Return to 1616

Dirk Hartog Island National Park

Ecological Restoration Project

***Return to 1616* is a Department of Parks and Widlife project that aims to restore the habitats and wildlife of Dirk Hartog Island National Park to how they would have been when Dirk Hartog landed on the island in 1616.**

This photo book shows project operations from 2012 to early 2015. While the focus in this period was on eradicating feral cats, goats and sheep, there were also other activities.

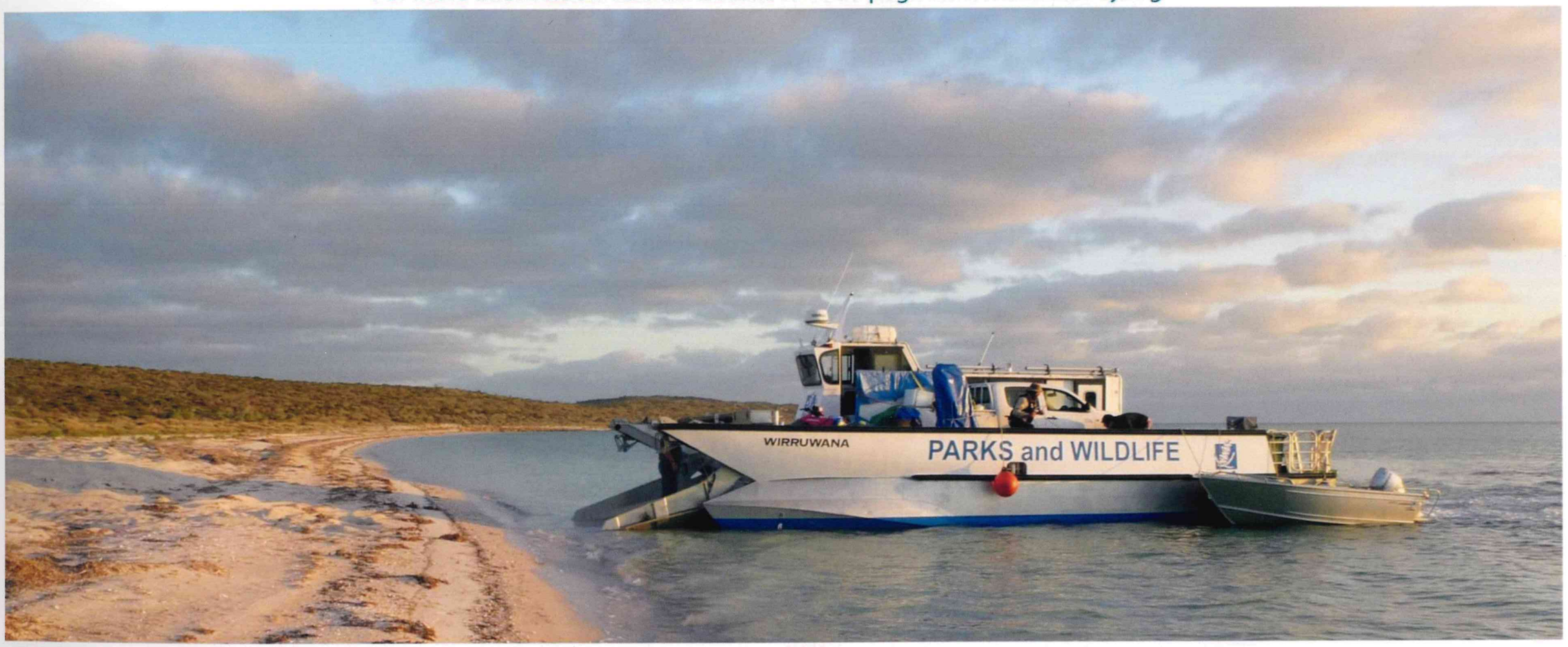
A barge was purchased to transport equipment, supplies and materials to the island, and a 13 kilometre fence was constructed to divide the island into two management areas.

Surveys were conducted to assess the status of native and exotic species on the island and biosecurity, fire and weed management plans were completed.

The Dirk Hartog Island National Park Ecological Restoration Project is mostly funded through the Gorgon Barrow Island Net Conservation Benefits (NCB) program with additional funding from the Department of Parks and Wildlife. The NCB program aims to deliver long term conservation benefits to places in Western Australia with similar values to Barrow Island.

Cat eradication under Return to 1616 only became possible following the development of Eradicat baits under the Western Shield fauna recovery project, the main method used to eradicate cats from the island.

For more information visit the ***Return to 1616*** page on www.sharkbay.org



SHARK BAY world heritage

western shield

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

DIRK HARTOG ISLAND
RETURN TO 1616

Reintroducing...

Ten small mammal species that were known to occur on the island at the time of Dirk Hartog's landing will be reintroduced when the feral animals are removed.

Heath mouse *(Pseudomys shortridgei)*

Western barred bandicoot *(Perameles bougainville)*

Brush-tailed mulgara *(Dasycercus blythi)*

Greater stick-nest rat *(Leporillus conditor)*

Woylie *(Bettongia penicillata)*

Dibbler *(Parantechinus apicalis)*

Desert mouse *(Pseudomys desertor)*

Chuditch *(Dasyurus geoffroii)*

Shark Bay mouse *(Pseudomys fieldi)*

Boodie *(Bettongia lesueur)*

and introducing

Another two small mammal species will also be brought to the island when it is free of feral animals.

Banded hare-wallaby *(Lagostrophus fasciatus)*

Rufous hare-wallaby / mala *(Lagorchestes hirsutus)*

Photos -
B&B Wells, Lochman Transparancies , Parks and Wildlife

Nest of the greater stick-nest rat on Salutation Island, Shark Bay

Feral cats

Feral cats are being removed using poison baiting and trapping. Monitoring of the cat population is undertaken using automated cameras, GPS radio collars and systematic searches for cat sign (prints, scats, kills).

A fence dividing the island into two management areas prevents cats crossing from north to south and enables eradication and monitoring to be staged.

Cats are efficient predators that have devastating impacts on native animal populations.

Forty tonnes of fencing material delivered to Herald Bay in 2013.

Gary Desmond, Parks and Wildlife maintenance officer, fits the final fence panel on the east coast.

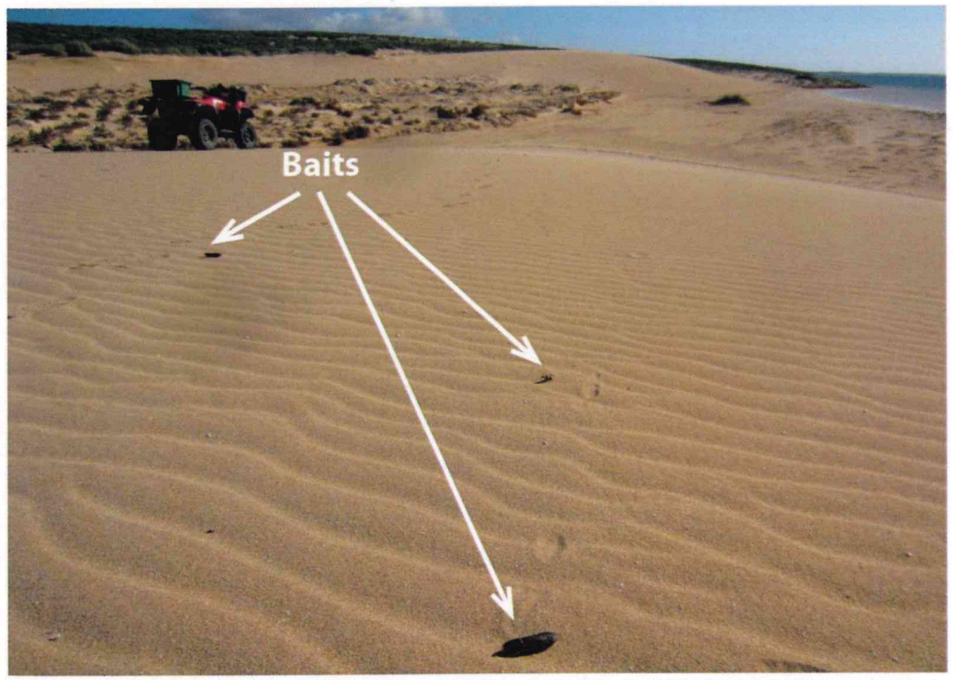
The fence is electrified. Please ensure the gate is shut after going through.

Parks and Wildlife senior technical officer, Mike Onus, recovering a dead radio collared feral cat after baiting.

Baiting

Poison baits containing 1080 are used as the initial control technique to eradicate feral cats.

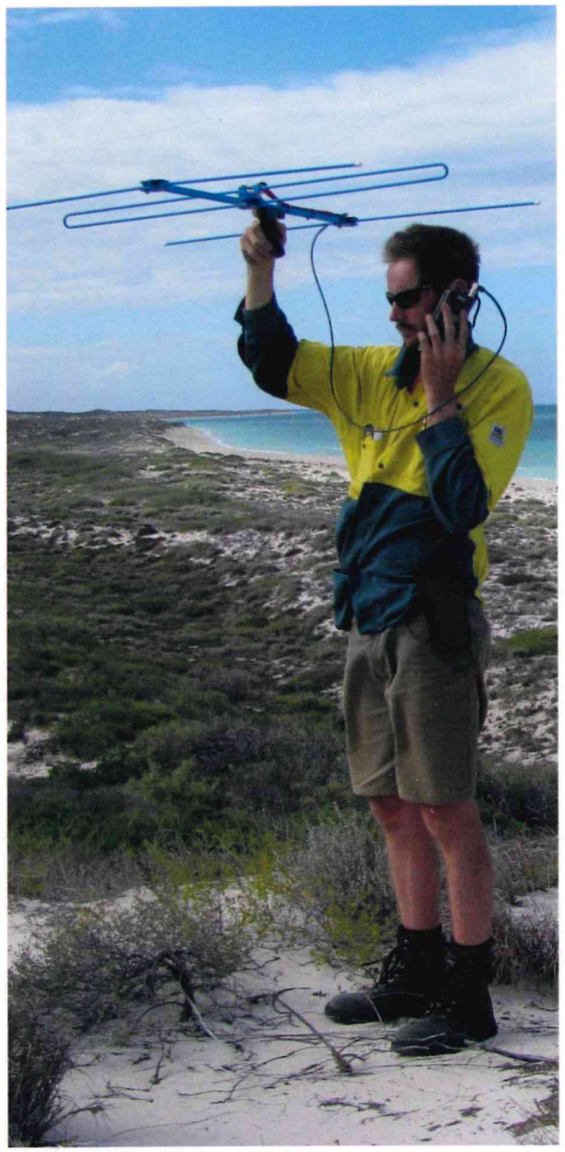
Baits containing 1080 poison are thawed before being loaded on a plane and dropped across the island on a pre-determined flight path. The baits are dropped by a machine at programmed intervals.



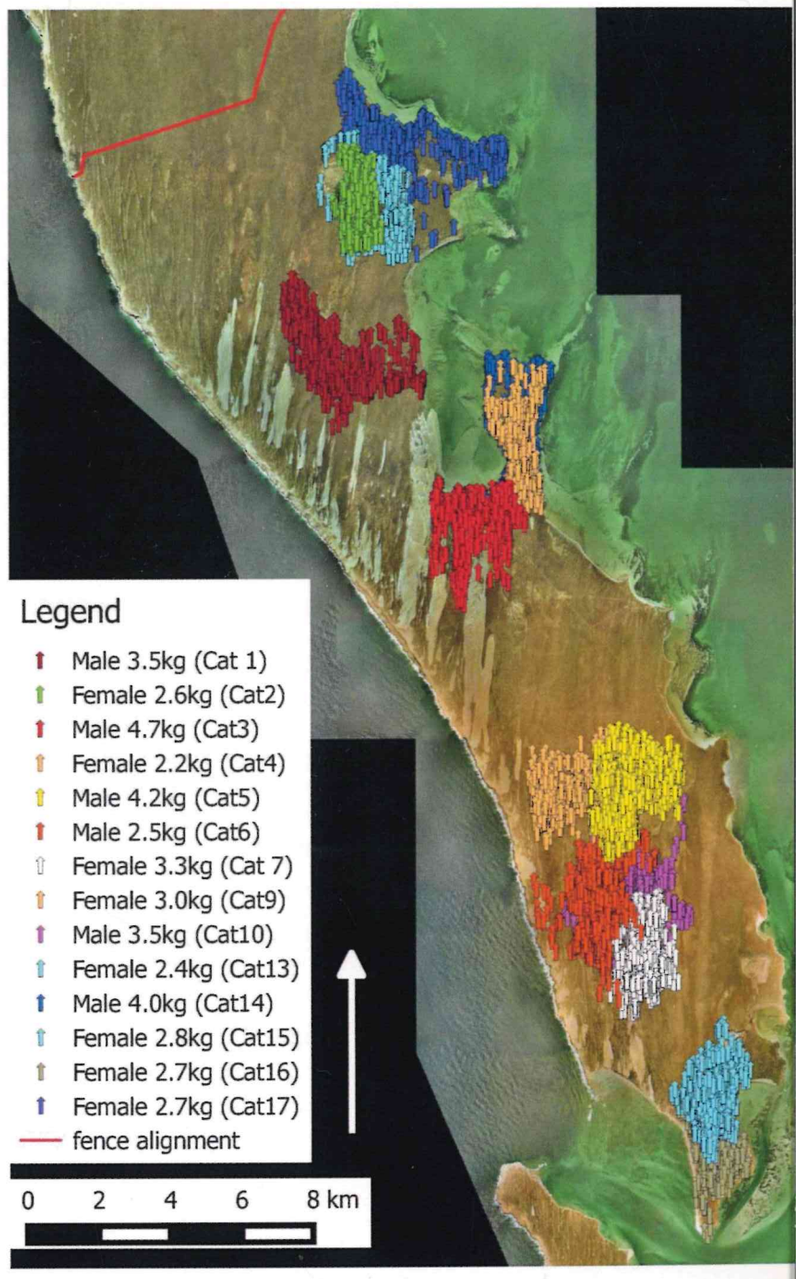
The ground spread of baits was mapped to help improve future baiting programs.

Radio collars

Fifteen cats were trapped and fitted with GPS radio collars and then released prior to baiting. The collars collect data about cat activity used to determine the success of baiting and assist with follow-up control. Fourteen of 15 collared cats died following baiting in 2014.



Parks and Wildlife research scientist, Michael Johnston, using a directional antenna and VHF receiver to locate radio collared feral cats.



Locations used by feral cats on Dirk Hartog Island (February to May 2014) from hourly GPS fixes of radio collared cats.

Monitoring

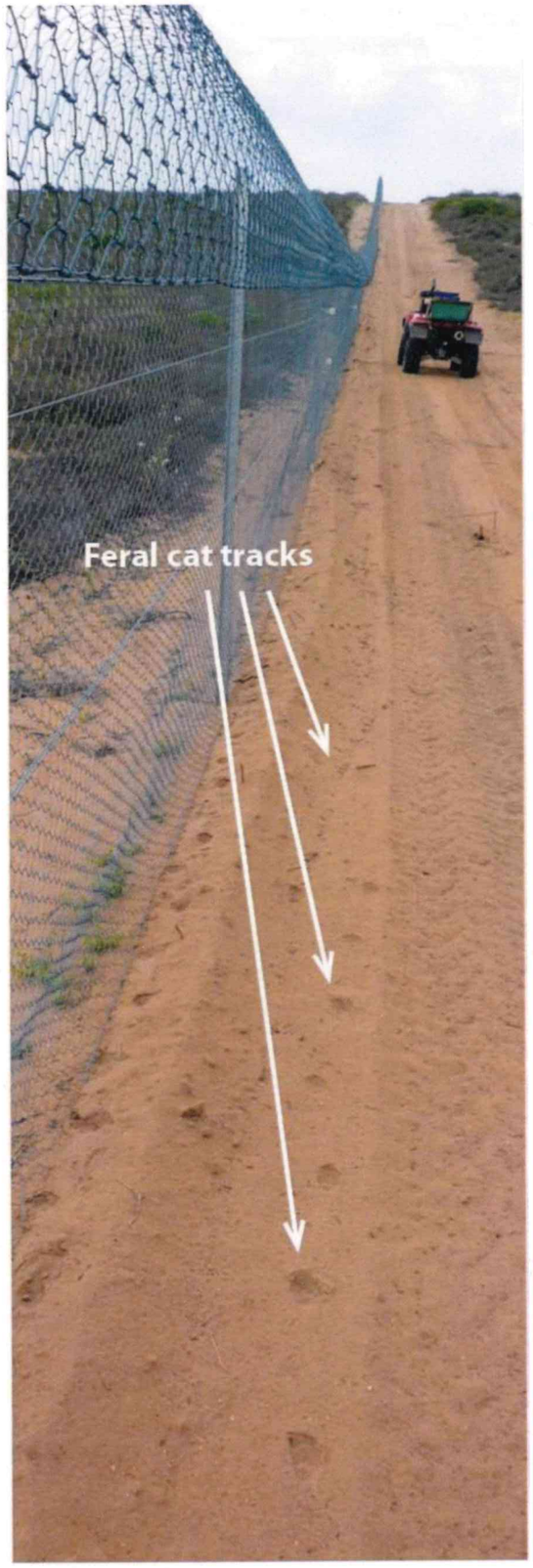
The most important and time-consuming part of the feral cat eradication project is the monitoring to ensure that cats have been removed. This is undertaken using several techniques including motion sensing cameras, active searches for cat sign and detector dogs.

Beaches and tracks are searched daily for evidence of cat activity such as footprints and scats.

Scats are dissected to identify what cats have eaten - centipedes in this case.

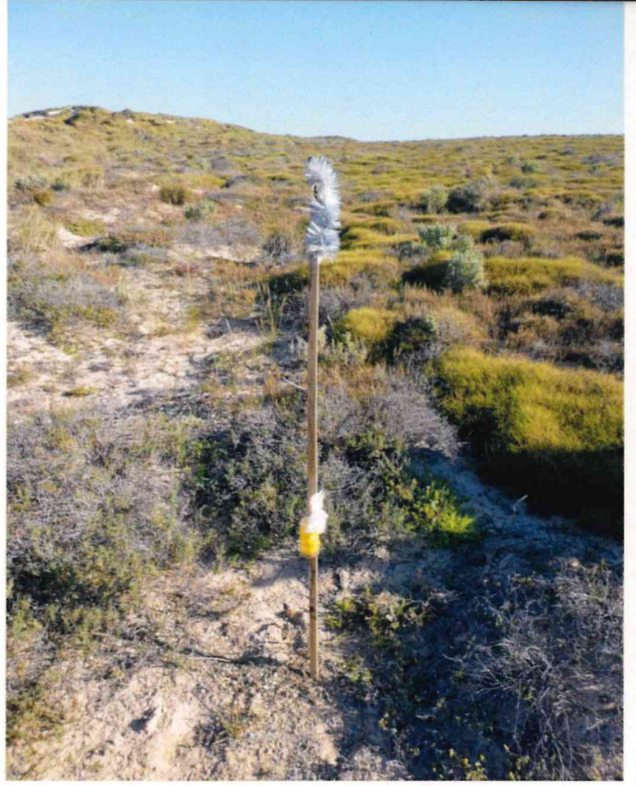
Bird roosts are checked for cat activity.

To help ensure successful rehabilitation when the project is finished, please do not drive on the monitoring tracks.



Detecting feral cats on the west coast relies on cameras because there is no sand to show tracks.

Parks and Wildlife technical officer, Jason Fletcher, establishing a camera trap as part of monitoring to detect any cats remaining after baiting.



Visual lures (tinsel and feathers) along with a scent lure (cat anal gland) are placed in view of camera traps to attract cats.

Feral cat photographed by automated camera while investigating a scent lure at a camera trap.

Trapping

Traps are used to capture feral cats that survive the baiting program.

Cage traps are commonly used in areas where cats are accustomed to the presence of people.

Rubber-padded leghold traps are used in other areas and are lured with 'pongo', a blend of cat faeces and urine.

All traps are checked early each day.

Rubber-padded leghold trap during installation.

A completed leghold trap.

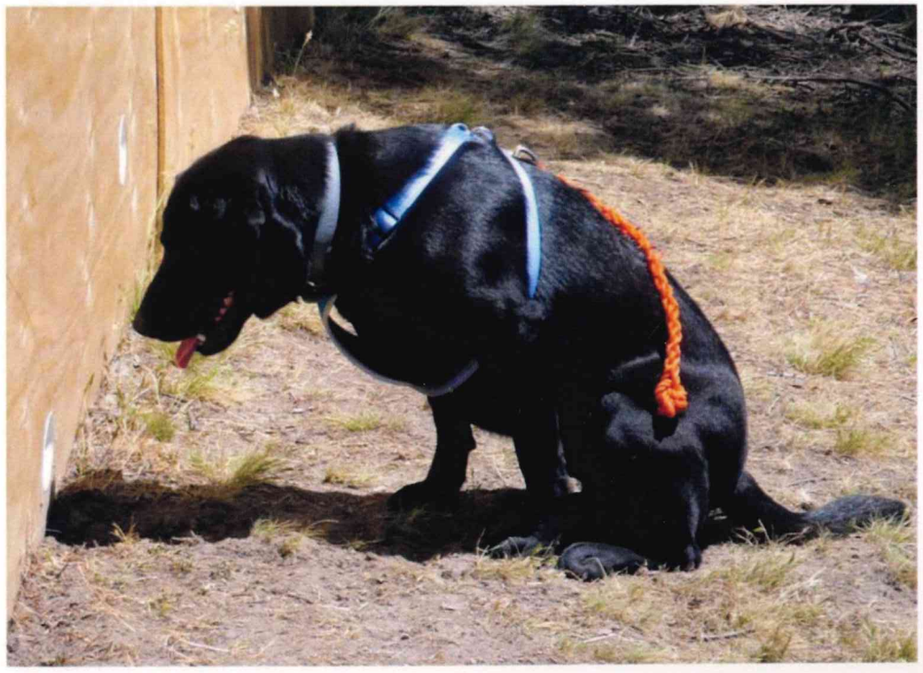
Cat entering a cage trap at the former tip.

Confirming success

A team of trained detector dogs will be brought onto the island to confirm eradication success.

The dogs are trained to 'indicate' by sitting when they detect recent cat scent. If a cat is detected, further trapping will be undertaken in that area.

The dogs with their handlers from Latitude 42 Environmental Consultants begin working south of the fence in 2015.

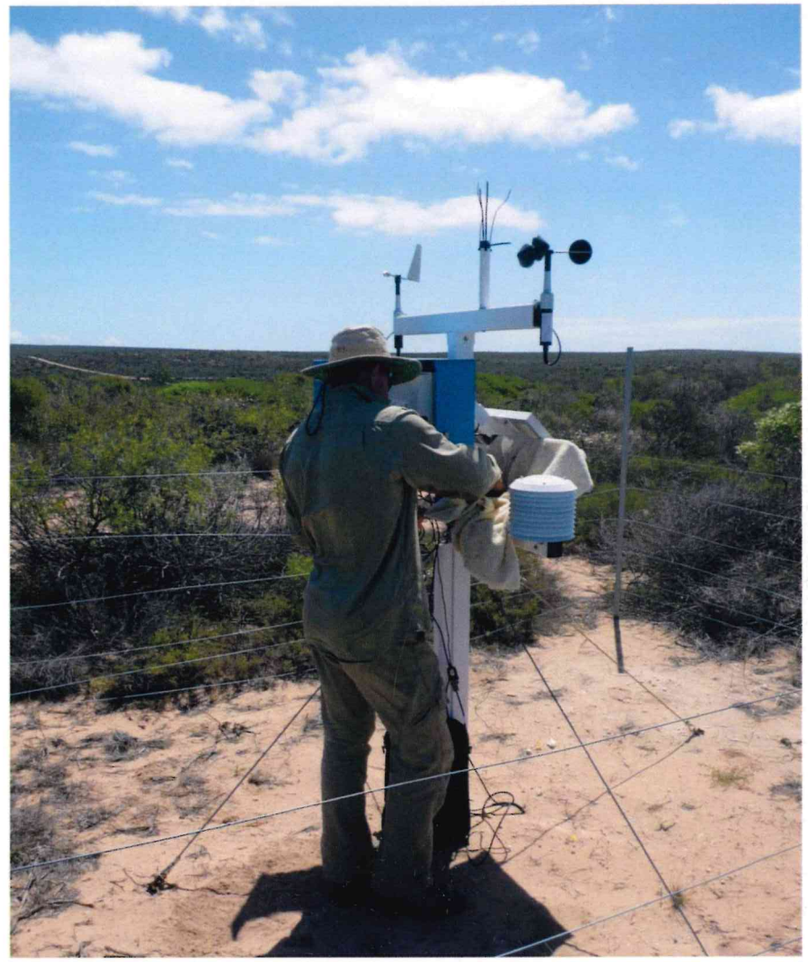


Operations base

A temporary depot was set up at the southern end of Herald Bay in 2014 while the cat team concentrated their operations south of the fence.

A similar camp will be established at Sandy Point as work starts north of the cat fence.

The cat team's home away from home.



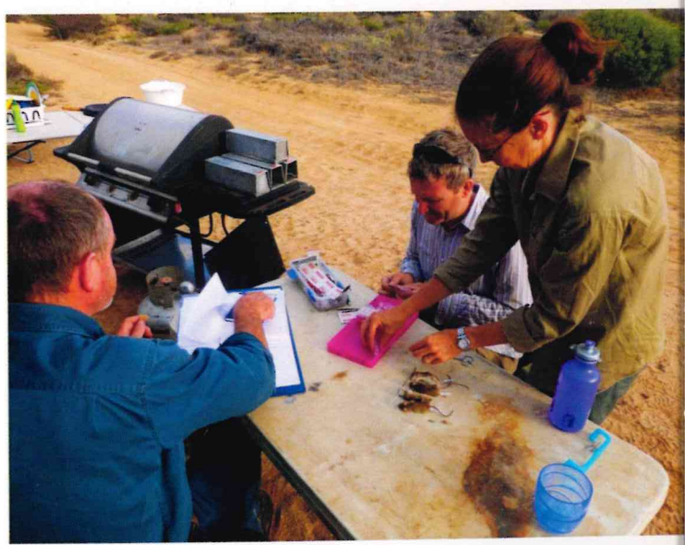
Jason Fletcher checks the weather station used for environmental monitoring. Data will later be analysed in relation to cat activity.

Rat surveys

The black rat is a highly invasive rodent which has significantly impacted wildlife on islands around the world. Parks and Wildlife surveys in 2014 confirmed that black rats have not established on Dirk Hartog Island or anywhere else in Shark Bay.

Methods used by the Parks and Wildlife rat survey team (Allan Burbidge, Russell Palmer, Keith Morris, Deanne von Senger and Andy Williams) included automated cameras at baited stations and analysing the scats of predators for black rat remains..

Black rat, *Rattus rattus*



House mice were found on the island, but there was no sign of black rats.

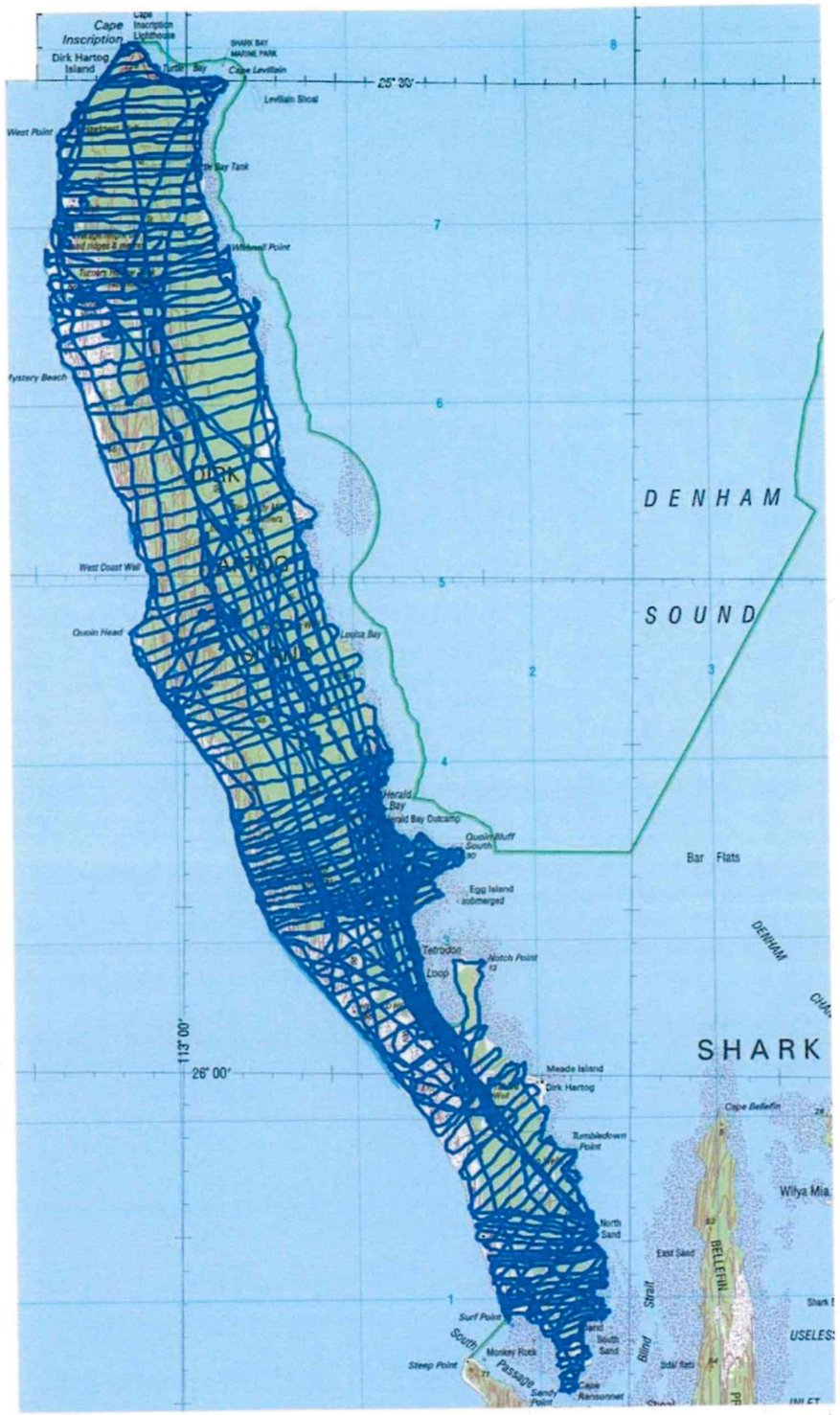
Eradicating goats

Goats are prolific breeders that denude vegetation needed by native species for food and shelter.

The goat eradication program on Dirk Hartog Island is in its final, and most difficult, stage with a number of strategies in place to ensure the few remaining goats are removed.

These strategies include aerial shooting and monitoring goat numbers and locations.

Growing numbers of goats leave nothing on the ground and can completely strip leaves and bark from shrubs. As this image from Peron Peninsula shows, a big billy standing on its hind legs can graze plants to over two metres.



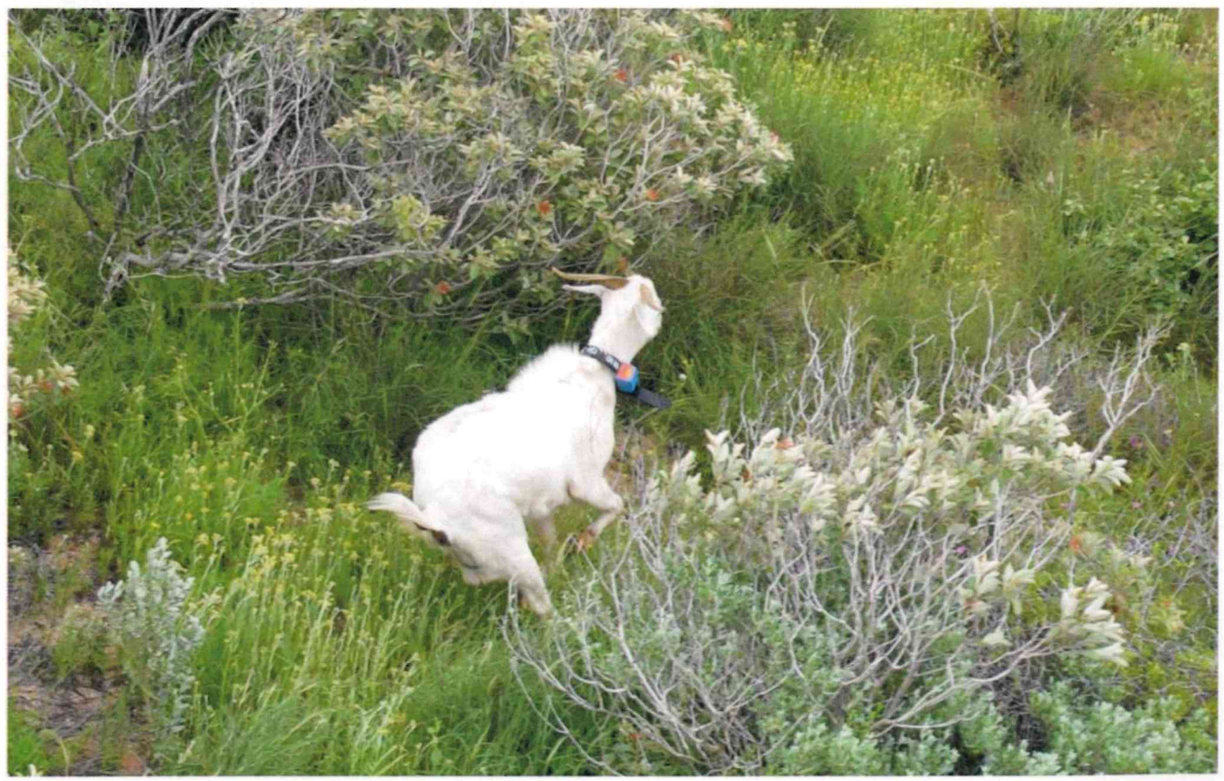
Three shooting programs each year involving systematic flights across the island will continue for at least a year after the last goats are thought to have been removed.

The eradication program maintains radio collars on 14 female goats. Known as Judas goats, these social females attract other goats, which are disposed of during shooting programs while Judas goats are left to gather and betray another mob.

The team flies the island to find goats to collar.

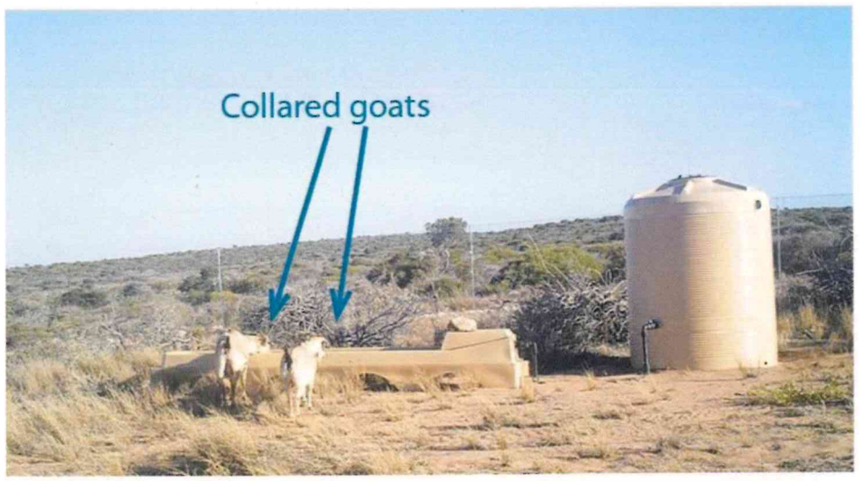
When a goat is found, the helicopter lands and two people disembark to catch and collar the goat.

The helicopter pilot and two people on the ground work as a team to catch the goat.

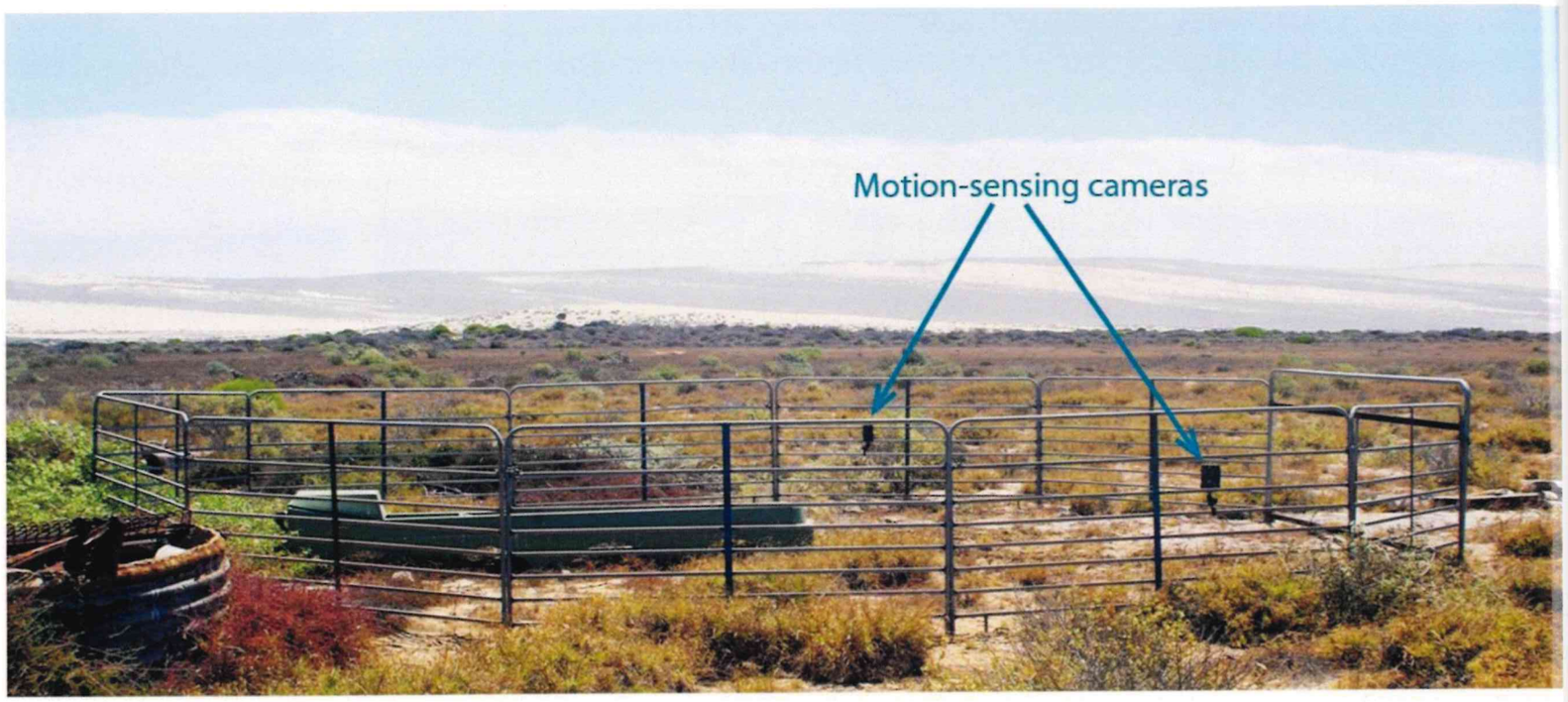


The Judas goats are radio tracked during shooting operations, but the collared goats are left so they can be tracked to another mob during the next shoot.

The goat eradication team uses images from water points and information from radio collared goats and aerial surveys to determine the numbers and ranges of remaining goats. The team will use this information when planning future shooting operations and to help verify the success of the eradication program.



Images are used to identify which animals are culled during shooting operations and help verify eradication success.



Motion-sensing cameras photograph animals going to the water.

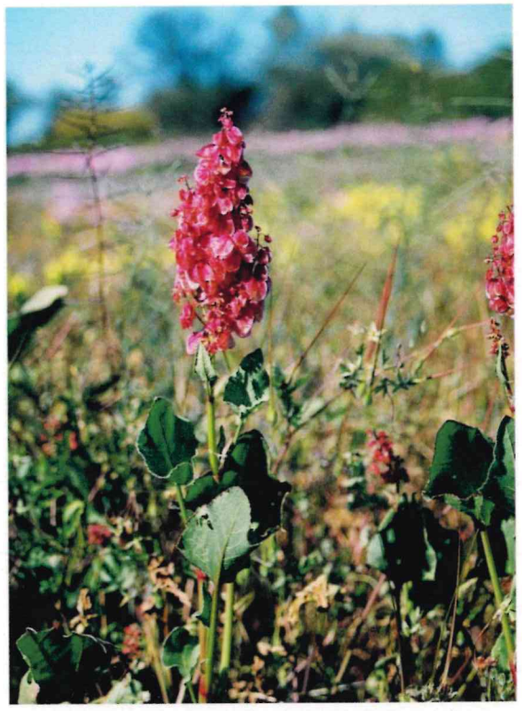
A motion-sensing camera at a water point yielded a pleasant surprise - a young white-bellied sea-eagle.

Managing weeds

Invasive weeds threaten natural ecosystems by displacing native species and leaving animals without their natural homes and food. Consequently managing weeds is an important part of ecological restoration.

The weed management plan developed for Dirk Hartog Island identifies management strategies for eight species that are currently on the island. The plan also advises to look out for five 'high risk alert species' that have been recorded in Shark Bay but not on Dirk Hartog Island.

Mexican poppy *(Argemone ochroleuca)*



Ruby dock *(Acetosa vesicaria)*

Kapok bush *(Aerva javanica)*

Crownbeard *(Verbesina encelioides)*

Please report any sightings of these weeds to:

Parks and Wildlife Shark Bay District
63 Knight Terrace
Denham WA 6537
Ph: (08) 9948 2226
sharkbayenquiries@dpaw.wa.gov.au

Photos -
http://www.lrm.nt.gov.au, Parks and Wildlife, www.weeds.org.au/, www.daff.qld.gov.au

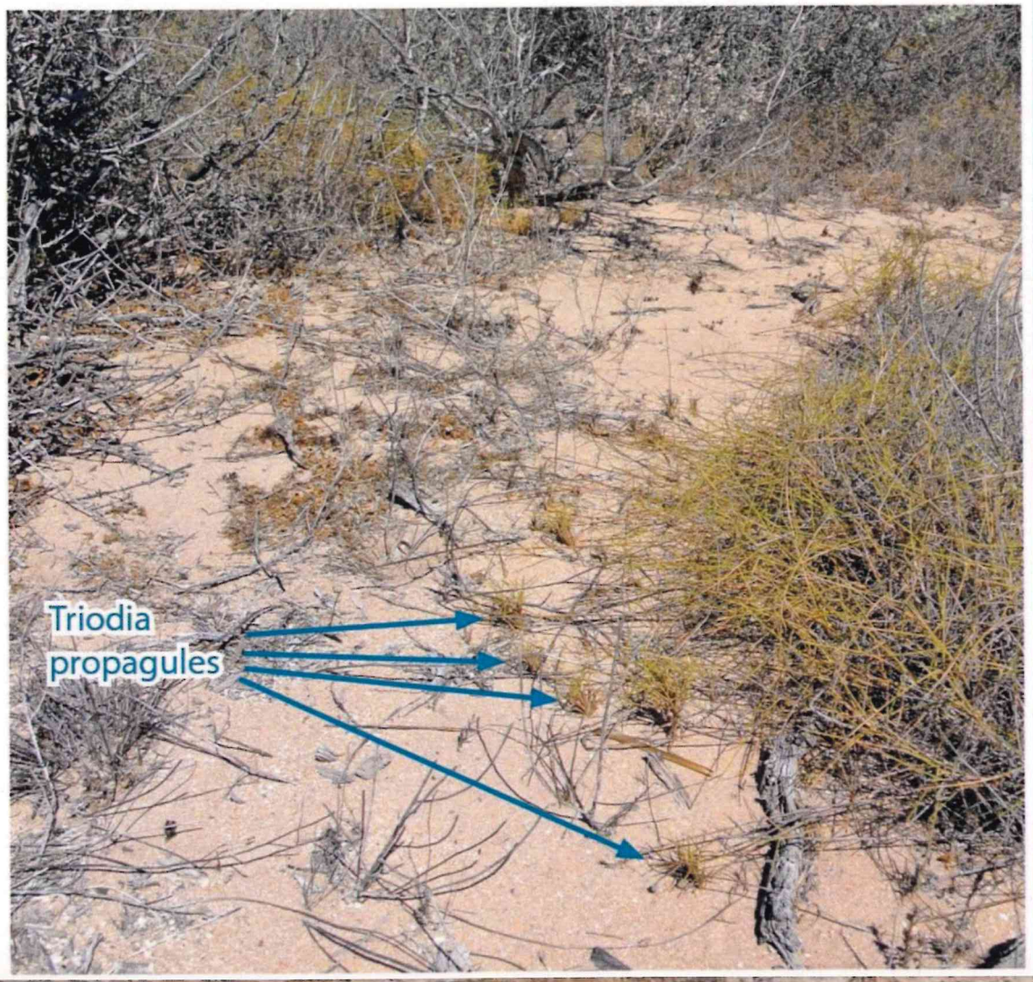
African boxthorn *(Lycium ferocissimum)*

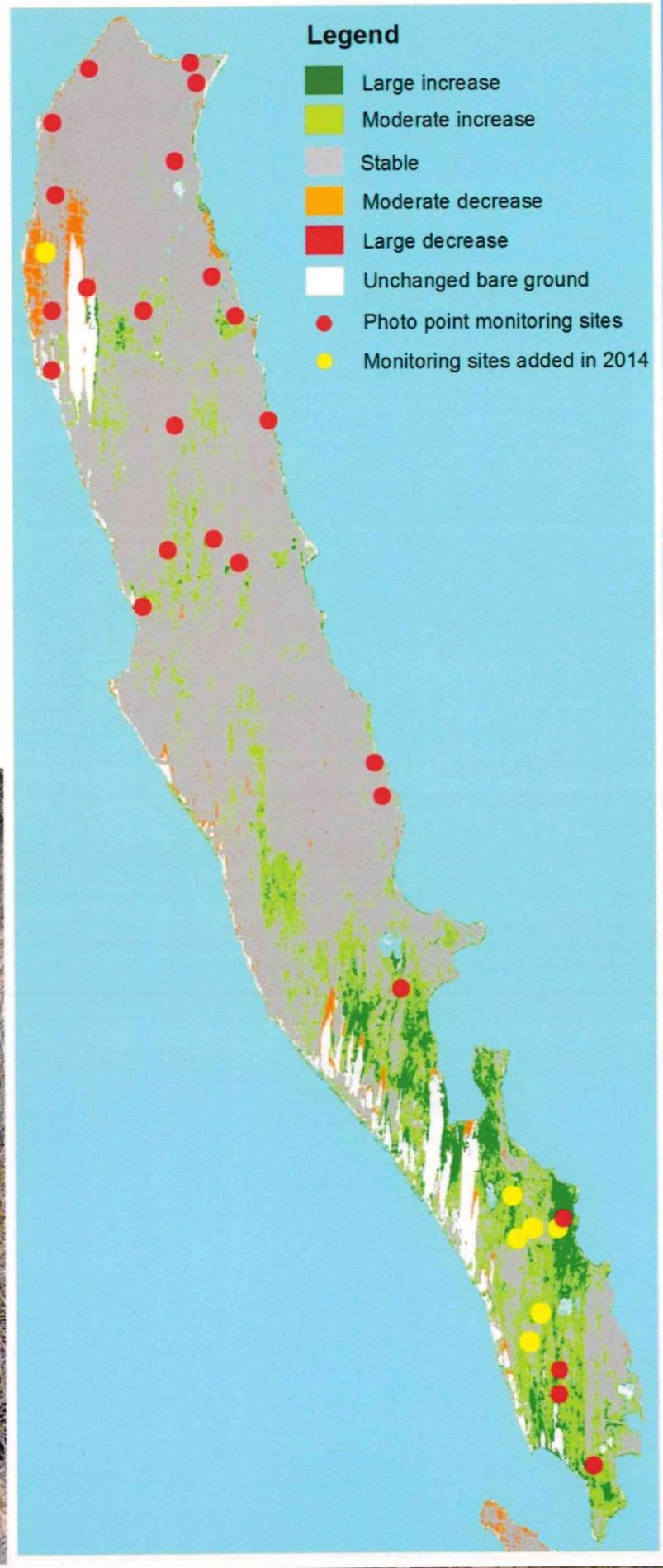
Vegetation

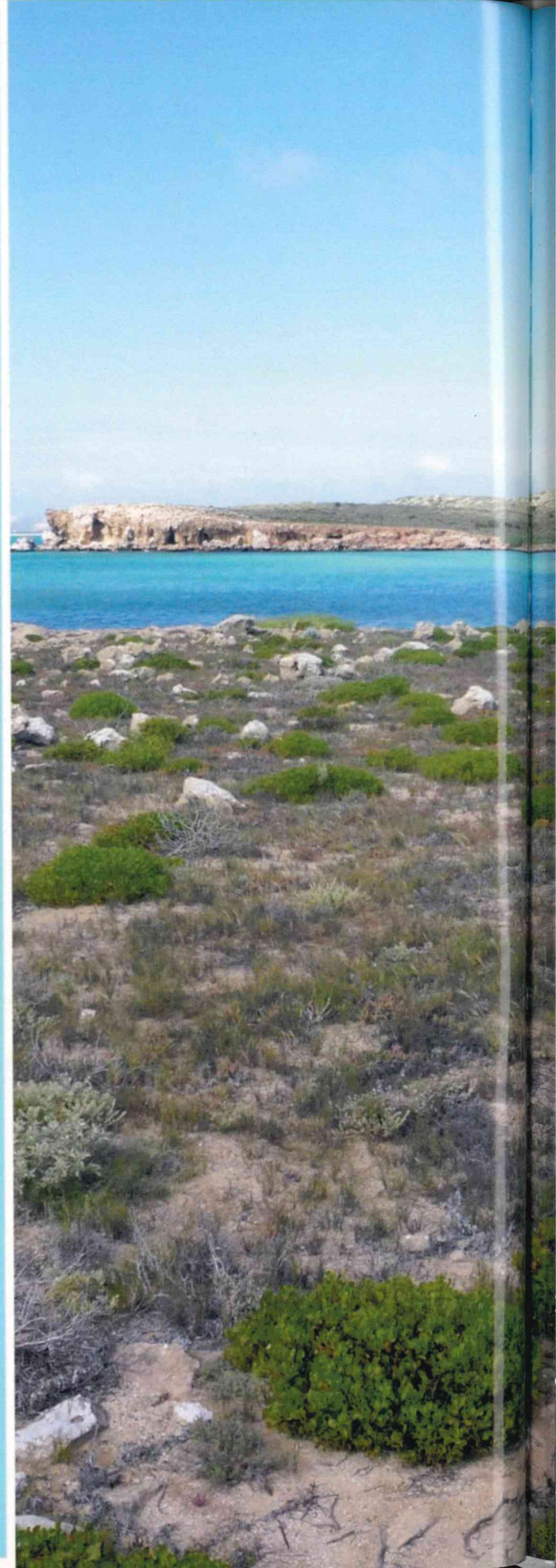
A study evaluating vegetation recovery since destocking sheep in 2008 and ongoing goat removal indicates a significant increase in vegetation cover over 20 percent of the island since 2008.

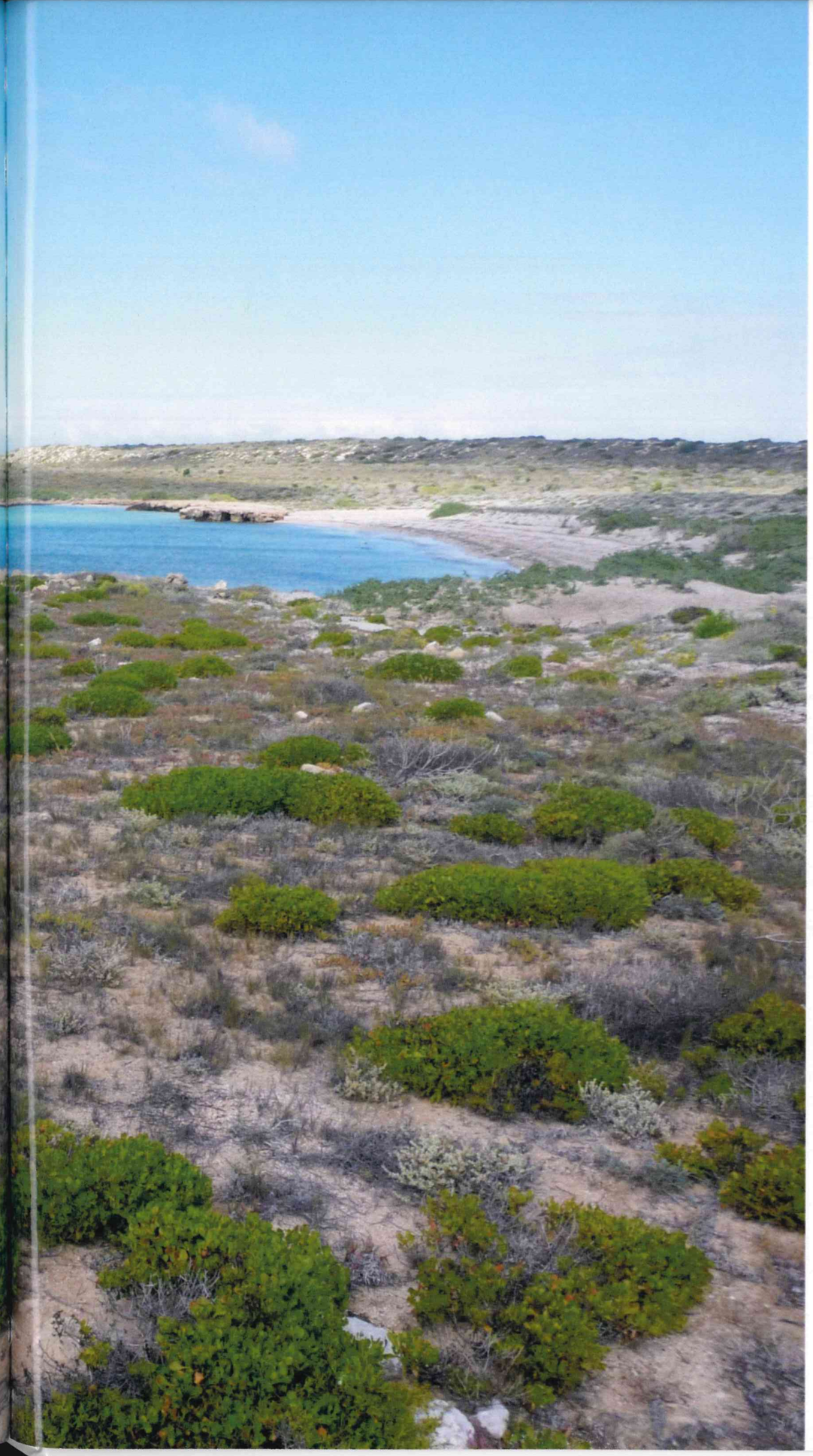
Changes in vegetation cover were measured using Landsat satellite imagery from 1988 to 2014. Validation was done recording species and cover at 27 sites on the ground.

Field validation indicates that the increase can be partly attributed to an increase in density of invasive buffel grass due to reduced grazing pressure, but that increases in cover from native species were also evident. An example of this is the triodia propagules shown below.







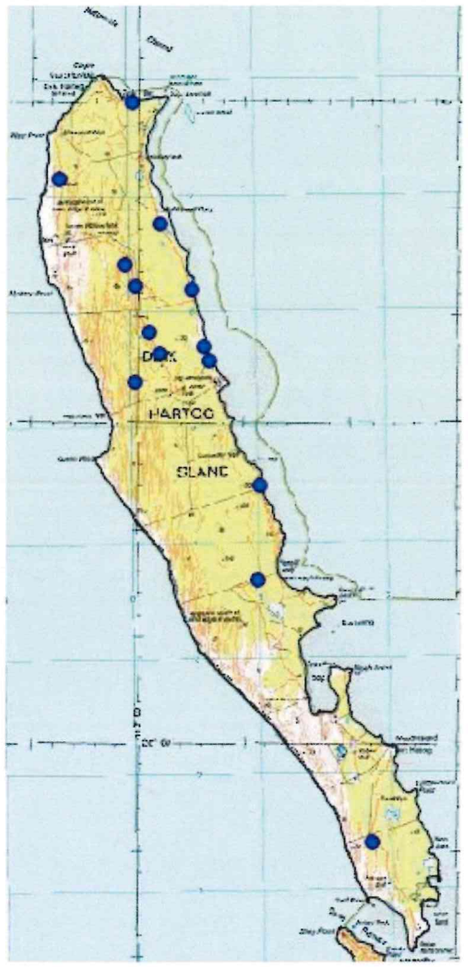


Wildlife

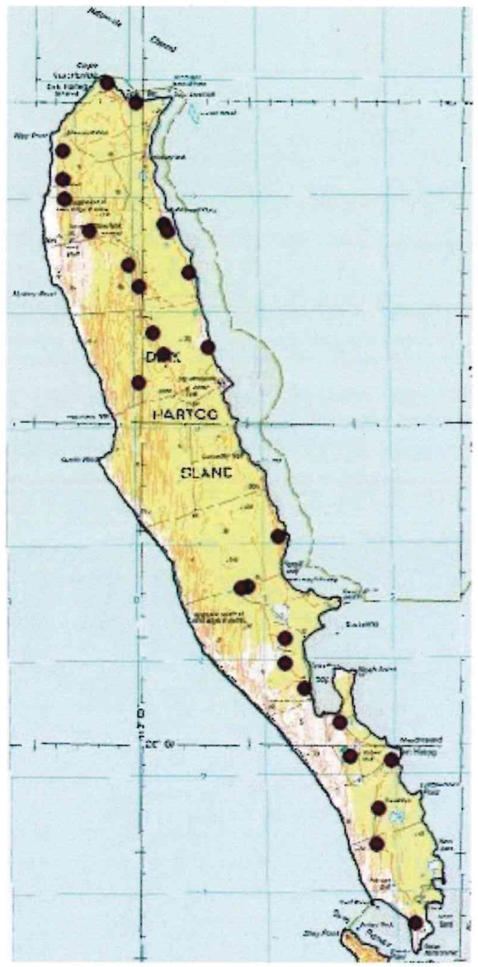
Black and white fairy-wren

Thirty-four sites were surveyed in October 2013 for three threatened bird subspecies found only on Dirk Hartog Island: black and white fairy-wren, rufous fieldwren and southern emu-wren.

As shown on these maps, black and white fairy-wrens were encountered more frequently on the northern half of the island while rufous fieldwrens and southern emu-wrens were distributed relatively evenly amongst the survey sites.



Black and white fairy-wrens were found at 16 of the 34 sites.



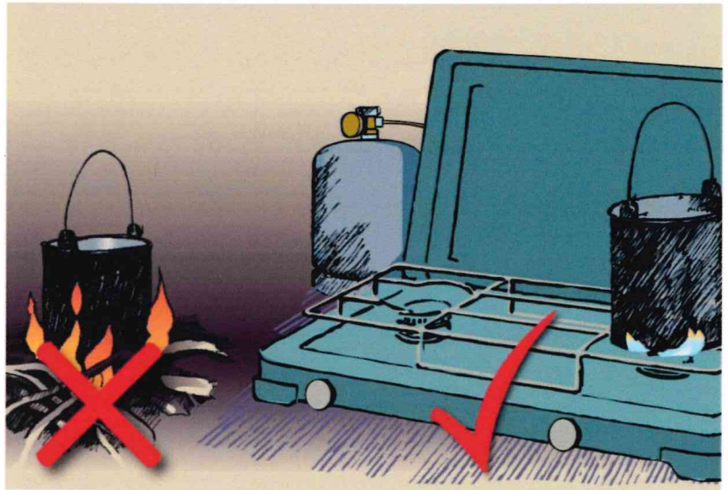
Rufous fieldwrens were found at 27 sites.

Southern emu-wrens were found at 14 sites.

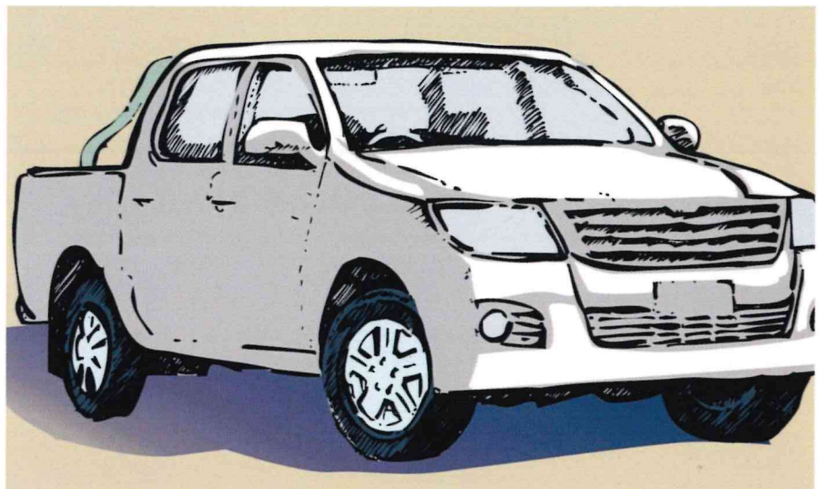
Illustration - Leonie Richards

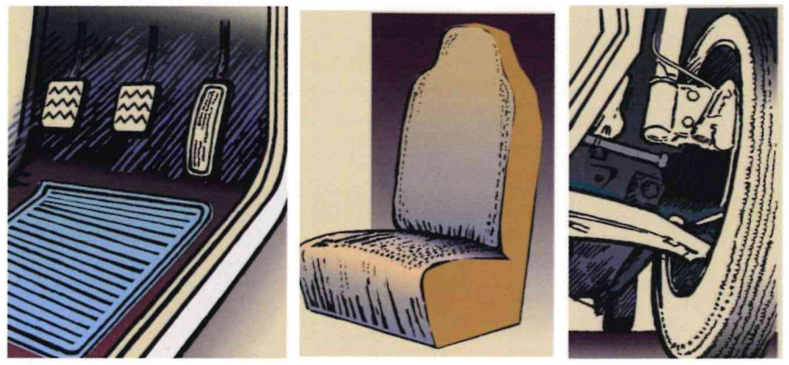
Island protection

You can help *Return to 1616* succeed by helping prevent the introduction of new pest species with their associated threats to habitats and native wildlife on Dirk Hartog Island.

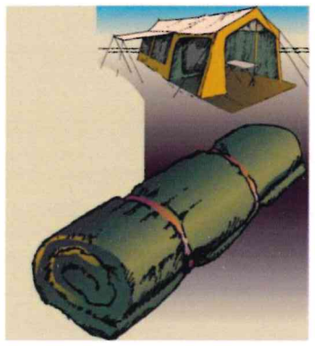


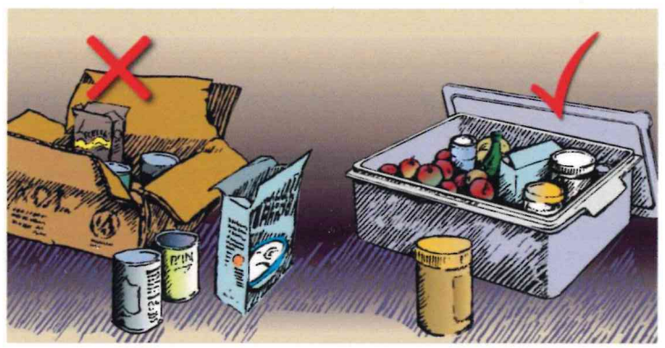
Please do not light fires as they can cause wildfires. Collecting firewood removes essential habitats and disturbs the balance of ecosystems. Bringing firewood from elsewhere can introduce pests.



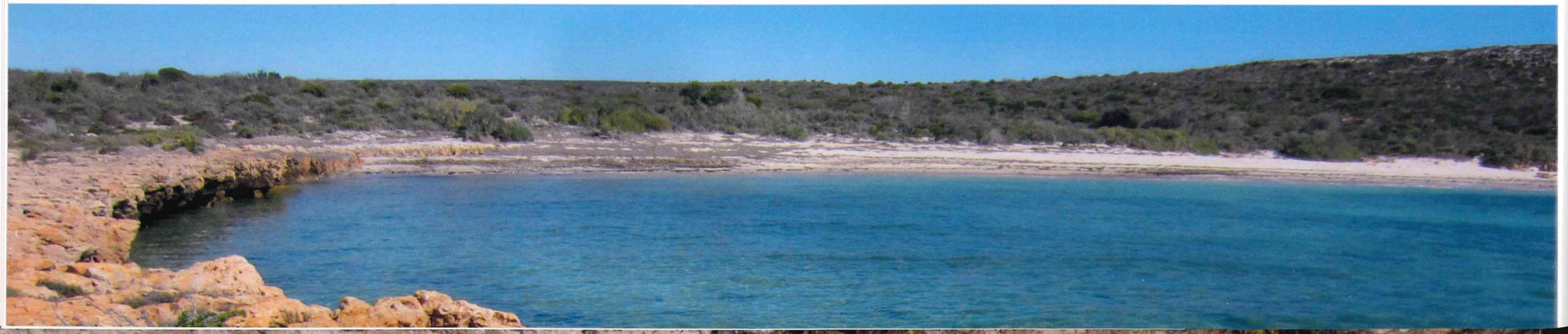


Please make sure you don't bring pest species onto Dirk Hartog Island with your vehicle, boat or gear.





Illustrations - Ian Trapnell



Photos – Parks and Wildlife, except where otherwise stated

Illustrations - Leonie Richards, Ian Trapnell

Back cover illustration - Kristy Day

Information current at April 2015

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