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Department of Biodiversity, Conservation and Attractions
Biodiversity and Conservation Science
Return to 1616
Dirk Hartog Island National Park

Wirruwana News

Updates From Dirk Hartog Island National Park

SUMMER 2026

Discover the latest updates from the *Return to 1616* Ecological Restoration Project including the recent woylie translocation, how island vegetation is bouncing back after drought and new insights from research into wallaby diets.

Woylie release marks ninth species and 1000th total animals translocated onto Wirruwana

In April 2025, a small, nocturnal marsupial made a big impact. As the ninth species translocated to Wirruwana/Dirk Hartog Island National Park (DHINP) since the beginning of the *Return to 1616* Ecological Restoration Project, the woylie or brush-tailed bettong (*Bettongia penicillata*) marked a major milestone in one of Australia's most ambitious conservation efforts.

The translocation of 180 woylies from three genetically distinct populations (Dryandra Woodland, Kingston National Park, and Tone-Perup Nature Reserve) was the culmination of years of planning. These populations represent the full genetic diversity of the species. Woylies were transported to Wirruwana over a two-week period and their arrival brought the total number of individual animals translocated across all nine species to 1133.

The translocation was not without its challenges, however.

With meticulous preparation and planning, the woylie translocation process (capture, transport and release) went exactly as planned. However, unusually hot and dry weather in the weeks after the translocation exacerbated stress experienced by the animals, contributing to a higher-than-expected mortality rate among woylies fitted with radio collars. Adjusting to a different environment and finding suitable food was always going to be a challenge for the new arrivals, so the team responded quickly by implementing supplementary feeding trials and intensifying monitoring efforts to counter the extended dry summer conditions and delayed rainfall. Cameras, radio-tracking and targeted trapping helped assess the health and behaviour of the remaining animals, revealing that surviving animals were settling in and toughing out the dry conditions until the first rains in May brought a turning point.

Once winter rainfall had finally arrived in June 2025, the translocated woylies were showing signs of acclimatising to their new home. Many had regained or exceeded their release weights, and several females were observed with pouch young.

One particularly heartening milestone was captured on a remote sensor camera: a woylie using its strong, prehensile tail to carry nesting material. Woylies use their tails like a fifth limb, curling them around bundles of grass and twigs to transport materials back to their nests. These nests, often hidden in shallow depressions or under dense shrubs, provides shelter and protection from predators and harsh weather conditions.

Continued over...

Above One of the Woylies released on Wirruwana. *Photo – Ian Wheeler / DBCA*

Woylie release *continued...*

This footage not only confirmed that the animals were beginning to settle and engage in natural behaviours but also offered a rare glimpse into the secretive lives of these nocturnal marsupials.

Above A woylie using its strong, prehensile tail to carry nesting material. *Photo – DBCA*

No further deaths were recorded in the collared woylies after the difficult initial weeks, and all collars were removed from healthy, fit animals by the final monitoring session in late October. The limited trapping to monitor and remove collars was supplemented with a small number of additional traps, with 46 founder animals (over a quarter of those translocated) recaptured. The woylies were doing everything they should by this stage, with over 90 per cent of females carrying pouch young and three new recruits (Wirruwana-natives) being captured! With late rains and lots of food available, they are now in a great position to weather the coming summer and continue to build their population over the years to come.

The woylie's story is a reminder that ecological restoration is complex and often unpredictable, with risks that are sometimes challenging to manage. However, it also highlights the dedication and responsiveness of the *Return to 1616* team. With continued monitoring and support, the woylies are expected to thrive and play a vital role in restoring the island's ecosystem.

Fascinating woylie facts

Woylies are a critically endangered species, with populations having declined by over 90 per cent in recent decades. Once widespread across southern and western Australia, their numbers have plummeted due to habitat loss, disease, and predation by introduced species such as foxes and feral cats. Conservation efforts like the *Return to 1616* Project are critical to their recovery.

Woylies are ecosystem engineers. As they forage for fungi, seeds and tubers, they dig small pits in the soil which helps to aerate the ground, disperse spores and promote plant growth. A single woylie can dig hundreds of pits in one night, playing a vital role in maintaining healthy ecosystems.

They are also known for their social nature and complex nesting behaviours. Woylies often build multiple nests within their home range and may rotate between them. Their nests are constructed from dry grass, leaves and bark, which they gather using their forepaws and tails.

Nature bounces back: The island's green recovery after drought

The El Niño-driven drought of 2023–24 brought one of the driest and hottest years on record to Wirruwana/Dirk Hartog Island. Despite these extreme conditions, vegetation across the island is beginning to show signs of resilience and recovery.

The latest remote sensing analysis for 2024–25 reveals that 18.5 per cent of the island has experienced a significant increase in vegetation cover following the removal of feral goats and ongoing ecological restoration efforts.

Between February 2023 and January 2024, the island recorded just 61.2mm of rainfall, the lowest 12-month total since records began at Steep Point in 1996. The average annual rainfall for the island is around 195mm. These extreme conditions led to a noticeable decline in vegetation cover in some areas, particularly on the northern tip of the island. Satellite and drone imagery monitoring however shows that many regions, especially in the southern third, have continued to recover thanks to reduced grazing pressure and long-term restoration work.

Several monitoring sites have seen steady increases in vegetation cover since the removal of goats in 2008. Drone imagery from 2021 and 2024 shows dry or desiccated shrubs alongside healthy green shrubs, indicating a mix of natural aging and active growth. Importantly, the coverage of the invasive weed buffel grass has not increased between these years.

While some sites show no significant change or slight declines, the overall trend is positive. The stability of sand dune areas and the expansion of native shrublands and grasslands suggest that the island's ecosystems are recovering from the drought conditions.

Annual remote sensing and field monitoring will continue alongside further analysis of Landsat imagery and drone-captured data. These efforts will help refine habitat models for key species and guide future restoration activities. Even in the face of climate extremes, nature is finding a way to bounce back.

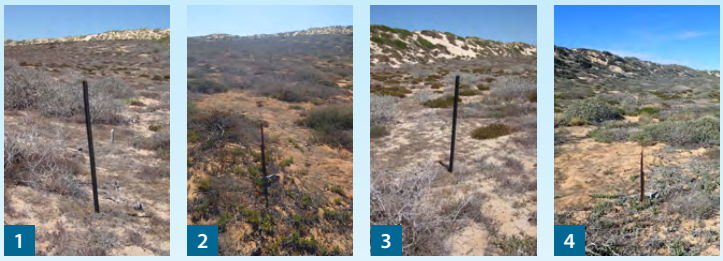


Image 1 and 2: Imagery from 2021 and 2024 shows dry or desiccated shrubs alongside healthy, green shrubs, indicating a mix of natural aging and active growth. The colour balance of images changes as cameras improve over time.

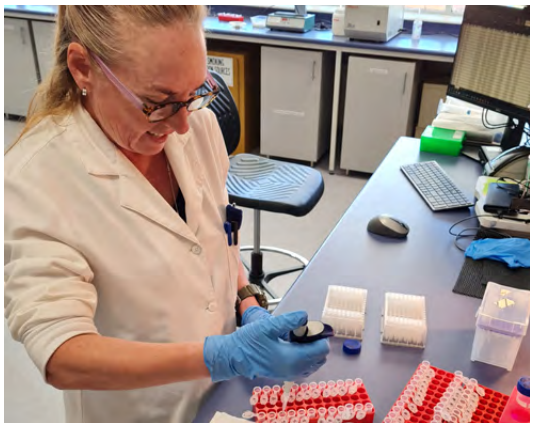
Image 3 and 4: Site five, located on the northwest of the island, shows a significant increase in vegetation cover. *Photos – DBCA*

Congratulations to DBCA's fauna genetics team!

We're thrilled to announce that DBCA's Fauna Genetics team has been named joint winners of the inaugural Government Science Project of the Year at the 2025 Premier's Science Awards. This dedicated team uses cutting-edge genetics to study threatened species across Western Australia to guide conservation programs. By extracting DNA from scats, scales and shells, scientists can monitor wildlife without capturing animals, minimising stress and disruption. These techniques were first trialled in 2018 during the banded hare-wallaby translocation to Wirruwana/Dirk Hartog Island as part of the *Return to 1616* Ecological Restoration Project, enabling individual identification and population tracking without traps or collars. Preserving genetic diversity is vital for species survival, and this knowledge is shaping conservation efforts here in WA and inspiring projects worldwide.

Read more on this project:
researchgate.net/publication/369308060

Above and Members of DBCA's fauna genetics team, Mel Millar and Kym Ottewell, receiving the award. **Below** Mel Millar working in the lab. *Photos – DBCA*



Heath and desert mice removed from translocation list

Long-term conservation projects require regular reviews to ensure its objectives are being met. Sometimes, this results in a change of scope.

The second stage of the *Return to 1616* project called for 10 terrestrial mammal species to be returned to the island and to establish up to two native mammal species that may have previously occurred there. Nine species have been successfully returned since 2018: banded-hare wallaby, dibbler, greater stick-nest rat, rufous hare-wallaby, Shark Bay bandicoot, Shark Bay mouse, western grasswren, brush tailed mulgara and woylie. Remaining species on the translocation plan are boodie and chuditch.

After careful evaluation of source populations and environmental conditions, it was decided to make a strategic change: two species, the heath mouse (*Pseudomys shortridgei*) and the desert mouse (*Pseudomys desertor*) have been officially removed from the translocation schedule.

Heath mouse: refocusing on in-situ conservation

The heath mouse is an endangered species that has always been difficult to find within Western Australia (see Wirruwana News Spring 2023) and has proven too scarce in its known habitats to support a sustainable translocation effort. Surveys at Lake Magenta and Dragon Rocks nature reserves have yielded few detections, with only four camera sightings recorded at Lake Magenta in recent years. As a result, conservation efforts for this species will now concentrate on protecting and enhancing existing populations in their natural range through predator control and habitat protection.

Desert mouse: widespread but unavailable

Although the desert mouse is not threatened and remains widespread across Western Australia desert regions, no source populations have been identified with sufficient local abundance to source individuals for translocation. It has infrequent population booms during years of exceptional rainfall but in most years it is present at low abundance. Without a readily abundant source population, the species has been removed from the project's scope.

Implications for the project

Removing these two species from the translocation list allows the project to reallocate resources and focus on the successful establishment and monitoring of the nine species already translocated to the island and prepare for the translocation of boodies in 2026.

The decision also highlights the importance of adaptive management in large-scale ecological restoration. By responding to new data and shifting conditions, the *Return to 1616* project continues to focus on the long-term success and sustainability of Dirk Hartog Island's unique biodiversity.

Right Desert mouse. **Below** Heath mouse. *Images – DBCA*

Hare-wallabies offer hope for conservation on Wirruwana

Two of Australia's rarest marsupials – the rufous hare-wallaby and the banded hare-wallaby – are quietly reshaping conservation efforts on Wirruwana/Dirk Hartog Island. Once widespread across the mainland, these species were reduced to just two natural populations on small islands in Shark Bay (Bernier and Dorre islands). Thanks to the *Return to 1616* Ecological Restoration Project, they're making a comeback – and teaching scientists valuable lessons along the way.

A recent study by Masters student Rachyl Stover at Edith Cowan University has revealed fascinating insights into the dietary habits of hare-wallabies following their translocation to Dirk Hartog Island. Using DNA extracted from scat (poo) samples, Ms Stover was able to identify the plants consumed by both hare-wallaby species across different seasons and locations.

The study showed that both species have remarkably broad and flexible diets, capable of adapting to different environments. On Wirruwana, their diets included a wide range of native plants and even invasive weeds like buffel grass and Mediterranean turnip. This adaptability is crucial for survival in changing landscapes, particularly as climate change and habitat loss continue to threaten native fauna.

Interestingly, the diets of the two species overlapped significantly, raising questions about potential competition for resources. Their ability to seasonally shift diets and their preference for different habitat types—open grasslands for rufous hare-wallabies and dense shrublands for banded hare-wallabies—suggest that they can coexist with limited conflict, as they do on Bernier and Dorre islands.

The research also highlighted differences between the founder populations on Bernier and Dorre islands and the translocated populations on Wirruwana. Banded hare-wallabies expanded their dietary range after translocation, while rufous hare-wallabies narrowed theirs, though both species are thriving. This suggests that dietary flexibility may be more important than dietary breadth when it comes to adapting to different environments.

Above The banded hare wallaby features in signs around the Island reminding visitors to slow down to avoid native animals.

Left Rufous hare-wallaby (*Lagorchestes hirsutus*) on Wirruwana, November 2022. *Photos – DBCA*

Beyond the science, the implications are profound. These hare-wallabies are not just surviving but also helping restore ecosystem function. By grazing on invasive weeds, they may be contributing to weed control and reducing fire risk. Their foraging behaviours could also aid in seed dispersal, although further research is needed to understand whether they help or hinder native plant regeneration.

Ms Stover's study underscores the power of non-invasive techniques like scat DNA analysis in monitoring cryptic species. It also reinforces the importance of understanding diet in conservation planning, especially when species are introduced into novel ecosystems.

As the *Return to 1616* Ecological Restoration Project continues, these small marsupials are proving to be big players in the fight against extinction. Their resilience offers hope, not just for their own survival but for the restoration of Australia's unique and fragile ecosystems.

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Visit sharkbay.org/restoration to learn more about *Return to 1616*.

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

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