

WIRRUWANA NEWS

UPDATES FROM DIRK HARTOG ISLAND NATIONAL PARK

AUTUMN 2024

Dibbler translocations to Dirk Hartog Island National Park are now complete and scientists from the Department of Biodiversity, Conservation and Attractions (DBCA) and Australian Wildlife Conservancy work together to achieve the island's first conservation donation.



Conservation Donation

Above AWC staff were very excited to receive a donation of 60 Shark Bay bandicoots from Wirruwana and the *Return to 1616* project. Photo – Alice Si

In 2019 and 2020, the Shark Bay bandicoot was returned to Dirk Hartog Island (*Wirruwana*) National Park as part of the *Return to 1616* Ecological Restoration Project. Since that time, Australia's smallest bandicoot species (also known as a Marl) has prospered and the island population has grown so well that there are now sufficient numbers to allow a donation of animals to other conservation areas. Establishing new populations helps to safeguard the future of the Shark Bay bandicoot by ensuring we don't have "all of the eggs in one basket".

The Australian Wildlife Conservancy (AWC) is a not for profit organisation that works in partnership with other groups to protect wildlife and their habitats. Recently, AWC has teamed up with the New South Wales (NSW) National Parks and Wildlife Service to return six native animal species that have become locally extinct to the Pilliga forests in central-north NSW, including the Shark Bay bandicoot.

In September 2023, AWC ecologists teamed up with the Department of Biodiversity, Conservation and Attractions' *Return to 1616* fauna team to collect bandicoots from Wirruwana for relocation to NSW. Over 2 busy nights of trapping, close to 180 bandicoots were captured. Of these, 60 healthy male and female bandicoots were selected to start the new population in the Pilliga. Whilst on the island, AWC ecologists were delighted to encounter some of the other species that have been returned to the national park including the rufous hare-wallaby and Shark Bay mouse.

Once sufficient numbers of bandicoots were obtained, AWC ecologists carefully prepared their charges inside specially designed and approved animal carriers. They then accompanied them on their journey across Australia, first via helicopter to Denham and from there on a chartered flight to their new home in NSW, whilst monitoring them closely to ensure they were kept at a comfortable temperature.

Conservation Donation continued...

On arrival, the animals were given a health check before being released to a 5800 hectare fenced enclosure in the Pilliga State Conservation Area. This area has been made free of feral cats and foxes, creating a safe haven for bandicoots. For the staff who spent so much time and effort coordinating a complicated translocation, it was a very exciting moment to watch the bandicoots take their first steps in their new home. For the first time in over a hundred years, the ecosystem is benefitting from the diggings that bandicoots make as they search for food, including invertebrates and roots. This action helps to create healthy soil by improving soil moisture and nutrient content and contributes to the germination of native plants.

Since their reintroduction, careful monitoring of the newest inhabitants of Pilliga has revealed that they are settling in well and doing what Shark Bay bandicoots do best when given the opportunity breeding! All of which bodes well for a bright future.



Above right It was an exciting moment watching the bandicoots take their first steps in their new home. *Photo – Dr Vicki Stokes, AWC*



Dibblers home and hosed

Last November marked not only the last dibbler translocation to Dirk Hartog Island National Park but also the completion of the dibbler breeding program at Perth Zoo. Over the last 26 years, over 1000 dibblers have been bred at the Zoo for release into suitable habitat. Of these, Dirk Hartog Island has received 203 dibblers as part of the *Return to 1616* Ecological Restoration Project. Kelly Gillen, Chair of the Gorgon Barrow Island Net Conservation Benefits Fund Advisory Board, was on hand and very excited to take part in the last release. “It was nothing short of amazing to see the incredible number of diggings and footprints of animals now living on the island” he said. “as well as the innovations that have been developed to manage such a large project”.

You can see one of the dibblers as it is released onto Dirk Hartog Island [here](#).

Above Kelly Gillen and DBCA Animal Science Program Senior Technical Officer Kelly Rayner releasing some of the last captive bred dibblers into Dirk Hartog Island National Park! *Photo – Dr Karl Brennan (DBCA)*



Main DBCA scientist Melissa Millar testing the DNA of a hare-wallaby scat. *Photo – Kym Ottewell*

Inset left Rufous hare-wallaby scats contain DNA that allows each individual to be identified. *Photo – Saul Cowen*

Inset right The *Return to 1616* fauna team collecting hare-wallaby scats. *Photo – Samantha Webb*

Who “dung” it? DNA detective work

One of the first native animal species to be translocated to Dirk Hartog Island National Park as part of the *Return to 1616* Ecological Restoration Project was the banded hare-wallaby in 2017 and 2018. Following their reintroduction, a select few wallabies were given temporary radio collars to allow monitoring of their early progress.

But how are they doing several years down the track? With many more animals present and distributed over a much larger area, this question can be difficult to answer. One tool in the toolkit to allow scientists to monitor animals is cage traps. But banded hare-wallabies are well known for being ‘shy’ of conventional traps. In addition, their secretive behaviour of sheltering under dense shrubs can mean they’re not easily seen on remote cameras either. All of which makes monitoring their progress a challenge.

There are, however, a range of other monitoring methods used to study animals, such as looking for tracks, droppings and other material that animals shed including hair and skin.

Given recent advances in genetic analysis techniques, it is now possible to determine a unique genetic ‘fingerprint’ for individual animals, which can be used, in the best forensic “whodunnit” style, to determine not only which species, but which individual animal DNA belonged to. Following on from this, could studying DNA in animal droppings provide a new method of monitoring populations from dung?

To find out, a preliminary study to see if DNA could be retrieved from banded hare-wallaby droppings was undertaken during the 2018 translocation. This study showed

that every time a wallaby leaves behind some poo (or scat to give the more scientific term), they also leave behind some sloughed off intestinal cells that contain DNA. The results showed that it is indeed possible to gather DNA from hare-wallaby scats, and that because DNA slowly degrades once it is exposed to the elements, fresh scats less than two weeks old are the most useful.

You can read more about this study [here](#).

In a piece of detective work worthy of Sherlock Holmes, the *Return to 1616* fauna team used this information to successfully devise a new method of monitoring this species using scats!

Scats are collected from transects at the initial release site and along the leading edge of the population’s expansion, selecting only fresh-looking scats.

In a highly streamlined approach, scientists in the DBCA genetics lab first test each scat to ensure it’s from a banded hare-wallaby, as rufous hare-wallabies often live in the same area and their scats look the same. Next the scat is DNA ‘fingerprinted’ which allows individuals to be identified, counted and their location recorded. This is much less stressful than traditional monitoring methods for both wallaby and scientist.

This new and efficient monitoring method is helping to demonstrate that banded hare-wallabies have not only done well after their release but that their population is continuing to expand.

Taking stock of no stock

The native vegetation of Dirk Hartog Island (Wirruwana) was severely impacted by the combined over grazing of introduced sheep and feral goats. With the purchase of the majority of the island by the State government and creation of a new national park in 2009, came an unparalleled opportunity to reverse this decline and restore the ecosystem of Western Australia's (WA) largest island with the *Return to 1616* Ecological Restoration Project.

Since the project's advent, the enormous effort to remove these non-native herbivores from the entire island, has made WA's largest island Dirk Hartog, the largest island in the world to be made free from feral goats and sheep.

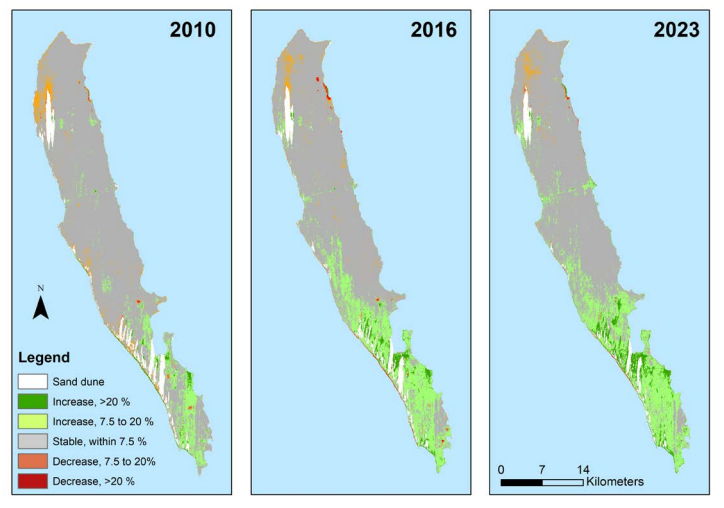
The resulting dramatic regeneration of the native vegetation has been well documented with an ongoing monitoring program. This makes use of satellite imagery and aerial photography from drones, as well as more traditional collection of on ground photos from 36 designated points (called photomonitoring), and assessment of vegetation along both marked lines (called transects) and plots.

Since the removal of sheep and goats, the monitoring program shows there has been a significant increase in vegetation cover across nearly 40% of the island mostly in the south where sheep congregated around water points causing greater destruction of vegetation. Less change is evident in the north of the island where the vegetation is mostly *Thryptomene* heath which is less palatable to herbivores. As a result it was in better condition when herbivores were removed and has shown less change over time.

But the good news doesn't stop there. Although weeds such as buffel grass have increased in density after the removal of sheep and goats, they haven't spread over wider areas. It's now apparent that native plant species including wattle and spinifex are slowly winning the battle and managing to grow through thick buffel grass tufts!

The *Return to 1616* project's ongoing weed management plan aims to eliminate, manage or control other weed species on the island, depending on their severity.

After so many years of decline from non-native herbivores, the regeneration of Dirk Hartog Island National Park's vegetation is a slow process. With annual rainfall variation, some years are better than others, however, the vegetation monitoring program is clearly showing the rejuvenation of the island is slowly and steadily heading in the right direction.



Above Satellite imagery shows that some of the most dramatic regeneration of native plants is in the southern portion of the island where sheep were once concentrated in high populations around water sources.

Below This series of photos taken between 2007 and 2022 show vegetation changes at the same location, before and after the removal of feral goats and sheep.



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To learn more about *Return to 1616*, visit sharkbay.org

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The *Return to 1616* project is funded by the Gorgon Barrow Island Net Conservation Benefits Fund.