



DIRK HARTOG ISLAND RETURN TO 1616

In October 2016, the Dirk Hartog Island National Park Ecological Restoration Project, *Return to 1616*, is on track to achieve its aim of eradicating feral animals and begin returning native animals after mid-2018.

Ten species of small mammals and a bird species that once occurred on the island will be reintroduced over 12 years, beginning in 2018: the western barred bandicoot, boodie, Shark Bay mouse, greater stick-nest rat, western thick-billed grasswren, woylie, heath mouse, desert mouse, mulgara, dibbler and chuditch. Two additional mammal species that may have previously inhabited Dirk Hartog Island will also be brought there to help their species survive - the rufous hare-wallaby and banded hare-wallaby.

Restoration of Dirk Hartog Island's ecology was underway before the *Return to 1616* project officially began in 2012. Thousands of sheep and feral goats were removed in the lead up to the island becoming a national park in November 2009 and a pilot study was conducted to determine the effectiveness of 1080 poison baits to remove feral cats.

Fifteen female goats were radio-collared at the beginning of the goat eradication program so they could be tracked during aerial operations. When collared goats were located, the goats with them were removed while the collared goats were left to gather and betray another mob. The collared goats are therefore known as 'Judas' goats.

The current intensive and systematic eradication and monitoring programs began in 2012 and are now in their final phases.

Sheep were declared eradicated in June 2016 and no goats, other than collared Judas goats, were found during aerial goat monitoring programs in February and June 2016. Nor have any un-collared goats been caught on automated cameras at water points this year.

It is likely that the 14 remaining Judas goats are the only goats left on the island. They will be removed if no further goats are found during the next two aerial monitoring operations in November 2016 and February 2017. There will be several follow up aerial monitoring programs after removal of the Judas goats, and automated cameras will continue to be monitored until eradication is declared.

There now appear to be no cats south of the cat-proof fence, and little cat sign north of the fence since August 2016.

Detector dogs were used to verify the absence of cats south of the fence during the winters of 2015 and 2016. They will be used to help verify the absence of cats north of the fence in winter 2017.

Monitoring for feral cats will continue to mid-2018. This will consist of eight seasonal surveillance periods, each comprising 20 continuous days with 10 days south of the fence followed by 10 days north of the fence. More than 160 camera traps, along with tracks and beaches, will be checked during each of these surveillance operations.

Declaration of feral cat and goat eradication is anticipated by mid-2018.



Vegetation on Dirk Hartog Island is showing strong signs of recovery.

Vegetation and habitat recovery

Since 2007 the Department of Parks and Wildlife has monitored changes to vegetation on Dirk Hartog Island. During this time many sheep and goats have been removed, eliminating the only large herbivores on the island.

The vegetation monitoring program uses satellite images along with extensive ground validation to build a picture of how vegetation cover on the island is changing.

Changes were first detected and investigated using satellite imagery. Hundreds of images collected at near monthly intervals since 1988 were analysed to identify where vegetation cover had increased since 2008, when destocking began. These areas were then validated on the ground to determine whether the increased ground cover was native vegetation or invasive weeds.

Many of the areas shown by satellite imagery to have increased vegetation cover were found to be native species.

Annual field checking continues with a team of Parks and Wildlife staff, including experts in botany and satellite imagery analysis.



Western barred bandicoot on Dorre Island.

Saving native animals from extinction

Several wildlife programs in Shark Bay are protecting threatened species.

Data collected over years of monitoring the native mammals on Salutation, Bernier and Dorre islands is providing information crucial for the management of wildlife on those islands, as well as for their potential to provide animals for translocating to Dirk Hartog Island.

August 2016 saw the ninth survey of Bernier and Dorre islands since regular surveys began in 2006. In September 2016, stick-nest rat surveys were conducted on Salutation Island for the 18th time since 1990. Wildlife surveys were also conducted on Dirk Hartog Island prior to commencing the *Return to 1616* project with six surveys conducted between 2005 and 2011.

These programs will help with data essential for translocations to Dirk Hartog Island as part of the *Return to 1616* ecological restoration project.

Planning translocations

Parks and Wildlife staff are currently preparing a strategic framework for translocating animals to Dirk Hartog Island between 2018 and 2030. Data from surveys on Shark Bay islands is being used in this planning, particularly the two most recent surveys conducted in August and September 2016.

The many considerations for successful translocations range from sourcing sufficient numbers of the different species, to sequencing and timing translocation of different species, and ensuring animals are released at suitable sites.

Sequence and timing of translocations will take into account interactions between different species, including predator/prey relationships and habitat competition; the conservation status of species; and availability of animals to translocate.



Boodies and woylies will initially be separated by the cat-proof fence to avoid the potential for boodies to outcompete woylies.

Interspecies relations

Some of the species proposed for Dirk Hartog Island have similar habitat needs and may compete with each other for food and/or shelter. Boodies are capable of outcompeting woylies in captive situations so these two species will be released at sites that are both far apart and initially separated by the cat proof fence.

Predator/prey relationships also need to be considered. The chuditch is a nocturnal predator that preys on small mammals as well as insects, reptiles and birds. This species therefore cannot be taken onto the island until potential prey like the Shark Bay mouse, western barred bandicoot and greater stick-nest rat are well established.



The chuditch, Western Australia's largest native predator, will be the last species reintroduced to Dirk Hartog Island.

Conservation status

The banded hare-wallaby is one of two species with no evidence of having previously occurred on Dirk Hartog Island. However, it is considered a priority for introduction as it is vulnerable to extinction.

Bernier and Dorre islands are the last refuges for this sub species of the banded hare-wallaby; the mainland sub species is extinct. Animals from Bernier Island supplied the Peron Captive Breeding Program and from there were translocated to Faure Island and to another mainland fenced site. Introducing the banded hare-wallaby to Dirk Hartog Island will improve this species' conservation status.



Bernier and Dorre islands are currently the last refuge for the banded hare-wallaby.

Sourcing animals for *Return to 1616*

The animals for Dirk Hartog Island will come from various sources, including islands in Shark Bay. It is important to determine the health and genetic diversity of potential source populations before translocating any animals.

Health of source populations has several meanings. One is the size of the population – are there enough animals for the population to cope with animals being removed? Another is disease – are there any diseases within the source population that could pose problems? Genetic diversity is also important for the long term health of populations.

Salutation Island

Salutation Island has a healthy population of greater stick-nest rats that has established since their introduction to the island in 1990. However, measuring only about one kilometre wide by two kilometres long, Salutation Island is quite small and genetic diversity on the island will need management to maintain the long term viability of the population.

A survey was therefore done in September 2016 to assess the genetic diversity of greater stick-nest rats on Salutation Island. This will help management determine whether rats are needed from other populations on South Australian islands to supplement genetic diversity on Salutation Island. It will also inform planning for Dirk Hartog Island.

Samples taken from the rats on Salutation Island are being analysed and it will take a few months for results to become available.



A survey on Salutation Island took samples from 70 greater stick-nest rats to test for genetic diversity.

Bernier and Dorre islands

Bernier and Dorre islands are potential sources for five species – boodie, western barred bandicoot, rufous hare-wallaby, banded hare-wallaby and the Shark Bay mouse. The wild populations of these animals occur naturally on the islands - they were not introduced like the greater stick-nest rats were to Salutation Island.

Surveys were done on Bernier and Dorre islands in August 2016 as part of ongoing monitoring as well as assessing the islands as potential translocation sources for *Return to 1616*.

Information collected over the years includes rainfall data and a range of details about species health and population sizes. The data is being analysed to answer questions like:

- Is the population of each species healthy enough to remove animals from?
- Is the genetic diversity of each species sufficient to repopulate Dirk Hartog Island from these islands alone?
- What is the best time to collect animals for translocation? How many years after good rainfall are population numbers peaking, and therefore best for removing animals?

Some species may need to be sourced from different places when these questions are answered. Generally the options are limited with Bernier and Dorre islands being the only source for banded hare-wallabies; and the main source for western barred bandicoots, Shark Bay mice and the island sub species of rufous hare-wallaby.



The island sub species of the rufous hare-wallaby is currently only found on Bernier and Dorre islands.

Other sources

Source populations will vary with species. Other potential sources include other islands, various wildlife sanctuaries, mainland populations and the Perth Zoo. Some of these are wild populations, others are captive breeding programs.



The Shark Bay mouse is currently only found on three Western Australian islands. The populations on Faure and North West islands were translocated from Bernier Island.



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Celebrating *Return to 1616*

In collaboration with the Shark Bay Arts Council the *Return to 1616* project sponsored several community weaving workshops during August 2016. The workshops were aimed at getting to know the *Return to 1616* animals while having some fun and learning new skills.

The 400th anniversary of the Dutch trader, Dirk Hartog, landing on Dirk Hartog Island is being celebrated from 21 to 25 October 2016. During the celebrations the large artworks created will be on display in front of the Parks and Wildlife office in Denham and smaller pieces made by Shark Bay School students will be displayed in the Discovery Centre.

The month of workshops wrapped up with a celebration where the artist-in-residence premiered *Ode to the native animals of Dirk Hartog Island* she made with the help of children during after school workshops. You can see it at [youtube/NB8thHHqPTA](https://www.youtube.com/watch?v=NB8thHHqPTA).

Parks and Wildlife is grateful to the Shark Bay Arts Council for hosting and supporting this month of creativity; to everyone who came and helped weave the *Return to 1616* collection of artworks; to Shark Bay School for bringing Cynamon into classes; and to Cynamon Aeria for enthusiastically and skillfully running the classes and workshops.



Pictured above are some of the weavers with their creations. Standing from left to right: Sharon, Fay, Cynamon, Sally, Mira, Janine and Greg. Kneeling in front: Susan, Bianca, Sietske and Helena. From left to right the creations represent the western barred bandicoot, Shark Bay mouse, dibbler and chuditch.