Mala (Lagorchestes hirsutus). Image: Matuwa Rangeland Restoration Project



Broad-banded Sand-swimmer (Eremiascincus richardsonii). mage: Kelapstick, CC BY-SA 3.0 Wikimedia Commons



Image: Matt from Melbourne, CC BY 2.0 Wikimedia Commons

Orange-naped snake (Furina ornata).



Goanna (Varanus gouldii).

Common brush-tailed possum. (Trichosurus vulpecula) Image: Matuwa Rangeland Restoration Project



Where did the work happen?

We did part of this research on Martu Country in the pen on the Matuwa-Kurrara Kurrara IPA.

We also did the same work at two Australian Wildlife Conservancy sanctuaries – Faure Island in Shark Bay, Western Australia on Malgana Country and Yookamurra Wildlife Sanctuary in South Australia. Yookamurra is located on Ngaiawang Country. This land was often shared with the Nganguraku, and is part of the Ngarrindjeri Nation. Yookamurra has a fenced area like the pen at Matuwa.



Who was involved?

Before we began, we spoke to TMPAC and got their approval to do this work on Martu Country. Bryony Palmer from the University of Western Australia did the study as part of her PhD project. Cheryl Lohr from DBCA was one of Bryony's supervisors and helped her do the work at Matuwa and analyse it. Bryony's supervisors at UWA also helped her and so did some volunteers, who did work in the field at Matuwa. At Faure and Yookamurra. the Australian Wildlife Conservancy helped out.

When did the work happen?

The project ran from 2018 until early 2021.

More information

If you want to talk about this project you can contact:

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Surveying the soils on a boodie warren at Matuwa-Kurrara Kurrara. Image: Bryony Palmer

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