

Dirk Hartog Island National Park

Return to 1616

Ecological Restoration Project



Education Package for Schools
Department of Biodiversity,
Conservation and Attractions



Department of
**Biodiversity, Conservation
and Attractions**



RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK

Dirk Hartog Island National Park

Return to 1616

Dirk Hartog Island National Park

Return to 1616

Ecological Restoration Project

Education Package

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Department of **Biodiversity,
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Gorgon Barrow Island
Net Conservation Benefits Fund
www.gorgon-ncb.org.au

Dirk Hartog Island National Park

Return to 1616



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RETURN TO 1616
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Introduction

Dirk Hartog Island is Western Australia's largest island. When visited by Dirk Hartog in 1616, the island was in pristine condition with a rich mammal fauna and flourishing vegetation. Since this time, introduced plants and animals have degraded the island causing the local extinction of native species. *Return to 1616* is an ambitious program to restore the island's natural ecosystems to how Dirk Hartog would have seen them. Introduced animals have been removed and native mammals are gradually being reintroduced.

These resources and activities have been designed to achieve a range of learning outcomes across curriculum areas – particularly HASS, Science and English.

After using the materials in *Return to 1616* learners will be better able to:

- describe how Dirk Hartog Island is being restored by the *Return to 1616* project
- provide examples of adaptations of species to their environment
- describe interactions between animals in an ecosystem
- describe predator prey relationships (food webs, food chains)
- identify threats to native species
- explain how our actions can have both positive and negative impacts on the environment
- identify practical ways that we can protect threatened species.

Travel through time

Meet the unique wildlife

Be part of the solution

Dirk Hartog Island National Park

Return to 1616



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DIRK HARTOG ISLAND
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Photo: Mark Cowan

Let's begin your journey to Dirk Hartog Island National Park...

Dirk Hartog Island National Park

Return to 1616



How to Use this Resource

People will be driven to learn when they're solving problems that matter to them. This resource is designed to engage learners in devising actions for real-world problems - big and small. Select an *Inquiry Activity* and let it lead the way. The *Information Hub* is there to support knowledge construction by learners. The *Teacher Section* is there to support teachers as they guide learners to achieve curriculum expectations.



Return to 1616 Background Information

Learn about the incredible project to restore the biodiversity of Dirk Hartog Island to its natural state.



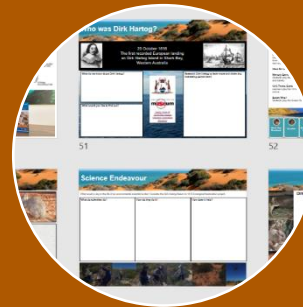
Virtual Tour

Interact with 360-degree images within Google Earth to explore the island and the *Return to 1616* project.



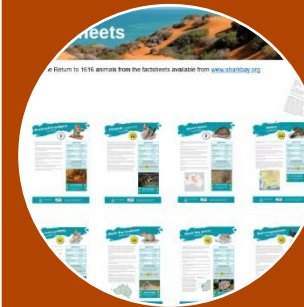
Inquiry Projects

Use 'Information Fluency' to guide your research or 'Solution Fluency' to guide you to real-world action!



Student Activities

Browse activities to complement your current programs and curriculum. These can be used as 'one-off' activities or as a series.



Information Hub

Search here for information you need when you need it. Find the information that best suits your inquiry and use it for real-world action. Share the information with others.



Teacher Section

This section includes curriculum links and other supporting materials for busy teachers.



Return to 1616

Background Information



Dirk Hartog Island National Park (Wirruwana)

Dirk Hartog Island (*Wirruwana*) lies within Shark Bay, which is the traditional land of the Malgana people. They know the island as Wirruwana and call the Shark Bay area Gutharraguda, meaning 'two bays'.

The Malgana people are saltwater people, living around the water for the majority of their existence and have inhabited Shark Bay for more than 30,000 years.

Covering 63,300 hectares, Dirk Hartog Island National Park (*Wirruwana*) is WA's largest and most western island, and lies within the Shark Bay World Heritage Area, 850 kilometres north of Perth. The Shark Bay World Heritage Area was inscribed on the UNESCO World Heritage List in 1991 recognising the area for its special natural values.



Return to 1616 Background Information



Dirk Hartog

On 25 October 1616, Dutch sea captain Dirk Hartog and the crew of the wooden-hulled, Dutch East India Company ship, Eendracht were the first Europeans to land on Western Australian soil when they set foot on the island. He nailed an engraved pewter plate to a post, leaving the first evidence of European landing in what would one day be called Australia. The pewter plate was inscribed with details of his journey. This was at Cape Inscription, also the site of an historic lighthouse and associated keeper's quarters.

The thin strip of land, dominated by scrub-covered sand dunes, is now named after the Dutch captain.

The island is about 80 kilometres long and varies between 3 and 12 kilometres wide. It was mined by Europeans for guano, used as a base for the pearling industry and was a pastoral station from 1860. In 2009, the majority of the land was purchased from the pastoralist by the Western Australian Government and declared a national park.





Dirk Hartog Island Locals

The western side of the island is dominated by tall exposed cliffs while protected beaches and shallow bays comprise the eastern coastline. The low shrubby vegetation harbours a range of animal life including the Dirk Hartog Island black and white fairy-wren, which is found nowhere else, and the northern sandhill frog whose distribution is limited to the Shark Bay area and Dirk Hartog Island.

Seabirds abound along the protected eastern coast of Dirk Hartog Island with species nesting on islands close to shore. Wildlife in the waters close to the island can be observed from a boat or while snorkelling or diving – manta rays throughout the year, whale sharks around the northern coastline in May and June and humpback whales in September. Dugongs travel to warmer waters around the island when the rest of Shark Bay's waters are at their coldest.

Each summer thousands of loggerhead turtles return to Turtle Bay, the area where they emerged as hatchlings, to lay their eggs. Parks and Wildlife staff and volunteers have been monitoring this during annual surveys each January since 1994 and Turtle Bay is one of the most important loggerhead nesting areas in the southern hemisphere.



Decimation of Native Species

The island has experienced significant changes since Dirk Hartog landed there on 25 October 1616. Sheep and goats changed the vegetation, their grazing habits and trampling reducing the food and shelter available for native species. Feral cat predation added to the pressures on native species and made it impossible for some to survive.

Ten species of small mammals and marsupials, and one small bird did not survive the changes to the island's ecology.



Shark Bay
bandicoot



Chuditch



Brush-tailed
mulgara



Dibbler



Greater
stick-nest
rat



Desert
mouse



Shark Bay
mouse



Heath
mouse



Woylie



Boodie



Western
grasswren

*The Return to 1616 Ecological Restoration Project
brings hope for these species.*

Return to 1616

Background Information



What is *Return to 1616*?

Welcome to the Dirk Hartog Island National Park *Return to 1616* Ecological Restoration Project.

When Dirk Hartog landed on the island in 1616, the flora and fauna was in pristine condition.

Since this time, the island's ecosystem has been degraded by:

- overgrazing by introduced animals such as goats and sheep, removing habitat and food for native animals
- the efficient hunting of native animal species by feral cats
- the proliferation of introduced weeds that smother native vegetation.

Their combined effect caused the extinction of many native animal species on the island.

In 2009, the majority of the island was purchased by the government and declared a national park. It is managed by the Department of Biodiversity, Conservation and Attractions (DBCA). *Return to 1616* aims to restore the island to a more natural state and involves the removal of introduced animal species, the reintroduction of native animal species and management of weeds. It has removed introduced grazing animal species and the native vegetation is rejuvenating. It has eradicated feral cats making the island safe for the return of native animal species. It is managing weeds and aims to prevent the future establishment of pest species.

Come on a journey to explore the project, discover how it's changing the face of the Dirk Hartog Island National Park and meet some of the native animals being returned.

Photo: Richard Manning



Return to 1616 Background Information



Help Arrives!

The exciting *Return to 1616* Ecological Restoration Project is now breathing life back into Dirk Hartog Island with the eradication of feral animals now complete. The reintroduction of species that became locally extinct on the island during its pastoral days began in 2018 and further translocations will take place over 12 years.

Habitats are recovering with sheep declared eradicated in June 2016 and goats in November 2017. The feral animal eradication program was completed in October 2018 with eradication of feral cats declared. Over the next twelve years the lost species and two additional marsupials are being translocated to Dirk Hartog Island.

Although fauna reconstruction officially began when feral cat eradication was declared, there was a pilot release of the two hare-wallaby species in August/September 2017. Twelve each of the rufous hare-wallaby and banded hare-wallaby were translocated from Bernier and Dorre Islands. Monitoring with the aid of radio and GPS collars fitted prior to release showed the hare-wallabies to be doing well and breeding, with eight joeys observed in May 2018, in addition to eight previously recorded.



The first full-scale translocation of hare-wallabies involved the release of 90 banded and 50 rufous hare-wallabies from Bernier and Dorre Islands Nature Reserve onto Dirk Hartog Island in October 2018 with another 49 rufous hare-wallabies the following year bringing the total number of translocated rufous hare-wallabies to 112. The total number of Shark Bay bandicoots translocated is 99.

Preview video (45 seconds):

<https://cdn-sharkbaywa.pressidium.com/wp-content/uploads/2017/04/Social-Media-video-MIN.mp4>

In the spring of 2019, the hare-wallabies were joined by 26 dibblers, captive-bred at Perth Zoo and 71 Shark Bay bandicoots translocated from Bernier and Dorre Islands.

Return to 1616 Animal Factsheets



Find the key facts for each of the *Return to 1616* animals from the [Animal Factsheets](#) including the: greater stick-nest rat, chuditch, heath mouse, western grasswren, Shark Bay bandicoot, Woylie, banded hare-wallaby, Shark Bay mouse, rufous hare-wallaby, brush-tailed mulgara, boodie, desert mouse, and dibbler.

Greater stick-nest rat

Lepus arizonae

CD

Quick Facts

Head body:	110-160mm
Tail:	140-180mm
Average weight:	60-80kg
Conservation:	40-50%
Number of young:	1-4
Reproduction:	4 months

Conservation Status

Least concern (LC) - This species is not considered to be at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Stick-nest rats are the only marsupial that build a nest out of sticks.

Chuditch (western quoll)

Dasyurus hallucatus

VU

Quick Facts

Head body:	200-260mm
Tail:	200-260mm
Average weight:	6.0-8.0kg
Conservation:	10-15%
Number of young:	2-6
Reproduction:	8-9 months

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Chuditch are the only marsupial to have a pouch.

Heath mouse

Pseudomys penningtoni

VU

Quick Facts

Head body:	90-130mm
Tail:	80-100mm
Average weight:	35-50g
Conservation:	3-4 months
Number of young:	2-6
Reproduction:	8-9 months

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Heath mice are the only marsupial to have a pouch.

Western grasswren

Amphispiza bilineata

P

Quick Facts

Head body:	100-120mm
Tail:	80-100mm
Average weight:	18-22g
Conservation:	18-17 days
Number of young:	2-3
Reproduction:	18-17 days

Conservation Status

Least concern (LC) - This species is not considered to be at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Western grasswrens are the only marsupial to have a pouch.

Shark Bay bandicoot

Perameles nasuta

VU

Quick Facts

Head body:	100-120mm
Tail:	80-100mm
Average weight:	18-22g
Conservation:	18-17 days
Number of young:	2-3
Reproduction:	18-17 days

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Shark Bay bandicoots are the only marsupial to have a pouch.

Banded hare-wallaby

Lepus dorsalis

VU

Quick Facts

Head body:	100-120mm
Tail:	80-100mm
Average weight:	18-22g
Conservation:	18-17 days
Number of young:	2-3
Reproduction:	18-17 days

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Banded hare-wallabies are the only marsupial to have a pouch.

Shark Bay mouse

Pseudomys penningtoni

VU

Quick Facts

Head body:	80-110mm
Tail:	110-120mm
Average weight:	30-35g
Conservation:	20-25%
Number of young:	3-4
Reproduction:	18-20 days

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Shark Bay mice are the only marsupial to have a pouch.

Rufous hare-wallaby

Lepus rufus

VU

Quick Facts

Head body:	100-120mm
Tail:	240-260mm
Average weight:	1.5-2.0kg
Conservation:	10-15%
Number of young:	1-2
Reproduction:	1-2 months

Conservation Status

Vulnerable (VU) - This species is at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Rufous hare-wallabies are the only marsupial to have a pouch.

Brush-tailed mulgara

Dasyurus byrnei

P

Quick Facts

Head body:	100-120mm
Tail:	80-100mm
Average weight:	40-50g
Conservation:	30-40%
Number of young:	1-2
Reproduction:	12-15 weeks

Conservation Status

Least concern (LC) - This species is not considered to be at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Brush-tailed mulgaras are the only marsupial to have a pouch.

Boodie (burrrowing bettong)

Bettongia lesueur

CD

Quick Facts

Head body:	300mm
Tail:	250mm
Average weight:	1.8kg
Conservation:	4 months
Number of young:	1-2
Reproduction:	12-15 weeks

Conservation Status

Least concern (LC) - This species is not considered to be at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Boodies are the only marsupial to have a pouch.

Desert mouse

Pseudomys penningtoni

S

Quick Facts

Head body:	60-70mm
Tail:	100-110mm
Average weight:	15-20g
Conservation:	2-3 months
Number of young:	1-2
Reproduction:	12-15 weeks

Conservation Status

Least concern (LC) - This species is not considered to be at risk of extinction.

OS CD VU EN CR EX

DID YOU KNOW?

Desert mice are the only marsupial to have a pouch.

Dibbler

Macrotis lewinii

EN

Quick Facts

Head body:	140-150mm
Tail:	110mm
Average weight:	80-120g
Conservation:	80-120%
Number of young:	1-2
Reproduction:	1-2 months

Conservation Status

Endangered (EN) - This species is at risk of extinction.

OS CD VU EN CR EX

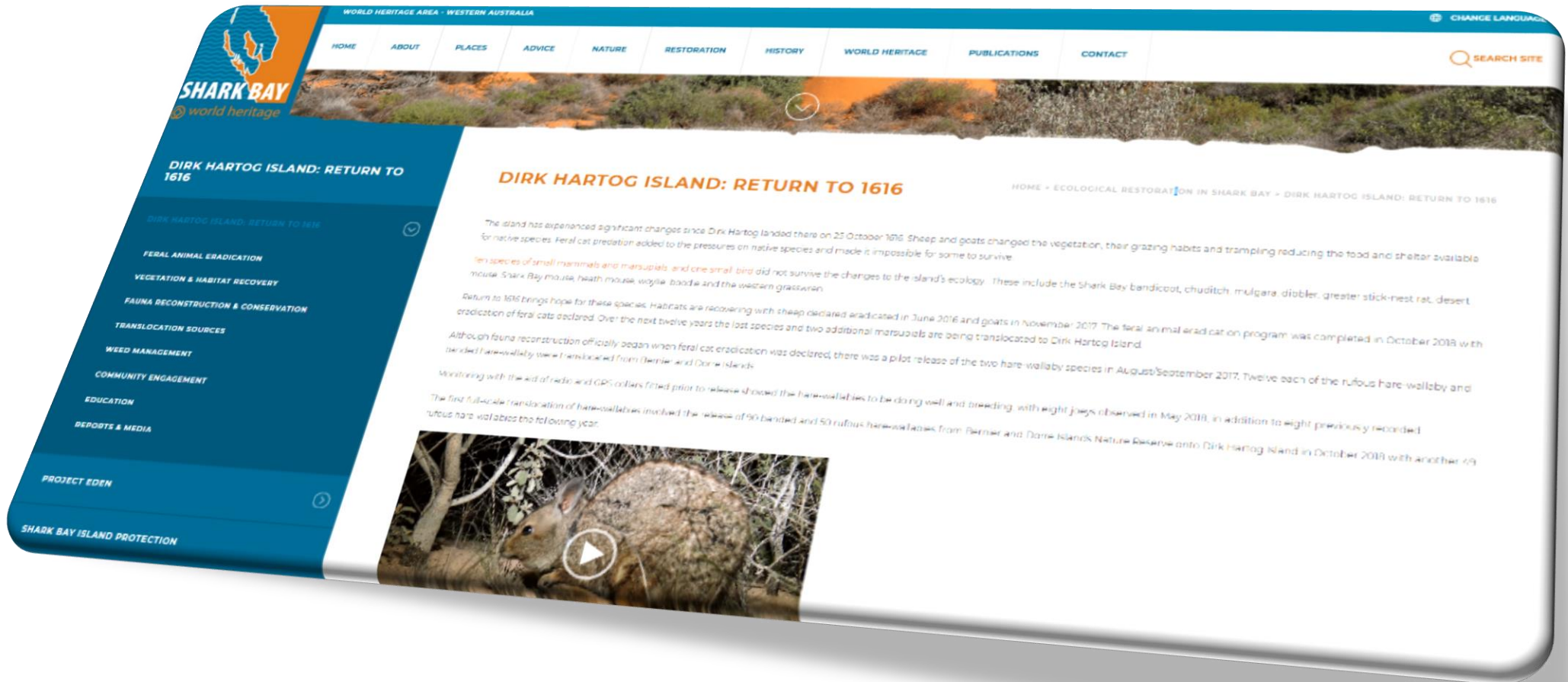
DID YOU KNOW?

Dibblers are the only marsupial to have a pouch.

Return to 1616 Shark Bay World Heritage



Learn more about the *Return to 1616* Ecological Restoration Project at www.sharkbay.org/restoration



www.sharkbay.org/restoration

Virtual Tour

Dirk Hartog Island National Park

Welcome to Dirk Hartog Island National
Park *Return to 1616* Ecological
Restoration Project Virtual Tour.



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RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK

Return to 1616 Virtual Tour



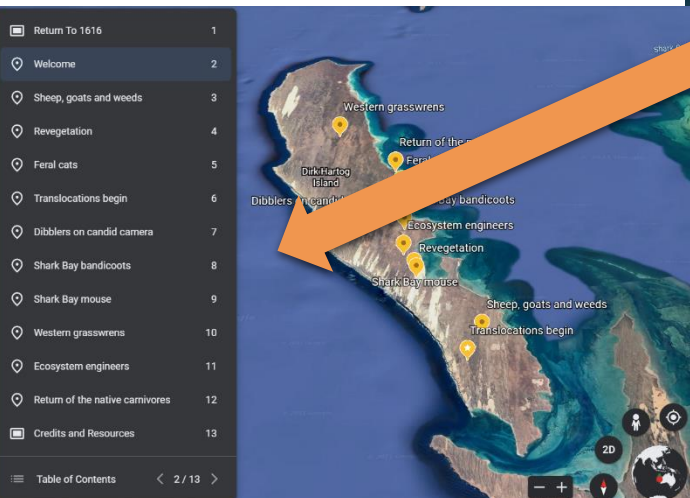
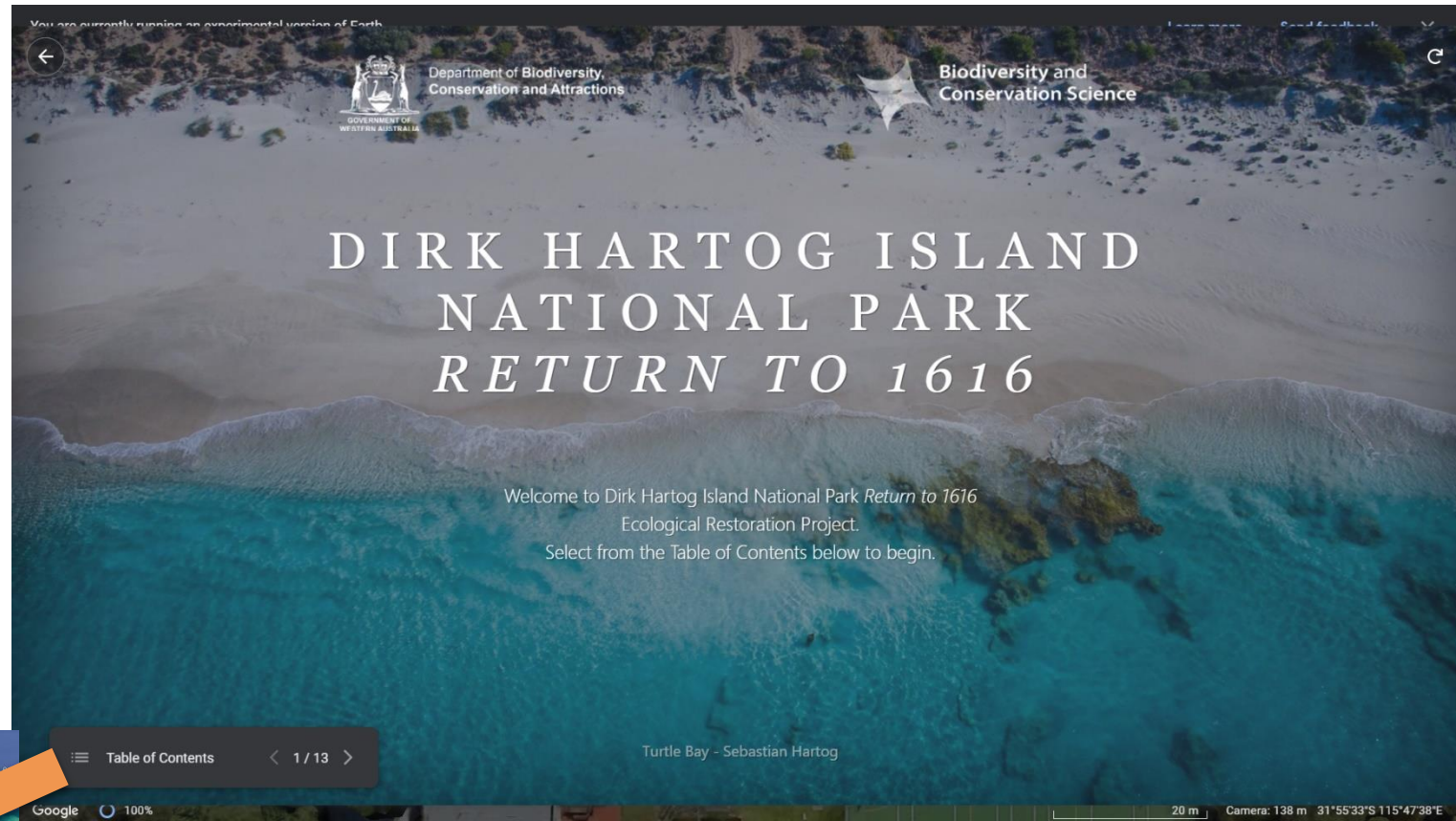
Returning to 1616

Welcome to Dirk Hartog Island National Park *Return to 1616* Ecological Restoration Project Virtual Tour. Use Google Earth or Kuula to explore the island and the *Return to 1616* project. The following pages can be used by individuals/groups to record and share discoveries.

For each location, consider:

What did you find interesting?

What would you like to know?



Google Earth
About: This is designed for tablet devices and computers
[Click here to begin](#)

KUULA
About: KUULA is more interactive. This is best suited for computers or VR (virtual reality) Headsets like the Oculus Quest 2.
Link: bit.ly/ReturnTo1616



VR Ready



<https://www.sharkbay.org/restoration/dirk-hartog-island-return-1616/education>

Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



← Department of Biodiversity, Conservation and Attractions

Department of Biodiversity, Conservation and Attractions

← You are here

Return To 1616	1
Welcome	2
Sheep, goats and weeds	3
Revegetation	4
Feral cats	5
Translocations begin	6
Dibblers on candid camera	7
Shark Bay bandicoots	8
Shark Bay mouse	9
Western grasswrens	10
Ecosystem engineers	11
Return of the native carnivores	12
Credits and Resources	13

DIRK HARTOG ISLAND
NATIONAL PARK
RETURN TO 1616

Welcome to Dirk Hartog Island National Park *Return to 1616*
Ecological Restoration Project.
Select from the Table of Contents below to begin.

Turtle Bay - Sebastian Hartog

Table of Contents < 1 / 13 >

Google Earth Virtual Tour
Site: *Return to 1616*
URL: [Click here](#)

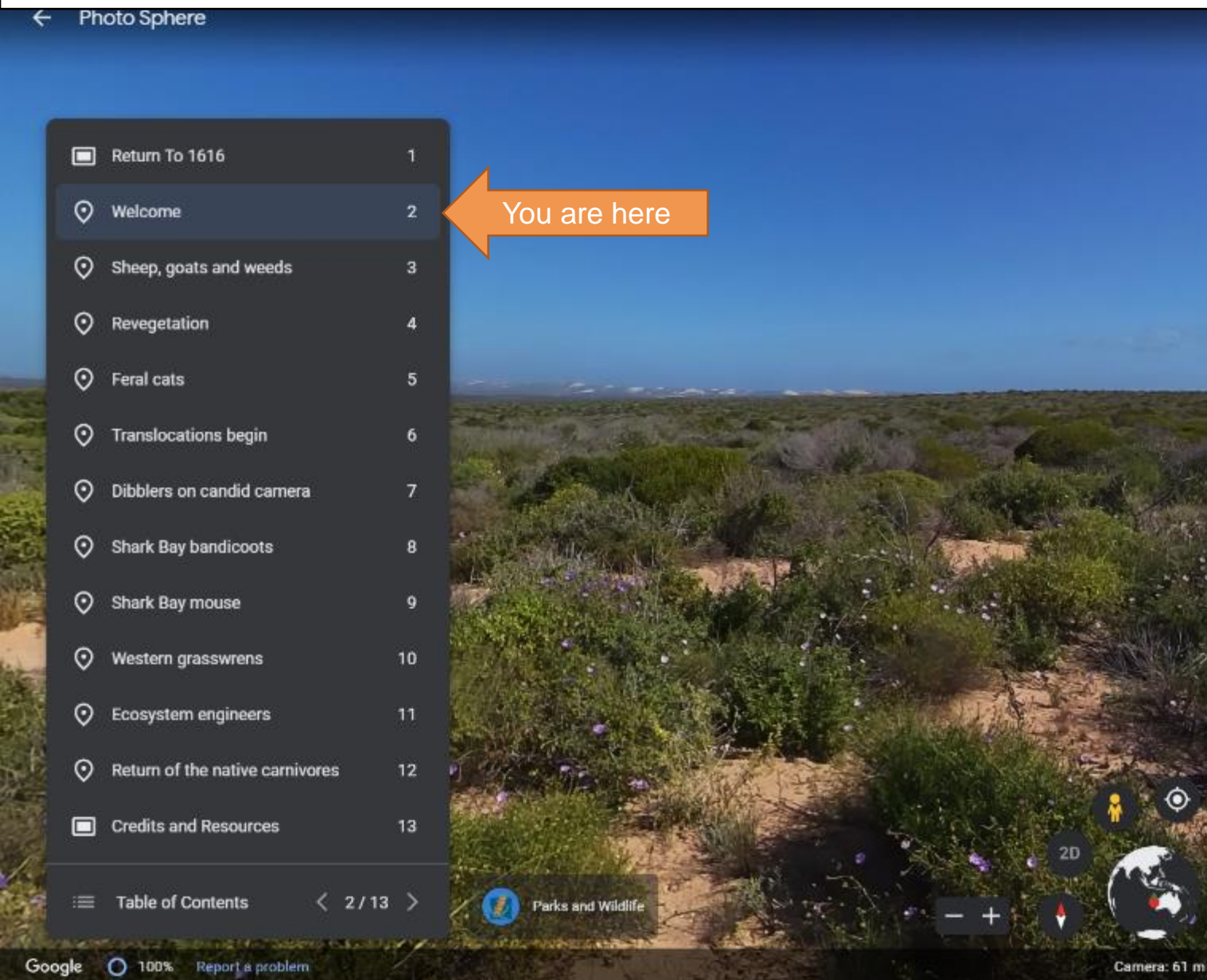
What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Welcome
URL: [Click here](#)

What's interesting about this location in the virtual tour?

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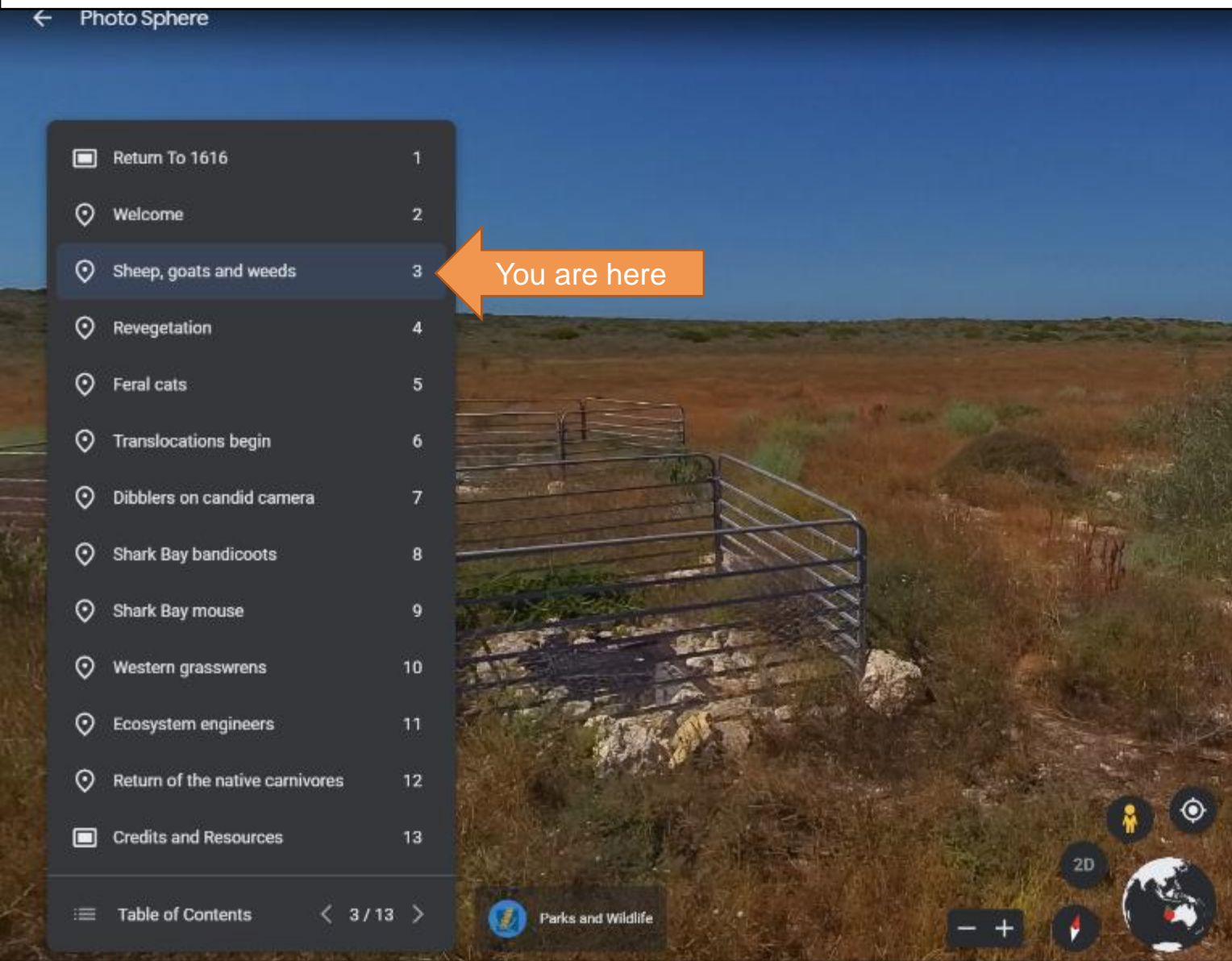
What questions does this raise for you?

Blank white space for user input.

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Sheep, goats and weeds
URL: [Click here](#)

What's interesting about this location in the virtual tour?

Blank white space for user response.

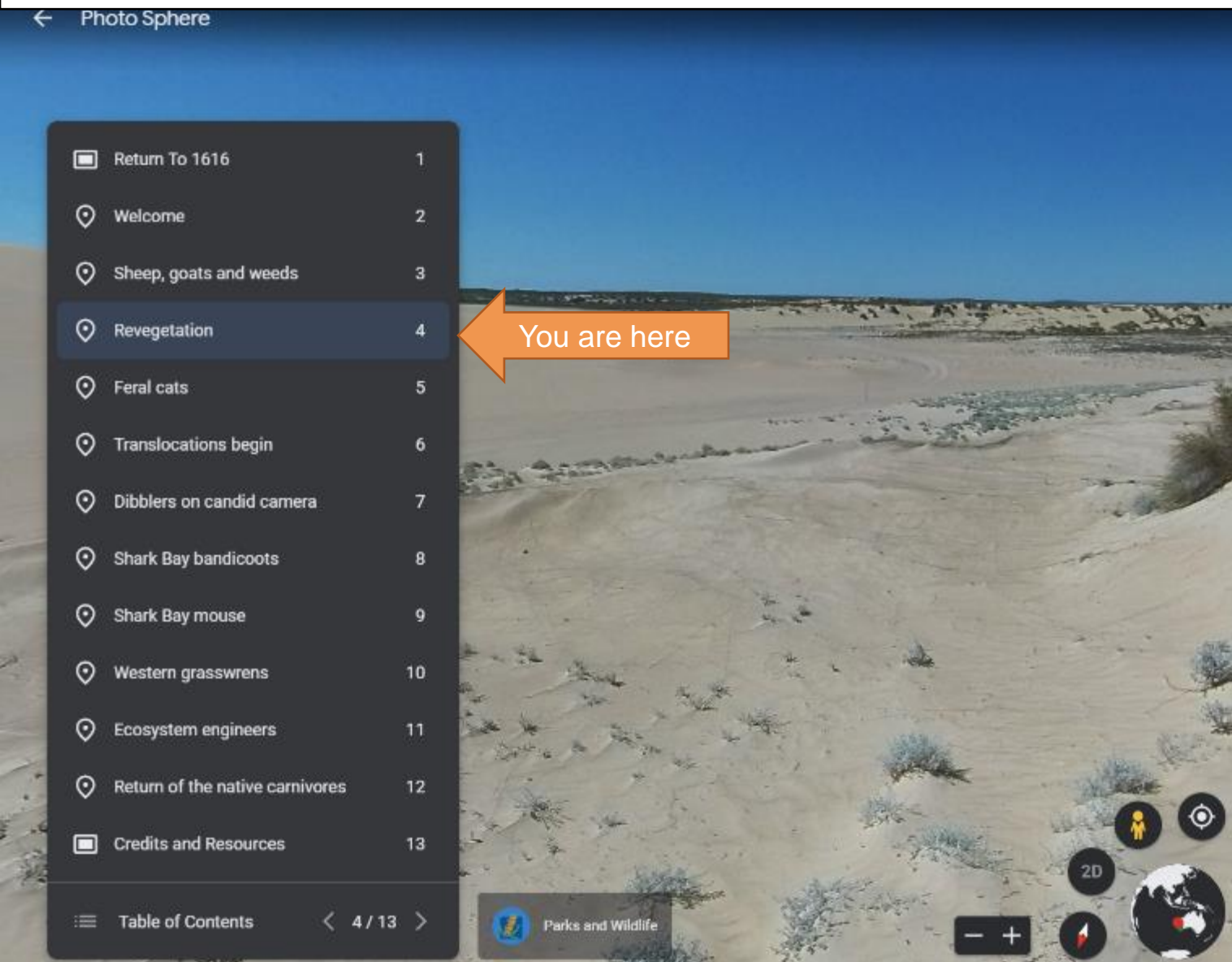
What questions does this raise for you?

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Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.

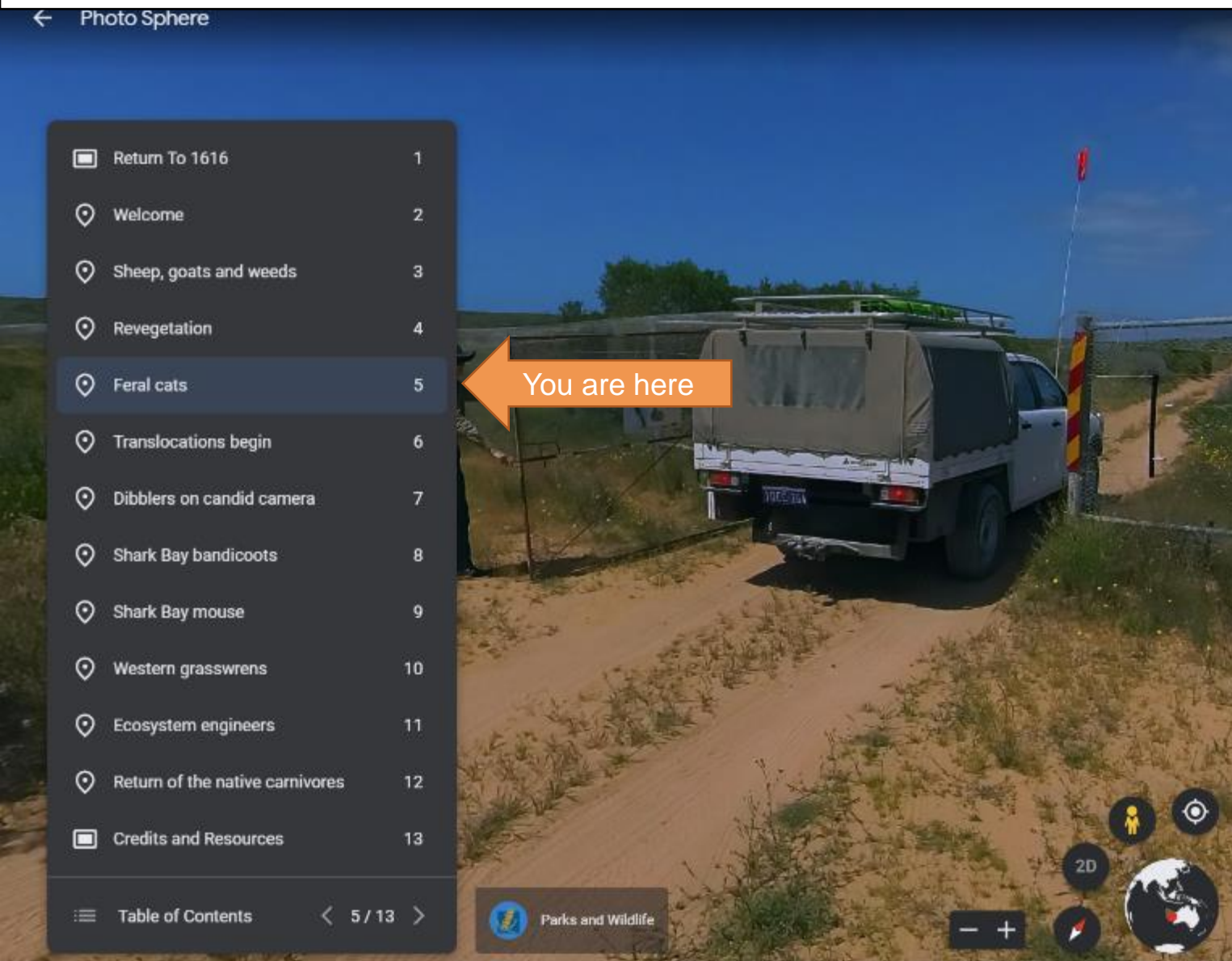


Google Earth Virtual Tour
Site: Revegetation
URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour

Site: Feral cats

URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.

← Photo Sphere

Return To 1616	1
Welcome	2
Sheep, goats and weeds	3
Revegetation	4
Feral cats	5
Translocations begin	6
Dibblers on candid camera	7
Shark Bay bandicoots	8
Shark Bay mouse	9
Western grasswrens	10
Ecosystem engineers	11
Return of the native carnivores	12
Credits and Resources	13

You are here

Google Earth Virtual Tour
Site: Translocations begin
URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.

← Photo Sphere

Return To 1616	1
Welcome	2
Sheep, goats and weeds	3
Revegetation	4
Feral cats	5
Translocations begin	6
Dibblers on candid camera	7
Shark Bay bandicoots	8
Shark Bay mouse	9
Western grasswrens	10
Ecosystem engineers	11
Return of the native carnivores	12
Credits and Resources	13

← You are here

Table of Contents < 7 / 13 >

Parks and Wildlife

2D

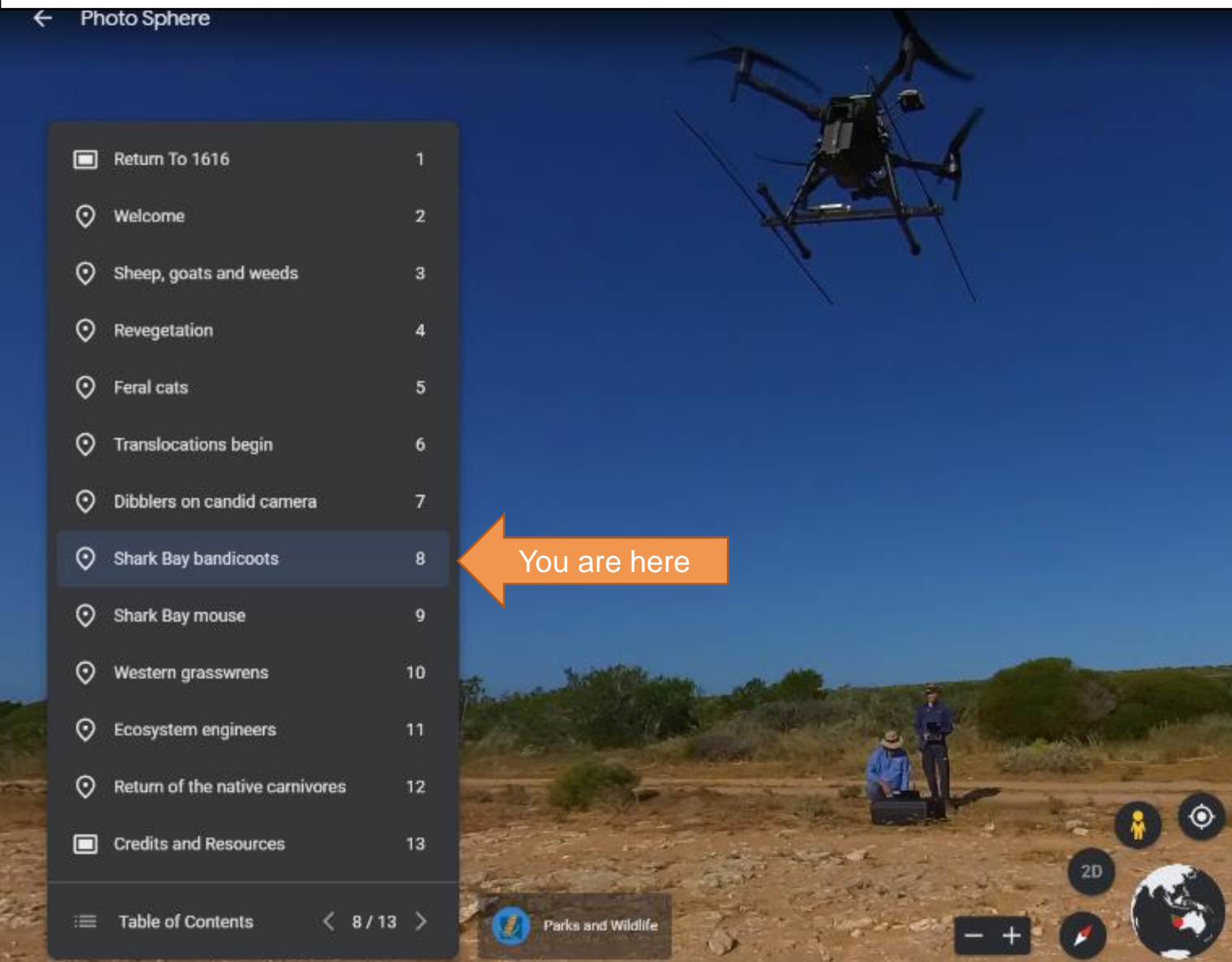
Camera: 31 m

Google Earth Virtual Tour
Site: Dibblers on candid camera
URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Shark Bay bandicoots
URL: [Click here](#)

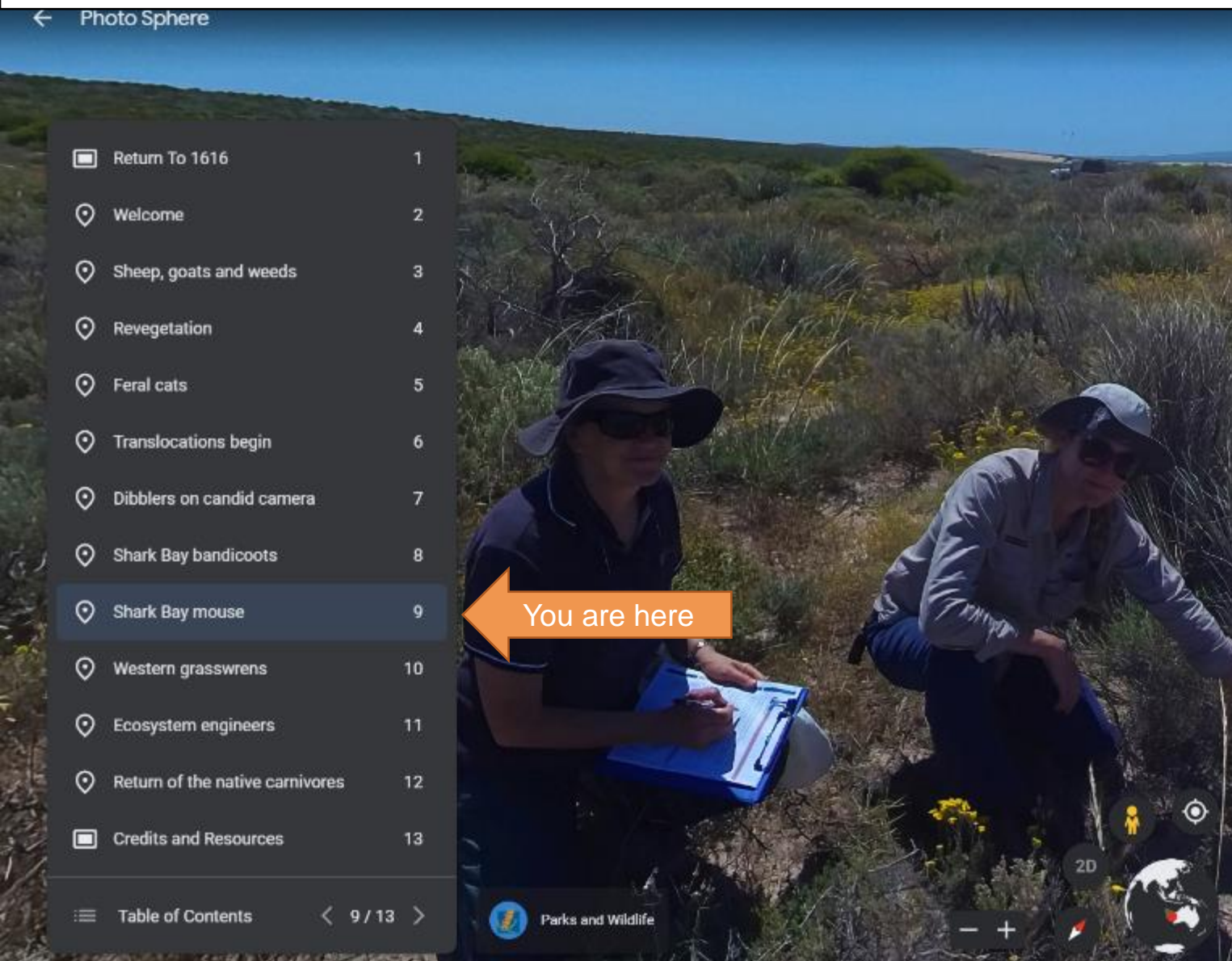
What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Shark Bay mouse
URL: [Click here](#)

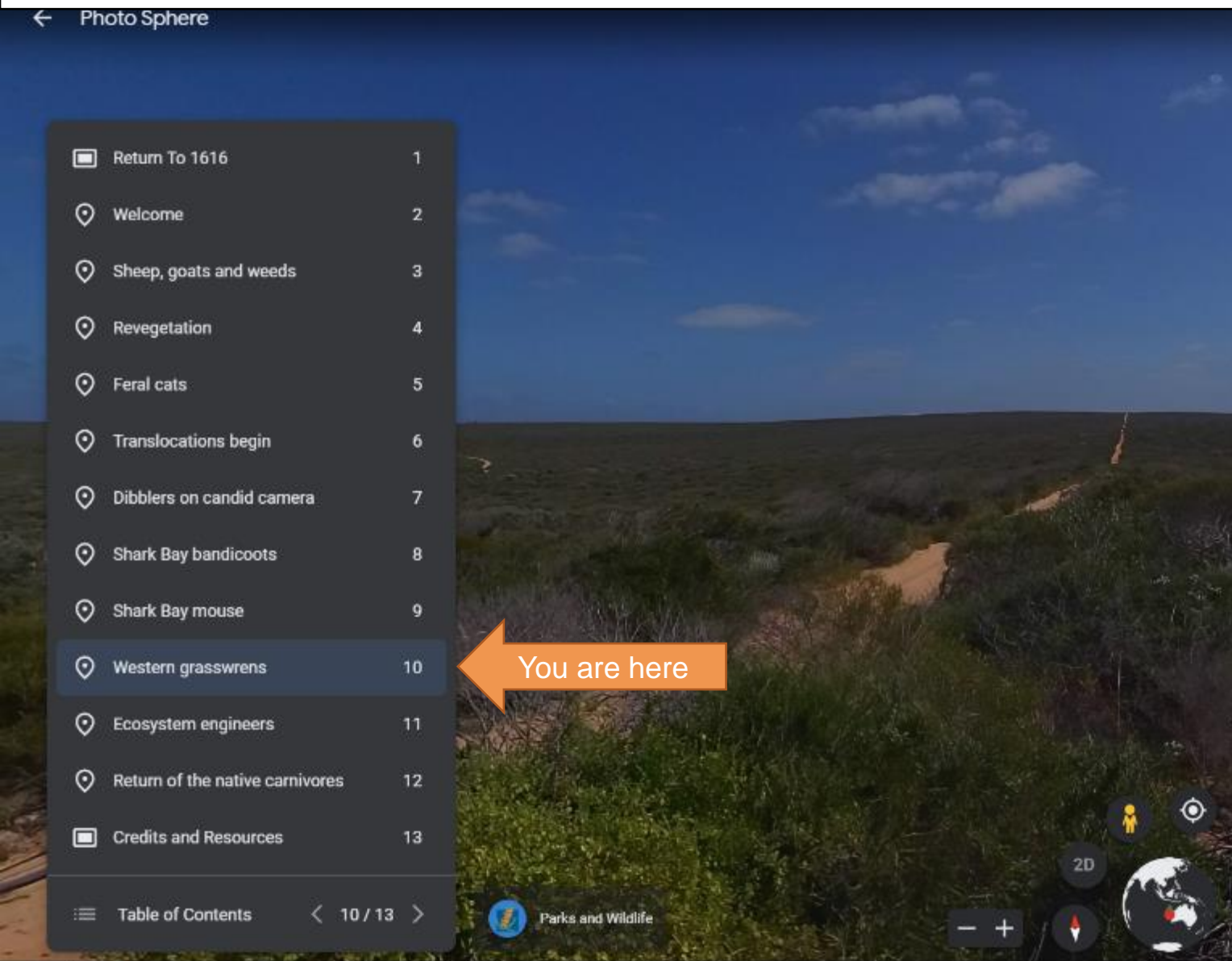
What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Western grasswrens
URL: [Click here](#)

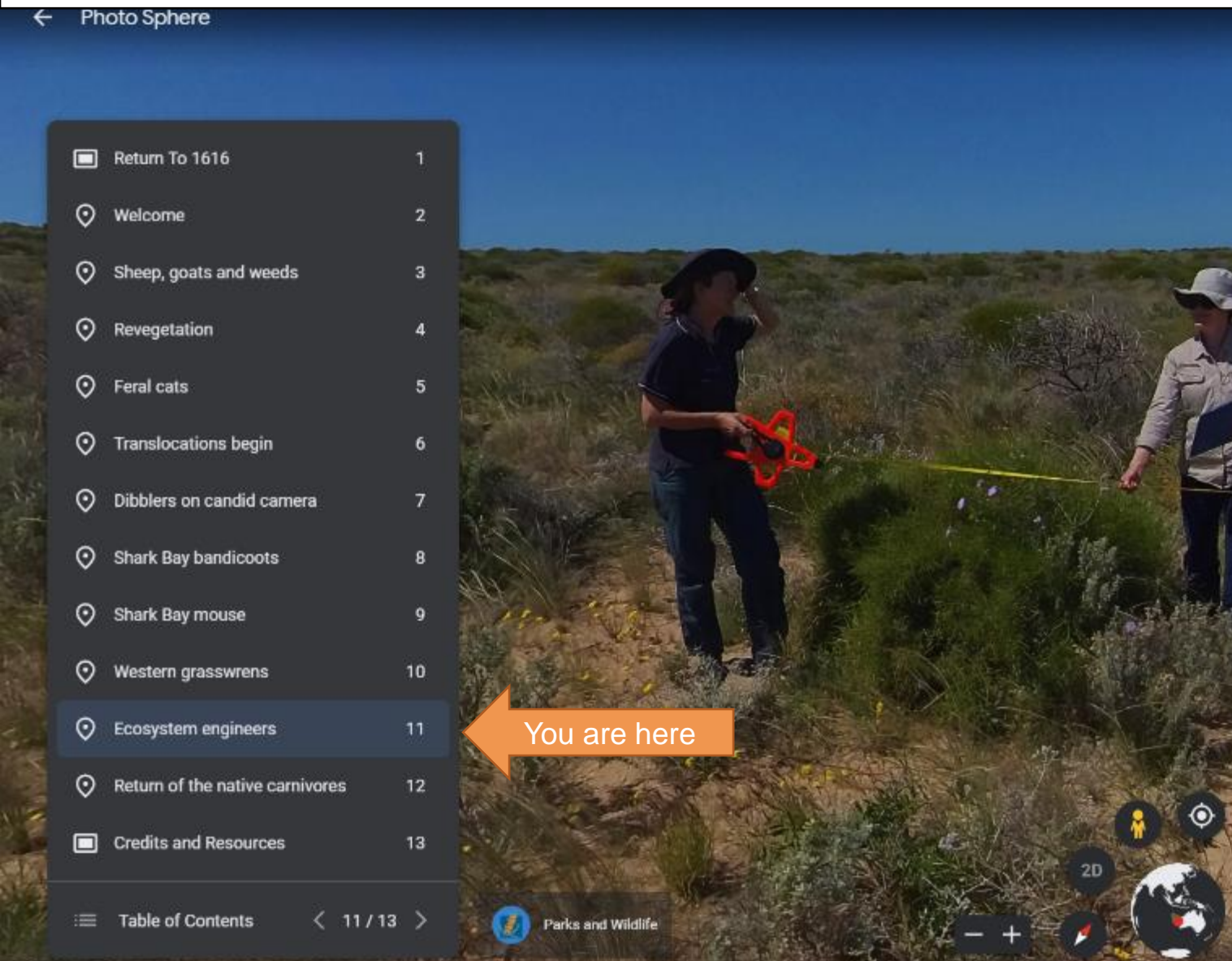
What's interesting about this location in the virtual tour?

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What questions does this raise for you?

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Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.

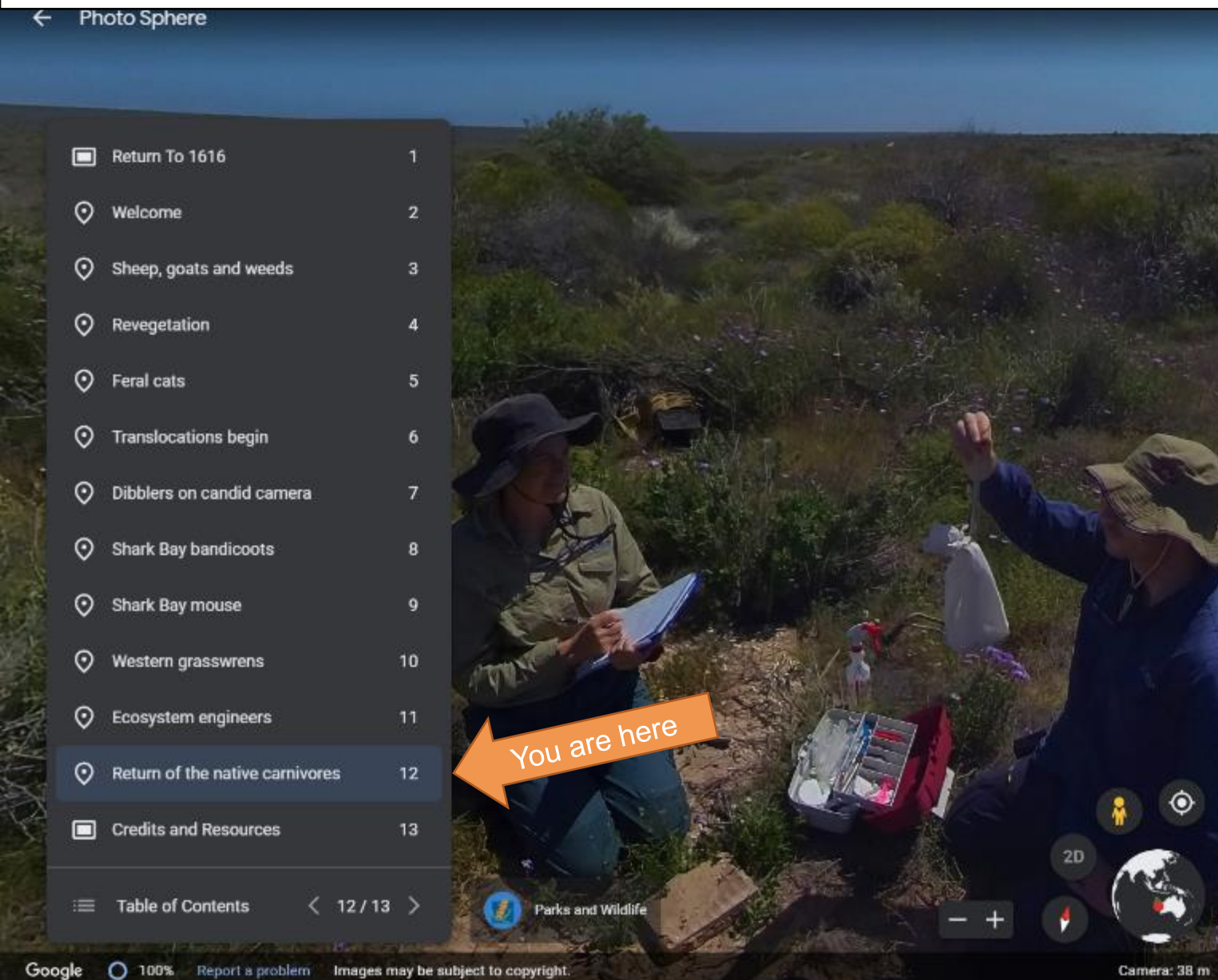


Google Earth Virtual Tour
Site: Ecosystem engineers
URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.



Google Earth Virtual Tour
Site: Return of the native carnivores
URL: [Click here](#)

What's interesting about this location in the virtual tour?

What questions does this raise for you?

Return to 1616 Virtual Tour



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RETURN TO 1616
DIRK HARTOG ISLAND
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Use this page to reflect on the information presented during your Dirk Hartog Island National Park virtual tour.

Google Earth Virtual Tour (for tablets and computers): [Click here](#)

Kuula Virtual Tour (enhanced experience for computers and virtual reality headsets): [Click here](#)

Where did you visit during this virtual tour?

What is the name of the special conservation project on the island?

What three introduced animals have been removed from the island?

What is one native animal monitoring technique used on the island?

What else did you learn?

What would you like to learn?

A photograph of a grey rabbit-like animal, possibly a macquarie hare, sitting on red sand dunes in a desert environment. The animal is facing right and appears to be eating a small plant.

Inquiry Project Knowledge Construction

This project challenges you to be a researcher! Do you feel you have a strong understanding of biodiversity in the Shark Bay region? What would you like to know? Who would you like to share this information with to make a positive impact?



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RETURN TO 1616
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Your quest, should you choose to accept...

This project challenges you to be a researcher! It will help you to learn all about the animals being relocated to Dirk Hartog Island and why. It will challenge you to think about what you would like to know. Who could you share your research with to make a positive impact?

Having an opportunity to generate your own questions for a topic can dramatically enrich learning. This project is designed to engage you in a quality process to conduct meaningful research. Just make sure you work closely with your teacher/parents if you need help with difficult research questions. Most importantly, make time at the end to share, celebrate and reflect your learning with others, no matter how big or small.



Step 1

What do you know about the animals being returned to Dirk Hartog Island? What would you like to know?



Step 2

Use Information Fluency to lead you through a meaningful research process.



Step 3

Share and celebrate!



Ideas for research

Animal species from the list below are being translocated into the national park on Dirk Hartog Island. Many of these species are threatened with extinction and listed on the Australian Government's list of nationally threatened species. See the [Information hub](#) and select one of the animal species below to research. Use the Information Fluency inquiry method below to lead you through.



Brush-tailed mulgara



Banded hare-wallaby



Boodie



Chuditch



Desert mouse



Dibbler



Shark Bay bandicoot



Heath mouse



Western grasswren



Greater stick-nest rat



Woylie



Shark Bay mouse



Rufous hare-wallaby

Extension Ideas

These ideas come from the Australian Curriculum, Cross-Curriculum Priorities, Sustainability. Use Information Fluency to help you unpack and research these ideas in relation to the Dirk Hartog Island *Return to 1616* Ecological Restoration Project.

Systems

- The biosphere is a dynamic system providing conditions that sustain life on Earth.
- All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
- Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

World Views

- World views that recognise the dependence of living things on healthy ecosystems, and value diversity, are essential for achieving sustainability.
- World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.

Futures

- The sustainability of ecological systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future.
- Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.
- Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgements based on projected future economic, social and environmental impacts.
- Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments.

Use Information Fluency to lead the way...

Information Fluency is designed to lead you through an inquiry research process. Use the following pages to capture your learning.

Work as a class, small group, individually and/or remotely and complete one or more projects as time permits.

information fluency

Information Fluency is the ability to subconsciously and intuitively interpret information in all forms and formats in order to extract the essential knowledge, authenticate it, and perceive its meaning and significance. The data can then be used to complete real-world tasks and solve real-world problems effectively. The process of Information Fluency is defined by the 5As.



Ask

This involves compiling a list of critical questions about what knowledge or data is being sought. The key here is to ask good questions, because that's how you get good answers.



Acquire

Accessing information isn't as easy as it used to be. This stage involves accessing and collecting informational materials from the most appropriate digital and non-digital sources.



Analyze

With all the raw data collected we must now authenticate, organize, and arrange it all. This stage also involves ascertaining whether information is true or not, and distinguishing the good from the bad.



Apply

Once data is collected and verified, and a solution is finally created, the knowledge must then be practically applied within the context of the original purpose for the information quest.



Assess

This involves open and lively discussions about how the problem-solving journey could have been made more efficient, and how the solution created could be applied to challenges of a similar nature.

Return to 1616 Knowledge Construction Project



This involves compiling a list of critical questions about what knowledge or data is being sought. The key here is to ask good questions, because that's how you get good answers.

What would you like to know? Generate a list of good questions about one of the animals being returned as part of the Dirk Hartog *Return to 1616* project.



Brush-tailed mulgara



Banded hare-wallaby



Boodie



Chuditch



Desert mouse



Dibbler



Shark Bay bandicoot



Heath mouse



Western grasswren



Greater stick-nest rat



Woylie



Shark Bay mouse



Rufous hare-wallaby

Return to 1616 Knowledge Construction Project



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Acquire

This stage involves accessing and collecting informational materials from the most appropriate digital and non-digital sources including the [Return to 1616 Information Hub](#).

How can we find out? Use dot points to record key information from trustworthy sources.



Analyze

With all the raw data collected we must now authenticate, organise and arrange it. This stage also involves ascertaining whether information is true or not, and distinguish the good from the bad.

Organize the most useful and accurate information here

Heading

- Key points

Heading

- Key points

Heading

- Key points

Heading

- Key points

Heading

- Key points

Return to 1616 Knowledge Construction Project



Once data is collected and verified, and a solution is finally created, the knowledge must then be practically applied within the context of the original purpose for the information quest.

Can you put this new information to good use? How will you share your findings to best suit the purpose? Prepare your information for your target audience and share a copy here.

Return to 1616 Knowledge Construction Project



This involves open and lively discussions about how the problem-solving journey could have been made more efficient, and how the solution created could be applied to challenges of a similar nature.

How could you have been more efficient and accurate in your research process? What aspects of the process will you use in your next research project? How did your target audience respond?

What was great?

Even better if?

Inquiry Project

Real-World Action

This project challenges you to take real-world action! Are there issues affecting biodiversity in the Shark Bay region that you feel strongly about? Would you like to make a positive difference? Would you prefer to be part of the problem or part of the solution? Would you like to help to solve problems that matter to you?



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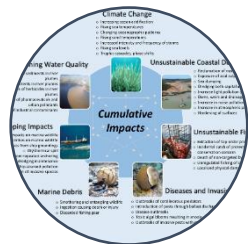


RETURN TO 1616
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Your challenge, should you choose to accept...

This project challenges you to take real-world action! Are there issues affecting biodiversity at Dirk Hartog Island, Shark Bay or your local region that you feel strongly about? Would you like to make a positive difference? Would you prefer to be part of the problem or part of the solution? Would you like to help to solve problems that matter to you?

Having freedom to choose a topic that captures your heart can dramatically enrich learning. This project allows you to select an aspect of a topic and work towards creating real-world action to make a difference. Just make sure you work closely with your teacher/parents to ensure your actions are safe, appropriate and have maximum impact. Most importantly, make time at the end to share and celebrate your action with others, no matter how big or small the impact may be.



Step 1

Consider biodiversity at Dirk Hartog Island, Shark Bay or your local region. What are you most concerned about?



Step 2

Use Solution Fluency to lead you to create real-world action



Step 3

Share, celebrate and reflect on your achievement



What are you concerned about?

Consider impacts on biodiversity at Dirk Hartog Island, Shark Bay or your local region. What are you most concerned about? [Learn more from Ranger Ryan](#) and use the ideas on this page to highlight and discuss issues affecting your region. When you are ready, use Solution Fluency to guide you to develop a real-world solution.

- Increasing ocean acidification
- Rising sea temperatures
- Changing oceanographic patterns
- Rising sand temperatures
- Increasing intensity and frequency of storms
- Rising sea levels
- Trophic cascades, phase shifts

Climate Change



- Litter, including risks to animals from getting caught or ingesting
- Increased light pollution and habitat disturbance
- Accidental fires
- Off-road driving causing damage to vegetation and animal habitat
- Risk to animals from vehicles travelling too fast at night
- Accidental introduction of disease and introduced species from vehicles

Careless Behaviour



- Outbreaks of weed species
- Weeds can grow quickly and smother native plants. Return to 1616 aims to manage some of the worst weeds already on the island such as ruby dock, iceplant, false sowthistle and caster oil plant.

Invasive Plants



- Introduction of pests (foxes, cats, non-native rodents, Asian house gecko)
- Outbreaks of invasive pests with cascading effects

Invasive Animals



- Smothering and entangling wildlife
- Ingestion causing death or injury
- Discarded fishing gear

Marine Debris



What makes me **CURIOUS**?



What makes me **CONCERNED**?



What do I want to **CREATE**?



Return to 1616 Real-World Action Project



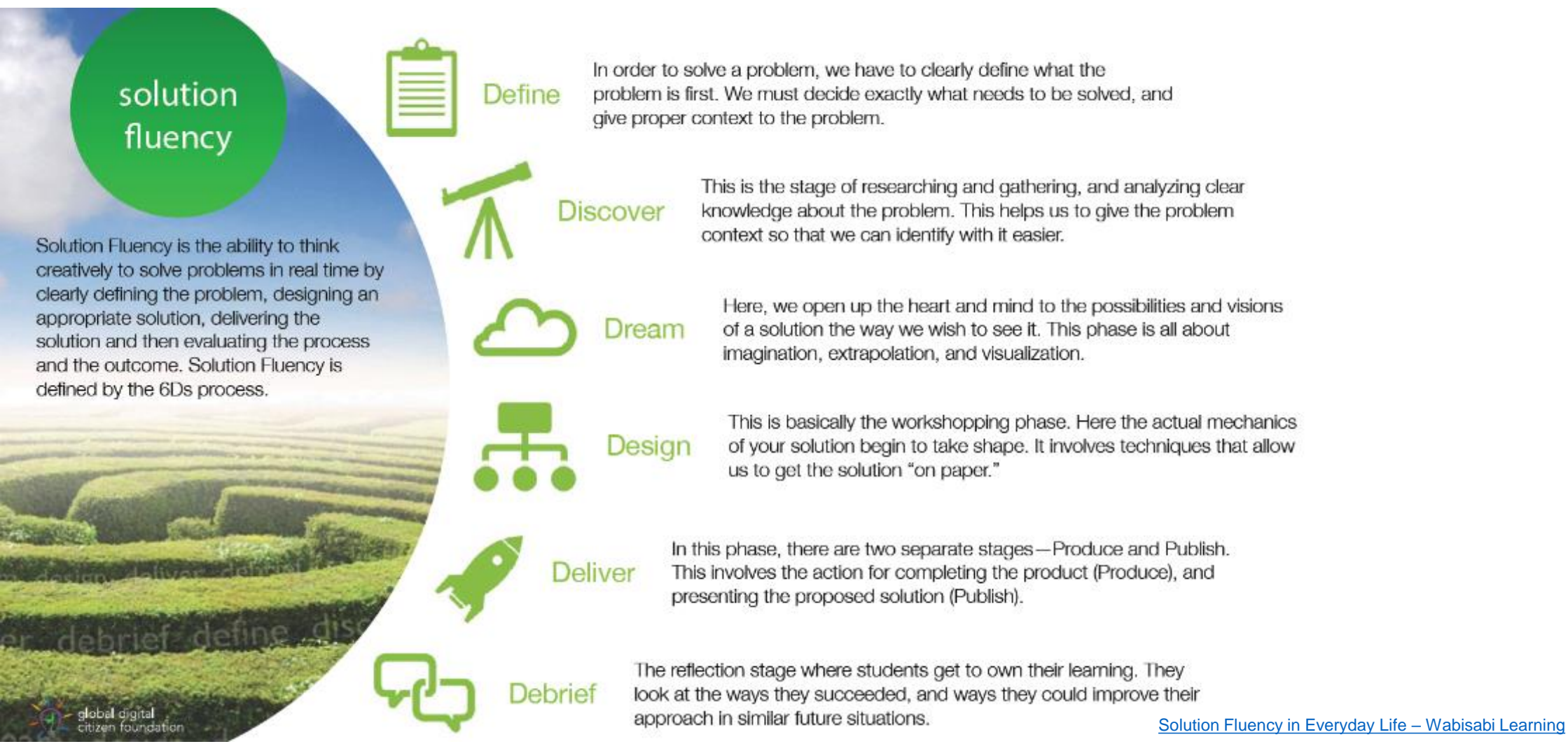
What strategies are being used to protect Dirk Hartog Island National Park?

[In this video](#), Ranger Ryan shares some of the ways in which biodiversity is being protected as part of the Dirk Hartog Island National Park ecological restoration project. Use this as an opportunity to take notes and develop your own questions for further inquiry. Check out the [Island Protection brochure](#) for more information.

The video player interface shows a coastal scene with waves crashing against a rocky shore. A yellow banner at the top of the video area reads 'PROTECTING THE ISLAND' in white, and 'DIRK HARTOG ISLAND NATIONAL PARK' in black. In the bottom right corner, there is a video thumbnail of Ranger Ryan Hicks, a man in a khaki shirt, smiling. Below the thumbnail, the text reads 'Parks and Wildlife Service RYAN HICKS STEEP POINT - SHARK BAY'. In the top right corner of the video frame, the Department of Biodiversity, Conservation and Attractions logo is visible.

Use Solution Fluency to lead the way...

Solution Fluency is a 'design thinking' model developed to help you create solutions to problems that matter to you. Use the following pages to capture your learning. Work as a class, small group, individually and/or remotely and complete one or more projects as time permits on your chosen topic.





Define

In order to solve a problem, we have to clearly define what the problem is first. We must decide exactly what needs to be solved, and give proper context to the problem.

What is the problem and what needs to be solved? Try to articulate the exact issue.

Return to 1616 Real-World Action Project



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Discover

This is the stage of researching and gathering, and analyzing clear knowledge about the problem. This gives the problem context so you can identify with it more easily.

What do we know and need to know about the problem? Use this page to gather your research.

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Dream

Here, we open up the heart and mind to the possibilities and visions of a solution the way we wish to see it. This phase is all about imagination, extrapolation, and visualization.

What amazing and wild ideas can we think of to solve this problem? How could we implement real-world action in a positive way?

Construct a...	Write to...	Invent a...	Create a...	Organise to...

Return to 1616 Real-World Action Project



Design

This is basically the workshopping phase. Here the mechanics of your solution begin to take shape. It involves techniques that allow us to get the solution “on paper.”

What’s the plan? Use this space to share the main steps you will take to achieve positive real-world action.

<p>Step 1 Write here</p>	<p>Step 2 Write here</p>	<p>Step 3 Write here</p>	<p>Step 4 Write here</p>
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Return to 1616 Real-World Action Project



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Deliver

In this phase, there are two separate stages – Produce and Publish. This involves the action for completing the product (Produce), and presenting the proposed solution (Publish).

Showcase your solution here! Present your solution to an audience if possible and deliver positive real-world action.

Return to 1616 Real-World Action Project



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Debrief

The reflection stage is where you get to own your learning. You look at the ways you succeeded, and ways you could improve your approach in similar future situations.

Use this space to reflect on your learning.

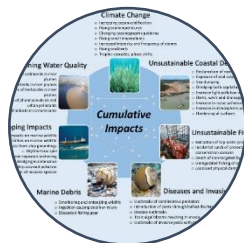
What was great?

Even better if?

Congratulations!

If you are reading this page, it is likely that you have completed a project that challenged you to take real-world action! We know there are issues affecting biodiversity in your region that you may feel strongly about.

Having freedom to choose a topic that captures your heart can dramatically enrich learning. This project allows you to select an aspect of a topic and work towards creating real-world action to make a difference. Most importantly, now is the time to celebrate your action with others, no matter how big or small the impact may be.



Step 1

Consider biodiversity in your region. What are you most concerned about?



Step 2

Use Solution Fluency to lead you to create real-world action



Step 3

Share, celebrate and reflect on your achievement

We hope you enjoyed being part of the solution and implementing positive real-world action!

Student Activities



These activities are designed to be used individually or to create a collection of activities.



Return to 1616 Boneheads 3D Scanned Models



Why do most animals have skulls? Why do skulls vary so much? What can we learn from the features of an animal skull? What do they tell us about animal habits and adaptations? Would you like a close up look at some real skulls in 3D? To learn more, explore the Boneheads activity (from the comfort of your screen). Find it on the *Return to 1616* education page or click [here](#).

Scientists rely on clues to solve mysteries. We can get clues about animals from their skulls. Examine the skulls, eye sockets, teeth, ear holes and nasal passages to find out how an animal lived, hunted, or obtained food, what senses it relied on and whether it was a predator or prey. Study the teeth and eye sockets of each 3D skull in the Boneheads Activity Sheets to determine whether the animal was predator, prey, or both.

Can you match each skull to the correct Return to 1616 animal?

BONEHEADS

Introduction

These skulls have been provided to give you some up close and personal look at some of the animals involved in the Dirk Hartog Island National Park Restoration Project. Take a look at each of the Return to 1616 animal skulls and find out more about each animal from these features.

The Return to 1616 Project

Dirk Hartog Island is Western Australia's largest island. The island was in pristine condition with a rich mammal fauna. Since this first European landing on Australian soil, the island has degraded causing the local extinction of many species. The Return to 1616 Project is helping to restore the island to its former glory by reintroducing native species and removing introduced species like sheep and goats. This helps to restore the island's natural habitat and reduces the food and shelter available to introduced species, which are gradually being returned. These include brush-tailed mulgara, greater stick-nest rat, western grey kangaroo, western quoll, woylie, boodie and western grasswren. Some species are threatened and some are endangered. Some are native and some are introduced. Some are native and some are introduced. Some are native and some are introduced.

So how do we know which animal is which? Explorers have helped by describing animals from their bones and skulls. To find out more about the Dirk Hartog Island National Park Restoration Project, visit: sharkbay.org/restoration.

PARTS OF THE SKULL

Canines or horns?

Teeth

Eyes

Eye or sight?

Predator or prey?

BONEHEAD 1

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 2

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 3

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 4

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 5

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 6

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

BONEHEAD 7

Look at your skull in 3D here for clues to help you find out who this animal is.

Here are some things to observe

1. Look at the whole skull. How big do you think I am?
2. Look at my eye holes. Do you think I am a predator or prey animal?
3. Look at my teeth. What do you think I eat?
4. Do you think I am - a land, air or sea animal?
5. Do you think I have fur, feathers or skin on my body?

Who am I?

[Click here to download](#)

Return to 1616 Status of Species



Biodiversity is the variety of plants, animals, micro-organisms and ecosystems that constitute our living environment— is not static; it is constantly changing. It can be increased by genetic change and evolutionary processes, and it can be reduced by threats which lead to population decline and extinction. Our knowledge of biodiversity increases when scientists discover new species. Australia’s biodiversity is currently in decline; in Australia, more than 1,700 species and ecological communities are known to be threatened and at risk of extinction. The key threats to species are loss, degradation and fragmentation of habitat, invasive species and altered fire regimes. Other threats include unsustainable use and management of natural resources, changes to the aquatic environment and water flows and climate change

On a national level, in Australia threatened fauna and flora may be listed in any one of the following categories:



At a state level, in Western Australia threatened fauna and flora may be listed in any one of the following categories:



Shark Bay bandicoot	Chuditch	Brush-tailed mulgara	Dibbler	Greater stick-nest rat	Desert mouse	Shark Bay mouse	Heath mouse	Woylie	Boodie	Western grasswren

Search reliable, the up-to-date information such as [Return to 1616 animal factsheets](http://www.sharkbay.org/restoration) available from <http://www.sharkbay.org/restoration> to identify the current status of the Return to 1616 animals. Use arrows to link the animal with its current status.

Return to 1616 Conducting Scientific Surveys



Scientific surveys are used to estimate populations of plant and animal species. The information gathered can be used to monitor the health of species and habitats.

Read - Study Measuring wildlife changes, past Landscape articles, or Key scientific publications to learn about the scientific methods used to collect data for the Dirk Hartog Island National Park Return to 1616 Ecological Restoration Project.

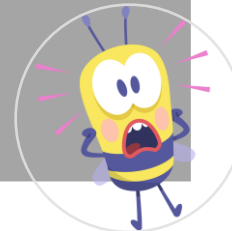
Watch - Watch [this video](#) to learn about how ecological surveys are conducted for the Dirk Hartog National Park Return to 1616 Ecological Restoration Project

Explore - Take a virtual tour to:
Study the Google Earth tour on your tablet device or computers. [Click here to begin](#)
Study the more interactive KUULA tour on your computer or upload the link (bit.ly/ReturnTo1616) if you have a VR headset like the Oculus Quest 2. [Click here to begin](#)

Why are ecological surveys conducted?



How are ecological surveys conducted?



What is the information collected from ecological surveys used for?



Conservation Codes and Threatened Species



Scientific surveys are used to estimate populations of plant and animal species. These codes are used to represent the status of populations.

The Department of Biodiversity, Conservation and Attractions within the Western Australian government maintains the following listings:

- [threatened native plants \(flora\)](#)
- [threatened animals \(fauna\)](#)
- [threatened ecological communities](#)

Protection is needed for critically endangered, endangered or vulnerable species and ecological communities because they are under identifiable threat of extinction (species) or collapse (ecological communities). Research these lists for Western Australia and reflect on your thoughts below.

Animals not needing special protection	Animals in need of special protection under the <i>Biodiversity Conservation Act 2016</i>				
<p>SECURE </p>	<p>Priority and Specially protected fauna</p> <p>PRIORITY FAUNA </p> <p>SPECIALLY PROTECTED FAUNA </p>	<p>Threatened fauna</p> <p>VULNERABLE </p> <p>ENDANGERED </p> <p>CRITICALLY ENDANGERED </p>			

What did I LEARN?

What makes me CONCERNED?

What do I want to DO?

Return to 1616 Native Animal Survey



Conduct a survey around your school or another location and record your observations below. It may be helpful to work in a small team and/or you may also like to use a tally or include other information such as observed behaviour or location. Enjoy the opportunity to tune into nature. Can you source reliable identification methods to research the species sighted? Can you indicate which species are native to the area?

Insects Sighted

Reptiles Sighted

Birds Sighted

Mammals Sighted

Return to 1616 Animal Research



Study the [Return to 1616](#) animal fact sheets, animal colouring information and websites and videos. Pick an animal and show what you have learned below.

My animal is:

My animal eats:

This is what my animal looks like:

An interesting fact about my animal:

My animal moves by:

My animal lives:

The enemies of my animal are:



Brush-tailed mulgara



Banded hare-wallaby



Boodie



Chuditch



Desert mouse



Dibbler



Shark Bay bandicoot



Heath mouse



Western grasswren



Greater stick-nest rat



Woylie



Shark Bay mouse



Rufous hare-wallaby

Return to 1616

Create a Fact Sheet



Would you like to help others learn more about the animals in Dirk Hartog Island National Park? Find some of the animal species that were known to live on the island before the [Return to 1616](#) project began. Investigate one and create your own factsheet to share. Research [Return to 1616 factsheets](#) to help create your own.

Animal	
Description	
Diet and Habitat	
Breeding	
Distribution	
Status	

Picture

A large, empty rectangular box with a black border, intended for the student to draw a picture of the animal they are researching.

Return to 1616 Biodiversity Brochure



Western Australia's biodiversity is threatened. Would you like to do something to help? Create an information brochure that informs people about the biodiversity of Dirk Hartog Island and the importance of the *Return to 1616* project.

Useful sites for information:

<https://www.sharkbay.org/place/dirk-hartog-island-national-park/>

Tips for designing an effective brochure:

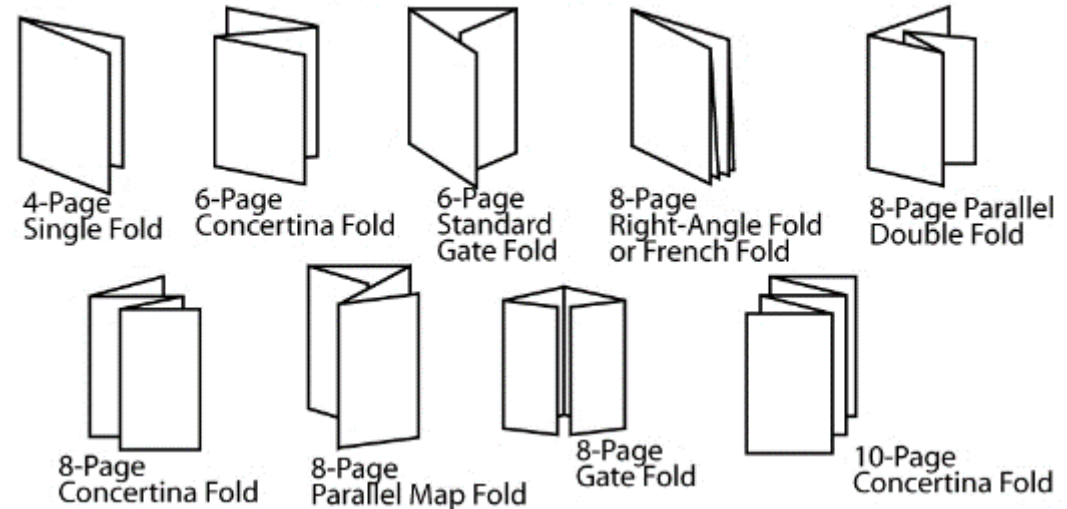
- Create a colourful and eye-catching cover for your brochure.
- Organise your information so it flows logically and present your ideas clearly.
- Group similar types of ideas together so the reader knows exactly what each section discusses.
- Answer the 5 Ws: Who? What? Where? When? Why?
- Your brochure shouldn't contain so much information that it overwhelms the reader.
- Make your brochure as attractive, appealing, and informative as you can.
- Balance text with illustrations and use plenty of colour.
- Use descriptive and precise writing.
- Edit text for grammar, punctuation, spelling, and capitalization.
- Decide on what type of folding the brochure will feature.

Consider using software like Microsoft Word or Publisher, Apple Pages or via online applications like Canva, MyCreativeShop, or Printing Press.

<https://templates.office.com/en-au/travel-brochure-tm33746274>

<https://www.canva.com/create/brochures/>

Types of Folding



Return to 1616 Discovery Day



Would you like to share a positive story? Would you like to inspire others? Help your teacher set up a discovery day for a younger class to introduce them to the animals being returned to Dirk Hartog Island as part of the *Return to 1616* project. Set up a series of stations around the classroom for self-guided learning in small groups. On the day, set a timer to go off every 8 minutes. When it goes off, groups rotate to the next activity.

Ideas for stations:

Memory Game

Students play the *Return to 1616* memory game to reinforce the animal appearance and names.

Wild Challenge Game

Learners play the *Return to 1616* Wild Challenge card game to understand the strengths of each animal.

Guess Who?

Students play the Guess Who game to reinforce animal appearances.

Drawings

Students use the [Return to 1616 animal fact sheets](#) to create drawings of their favourite animals (include physical features and habitat).

Models

Students create a plasticine model of their favourite animal.

Create a Video Quiz

Students choose a short video to learn about some of the *Return to 1616* animals and create a short quiz.

Banded hare-wallaby (1:12)

https://www.youtube.com/watch?v=iJyd_TuLKaY

Dibbler (3:39)

<https://www.youtube.com/watch?v=Ai9ZLAE5wAs>

Woylie (1:04)

<https://youtu.be/gdzEHaTAR40>

Dibblers released onto Dirk Hartog Island National Park (1:10)

<https://www.youtube.com/watch?v=8vLsHG8xLgU>

Feral cat eradication (2:24)

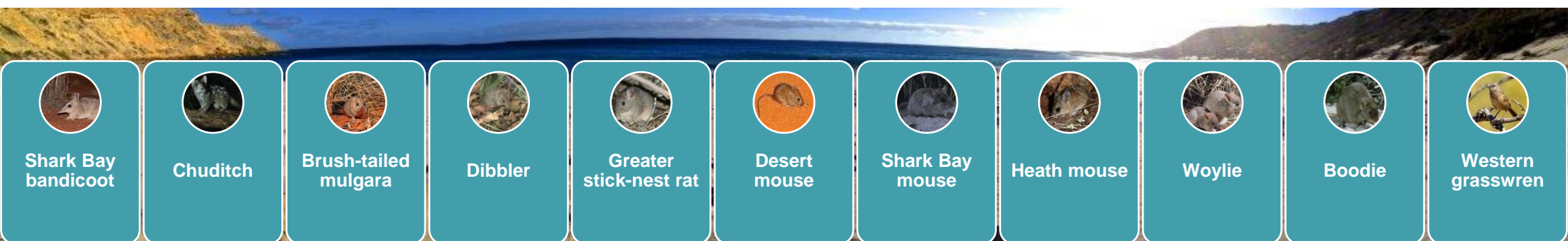
<https://www.youtube.com/watch?v=vfxJEOOF47g&list=PLwKOFN5-6PcQPw9iPMtPp7TGxbULdJtXc&index=102&t=13s>

Greater stick-nest rats (1:56)

<https://www.youtube.com/watch?v=gOf7Vt8u5Tw>

Loggerhead turtles

<https://www.youtube.com/watch?v=bUXY5OOR66U>



Return to 1616 Habitat Diorama



What is a habitat? What makes up a habitat? What would happen if habitats changed? What do the *Return to 1616* animals need? Do they all need the same habitat? What are some of the specific requirements?

Refer to the [Return to 1616 animal factsheets](#), refer to the [Return to 1616 Information Hub](#), or conduct some internet research or read a good book about animal habitats to develop your understanding. Some good books include:

- A Hollow is a Home - Abbie Mitchell, Astred Hicks
- Whose Habitat is That? - Lucile Piketty
- Amazing Animal Earth - Alessandra Yapp.

Challenge: Choose one of the Return to 1616 animals and create a diorama to replicate their ideal habitat.

Prepare a blueprint or rough sketch of your diorama design before you begin construction.

Suggested materials:

- Shoebox or tissue box
- Different types of paper
- Air-dry clay
- Random items: pipe cleaners, popsicle sticks,
- tissue paper, buttons, scrap fabric, beads, seeds,
- nuts, leaves, etc.
- Magazines
- Glue
- Markers.

Gather pictures of the habitat and the animal to use for inspiration. Start making the plants and animals you would like to showcase in the habitat. You can use clay, cut them out, draw them on paper or use papier mache. Create the background for the habitat diorama and finally, use the shoebox to complete the habitat.

Put the background in the back and place the animals and plants you have created towards the front.



Return to 1616 Science Endeavour



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What would a day in the life of an environmental scientist be like? Consider the Dirk Hartog Return to 1616 Ecological Restoration Project. [Watch this video featuring a Return to 1616 research scientist](#) to learn more about environmental science work. Read about survey methods in [Measuring Wildlife Changes](#), Landscape articles. Reflect on your learning below.

What do environmental scientists do?

How do they do it?

How does it help?



Return to 1616 National Park Treasure Hunt



This A-Z treasure hunt game will help you to tune into your surroundings. Could you create one for the Shark Bay region? See how many things you can notice on your next visit to a National Park.

- A = Ant. Can you find an ant out exploring?
- B = Birds next. What bird created this nest?
- C = Chewed leaf. What has eaten this leaf?
- D = Dew. Can you find any moisture on a plant or the ground?
- E = Earthworm
- F = Feather. What bird left this clue?
- G = Green leaf
- H = Hollow. Can you spot a good place for an animal to live?
- I = Insect. Can you find an insect?
- J = Jewel. Can you find something you think is treasure?
- K = Kangaroo
- L = Ladybug
- M = Moss or mushroom
- N = Nut. Can you see any signs of animals eating the seeds?
- O = Orange. Can you find something orange?
- P = Poo. What animal left this dropping?
- Q = Quick animal. Find something moving fast
- R = Reptile. Can you see any cold-blooded animals?
- S = Sign. What does it say?
- T = Tree sap.
- U = Underground. Can you find something that lives underground?
- V = Vine
- W = Web. Can you see a spider in a web?
- X = Xanthorrea. Another word for grasstree. Can you find one?
- Y = Y shaped stick
- Z = Zoo. Can you find something that could be in a zoo?



Return to 1616 History of Dirk Hartog Island



Have you ever been to Dirk Hartog Island? Consider using the [virtual tour](#) to learn more about the environment. Share your perceptions below:


My perceptions:

The following people are recognised in the history of Dirk Hartog Island. What would you expect their perceptions of the environment to be in their era? Work with your classmates to research, prepare and share a series of presentations or dramatized interviews to learn more about these people?

Malgana People



1616 Dirk Hartog




1697 Willem de Vlamingh



1772 Louis Aleno de St Aloüarn




1801 Emmanuel Hamelin




1818 Rose and Louis de Freycinet




1869 Francis Louis von Bibra




1907 John and James Withnell



1969 Sir Thomas Wardle



Now:
Scientist Kelly [view](#)
Ranger Ryan [view](#)



Return to 1616
Who was Dirk Hartog?



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RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK



25 October 1616
The first recorded European landing
on Dirk Hartog Island in Shark Bay,
Western Australia



What do we know about Dirk Hartog?

Research Dirk Hartog to learn more and share any interesting points here?

What would you like to find out?

Return to 1616 Land Use at Dirk Hartog Island



What do you know about land use at Dirk Hartog Island? How has the land been used? What was the impact on the environment? How is it used today?

Use your research skills to find out more about the way in which the land has been used over time and share your findings here.

Aboriginal History

1616 Dirk Hartog Visited

1869-2009
Sheep Station

Return to 1616 Ecological
Restoration Project



RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK

Era	Land Use	Impact	My Thoughts
Pre-1616			
1869-2009			
2009-now			

Return to 1616

Create a Diary Extract



In 1699, William Dampier described what is thought to be a banded hare-wallaby in his diary:

Racoons, different to those of the West Indies chiefly as to their Legs; for these have very short Fore-Legs; but go jumping upon them as the others do (and like them are good meat)".



Can you imagine being one of the European crew members arriving in Australian waters, coming ashore, and seeing one of the *Return to 1616* animals for the very first time? Create a journal extract from the point of view of a member of the expedition describing one of the *Return to 1616* animals.

Write here:



Shark Bay bandicoot



Chuditch



Brush-tailed mulgara



Dibbler



Greater stick-nest rat



Desert mouse



Shark Bay mouse



Heath mouse



Woylie



Boodie



Western grasswren

Return to 1616 Positive Persuasion



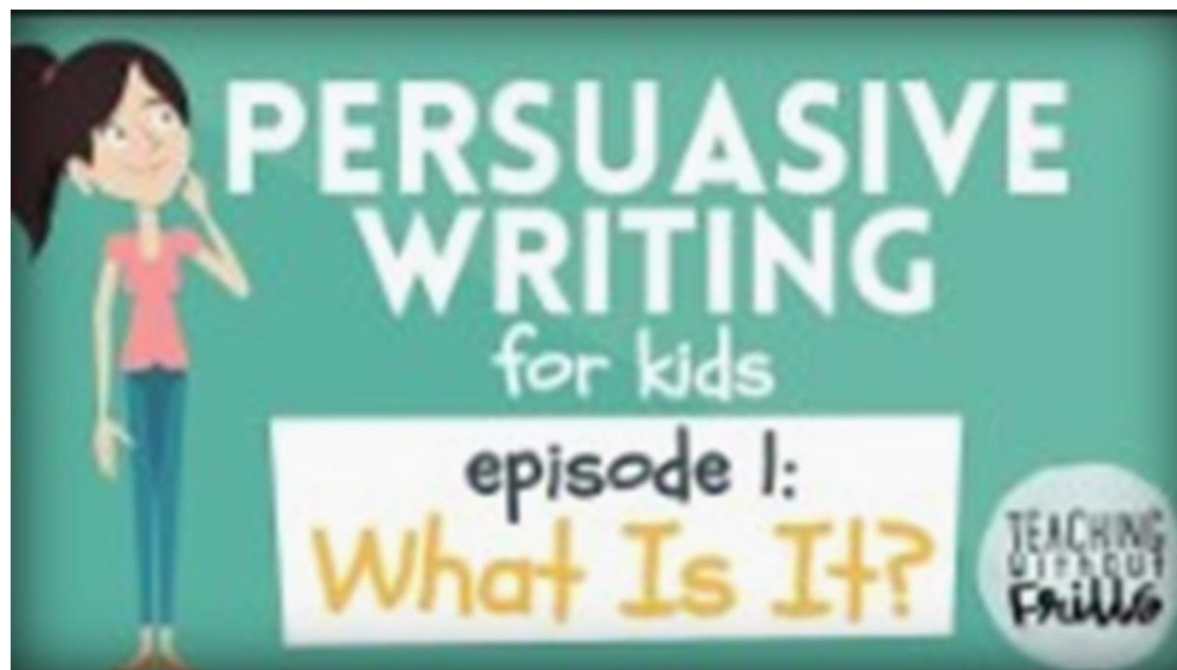
The *Return to 1616* Project has facilitated the reintroduction of many species of animals to Dirk Hartog Island's ecosystem. Choose one of the animals and research their importance and the threats they face. Using your research, consider actions that will help to ensure the survival of the species.

Challenge: Prepare a persuasive text to encourage others to support and implement positive actions to protect your animal.

This activity is intended to encourage a positive and respectful approach to protecting Australia's threatened animals. Explore persuasive writing and learn how it is different to whining and complaining. For example, <https://www.youtube.com/watch?v=hD9arWXlDdM>

Guiding Questions

1. What are the key actions that will help your animal to survive?
2. What would you like to achieve through persuasive text?
3. Who will be your target audience?
4. How will you present your persuasive text for positive impact (poster, newspaper article, letter, etc.)?



Attention	Interest	Desire	Action
Summary of problem	Facts, figures	Reduce resistance	Describe specific request
Unexpected statement	Expert opinions	Anticipate objections	Sound confident
Reader benefit	Examples	Offer counterarguments	Make action easy to take
Compliment	Specific details	Use <i>What if?</i> scenarios	Offer incentive or gift
Related facts	Direct benefits	Demonstrate competence	Don't provide excuses
Stimulating question	Indirect benefits	Show value of proposal	Repeat main benefits

Return to 1616 Online Quiz

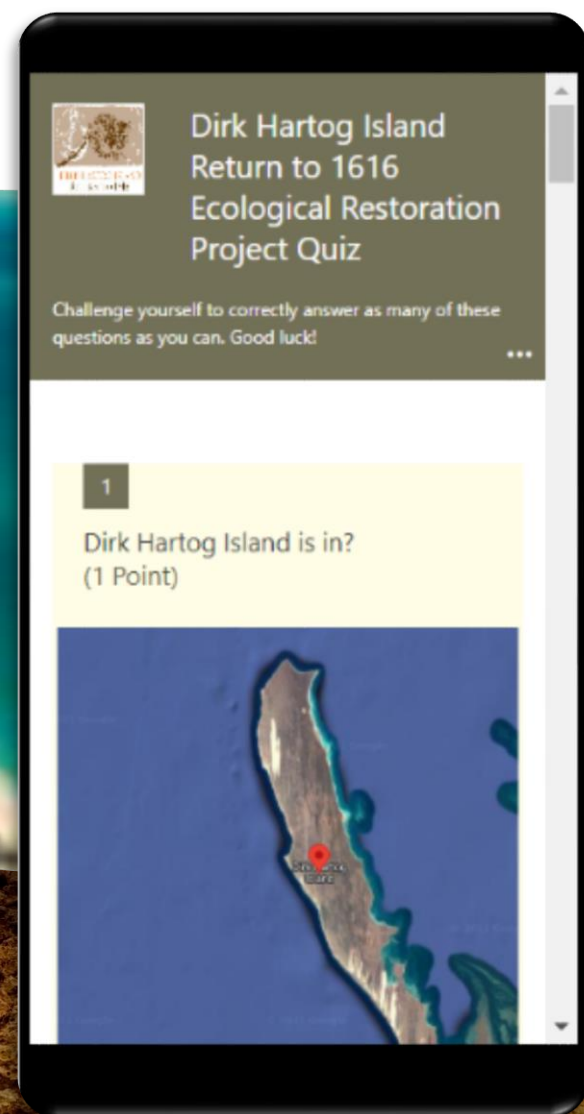
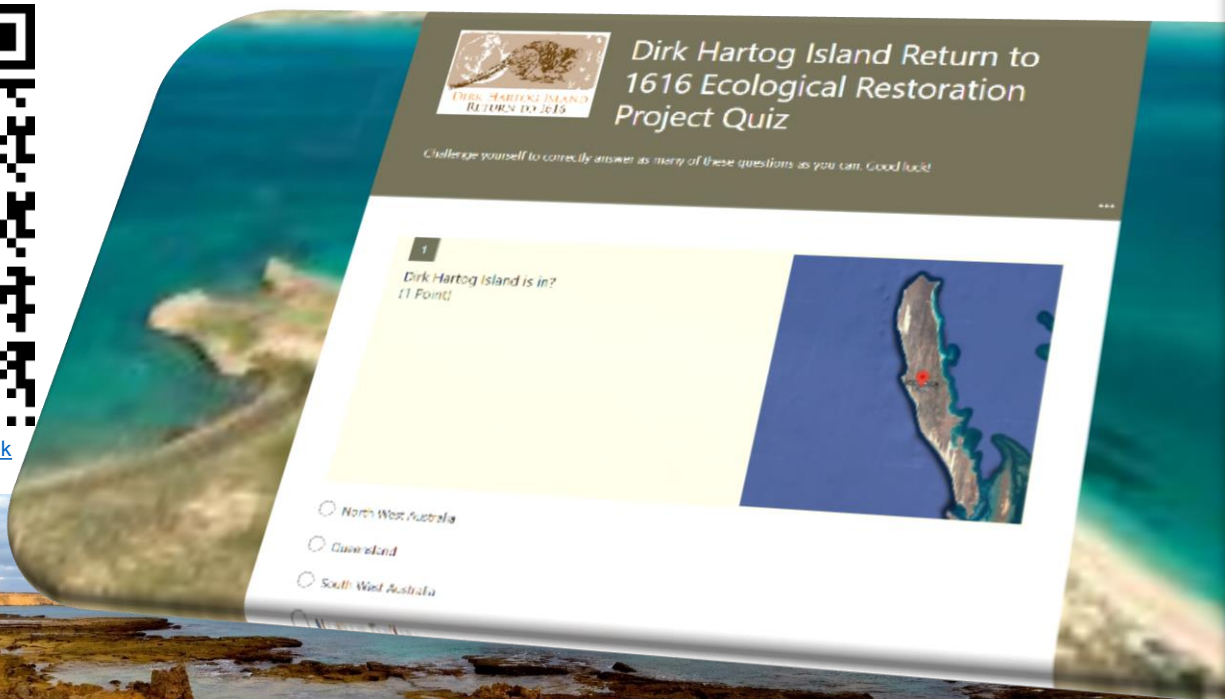


Challenge yourself to answer as many questions as you can about ecological restoration and Dirk Hartog Island National Park.

[Click Here to Begin!](#)



<https://forms.office.com/r/RHF7UbuYMK>



Return to 1616 Colouring Activities



Have fun while you learn about the animals being returned to Dirk Hartog Island National Park. Read the [fact sheets](#) and [cover sheet](#) to help you draw in the correct habitat and food for each animal that you colour in, including:

- [Rufous hare-wallaby](#)
- [Banded hare-wallaby](#)
- [Dibbler](#)
- [Shark Bay bandicoot](#)
- [Boodie](#)
- [Greater stick-nest rat](#)
- [Brush-tailed mulgara](#)
- [Shark Bay mouse](#)
- [Western grasswren](#)
- [Woylie](#)
- [Chuditch](#)



Can you also draw and colour [the correct habitat and food eaten](#) by each of these animals?

Wild Challenge Playing Cards



This printable set of cards features animals from Dirk Hartog Island including original and introduced species. Enjoy endless opportunities for education and fun!



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RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK

Return to 1616 Wild Challenge Playing Cards



Have fun and enjoy learning at the same time! Print out the [Return to 1616 Wild Challenge playing cards](#). Follow the instructions below to play and have fun while you learn about the animals being returned to Dirk Hartog Island National Park. Explore more games and activities with the other Wild Challenge Games.

Instructions

The Wild Challenge game is based on the *Return to 1616* project on Dirk Hartog Island National Park detailed below. It contains a series of 30 cards that include both *Return to 1616* animals (marked in red) as well as other animals that either live on the island or in the surrounding waters.

1. Print out the cards on double sided paper.
2. Cut out your cards and laminate.

Rules of play

Any number of people can play.

To start the game, shuffle and deal all the cards face down to the players. Each player holds their cards so that they can see the top card only.

The player to the dealer's left starts by reading out a category from the top card (e.g. Rarity, value 5) The other players then read out the same category from their cards. The one with the best or highest value wins, and that player collects all the top cards, including their own, and moves them to the bottom of their pile. It is then their turn again to choose a category from the next card and play continues until they lose.

If two or more cards share the top value then all the cards are placed in the middle and the same player chooses again from the next card.

The winner of the hand takes the cards in the middle as well.

The *Return to 1616* project animals are special. Their names are written in red on the front of the card. They are worth more points so try hard to collect as many as you can. Play continues until one person has all the cards and is declared the winner.

If you are playing a timed game, at the end of the time the:

- *Return to 1616* animals are worth 5 points;
- all other native animals are worth 2 points; and
- the cat is worth 1 point.

Highest score wins so keep every Return to 1616 animal you can!



[Click here to Download](#)

Return to 1616 Wild Challenge Card Games



GUESS WHO?

1. This is a pair guessing game.
2. Display all of the cards.
3. Each person secretly selects a mystery animal without telling their opponent.
4. Try to guess your partner's mystery animal by asking yes/no questions.

1616 MEMORY MATCHING GAME

1. This game uses two sets of cards. The objective is to collect the most pairs of cards.
2. Shuffle the cards and lay them on the table, face down, in rows.
3. On each turn, a player turns over any two cards (one at a time) and keeps them if the cards match.
4. If successful matching a pair the player keeps the cards and gets another turn.
5. When a player turns over two cards that do not match, those cards are turned face down again (in the same position) and it becomes the next player's turn.
6. The trick is to remember which cards are where.
7. The person with the most pairs at the end of the game wins

[Download printable cards here!](#)

The grid contains 30 cards, each with the following structure:

- Animal Name:** Common name and scientific name.
- Conservation Status:** Indicated by a circle with a letter (e.g., S, VU, EN, CR, SP, P).
- Statistics:** Average size (cm), Lifespan (years), Average weight (g), Speed, Number of young, Gestation, and Birth.
- FUN FACT:** A short, interesting fact about the animal.

Animals included in the grid:

- Indo-Pacific bottlenose dolphin
- Shark Bay mouse
- Shark Bay bandicoot
- Rufous hare-wallaby
- Sandhill frog
- Horn owl
- Humpback whale
- Tiger shark
- Banded hare-wallaby
- Brush-tailed Nuttara
- Loggerhead turtle
- Golden ghost crab
- Eastern osprey
- Manta ray
- Heath mouse
- Woylie
- Dibbler
- Desert mouse
- Guardar
- Dirk Hartog black and white fairy-wren
- Feral cat
- Western bearded dragon
- Boodie
- Greater stick-nest rat
- Chuditch
- Western grasswren
- Knob-tailed gecko
- Dugong
- Western spiny-tailed skink
- White shark

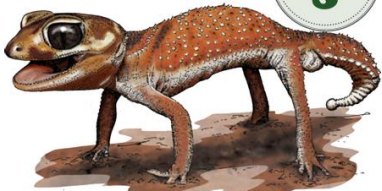
Return to 1616 Food Chains

Can you use the *Return to 1616* playing cards to create food chains? Research food chains and select an appropriate method to create and display energy flow. Cards can be downloaded [here](#).

Food chains show who eats whom in the environment. Every living thing needs food to survive. A food chain shows the pathway that energy and nutrients follow through an ecosystem. Conduct further research to see how many food chains you can create using the *Return to 1616* playing cards.

Knob-tailed gecko
Nephurus levis occidentalis

SECURE
S



Average size (cm)	10
Lifespan (years)	10
Average weight (g)	21
Speed	1
Number of young	6
Cuteness	8
Rarity	3

FUN FACT!
Knob-tailed geckos wiggle their bodies, swing their tails, and bark loudly at their predators!

The knob-tailed gecko is a robust lizard that eats insects. It has a short, flattened, leaf-shaped tail, that ends in a knob.

Dibbler
Parantechinus apicalis

ENDANGERED
EN



Average size (cm)	14
Lifespan (years)	3
Average weight (g)	80
Speed	8
Number of young	8
Cuteness	9
Rarity	9

FUN FACT!
Dibblers were believed to have gone extinct, until a pair were accidentally found in 1967.

The dibbler is a small, nocturnal, carnivorous marsupial. It has distinctive white rings around the eyes and a tapering hairy tail.

Desert mouse
Pseudomys desertor

SECURE
S



Average size (cm)	4
Lifespan (years)	2
Average weight (g)	25
Speed	3
Number of young	15
Cuteness	2
Rarity	2

FUN FACT!
Desert mice are nocturnal mammals that spend most of their lives underground. They are known for their ability to dig burrows.

The desert mouse is a nocturnal, active rodent with a pale ring around its eye and black guard hairs that give it a grizzled appearance.

Guardar
Pseudonaja nuytsii

SECURE
S



Average size (cm)	100
Lifespan (years)	10
Average weight (g)	1000
Speed	10
Number of young	10
Cuteness	10
Rarity	10

FUN FACT!
The Guardar is a venomous snake that is found in the coastal regions of Western Australia. It is known for its ability to climb trees.

The Guardar is a venomous snake that is found in the coastal regions of Western Australia. It is known for its ability to climb trees.

Barn owl
Tyto alba

SECURE
S



Average size (cm)	25
Lifespan (years)	10
Average weight (g)	100
Speed	10
Number of young	10
Cuteness	10
Rarity	10

FUN FACT!
Barn owls are nocturnal birds of prey that are found in the coastal regions of Western Australia. They are known for their ability to fly silently.

The barn owl is a nocturnal bird of prey that is found in the coastal regions of Western Australia. They are known for their ability to fly silently.

Chuditch
Dasyurus geoffroii

VULNERABLE
VU



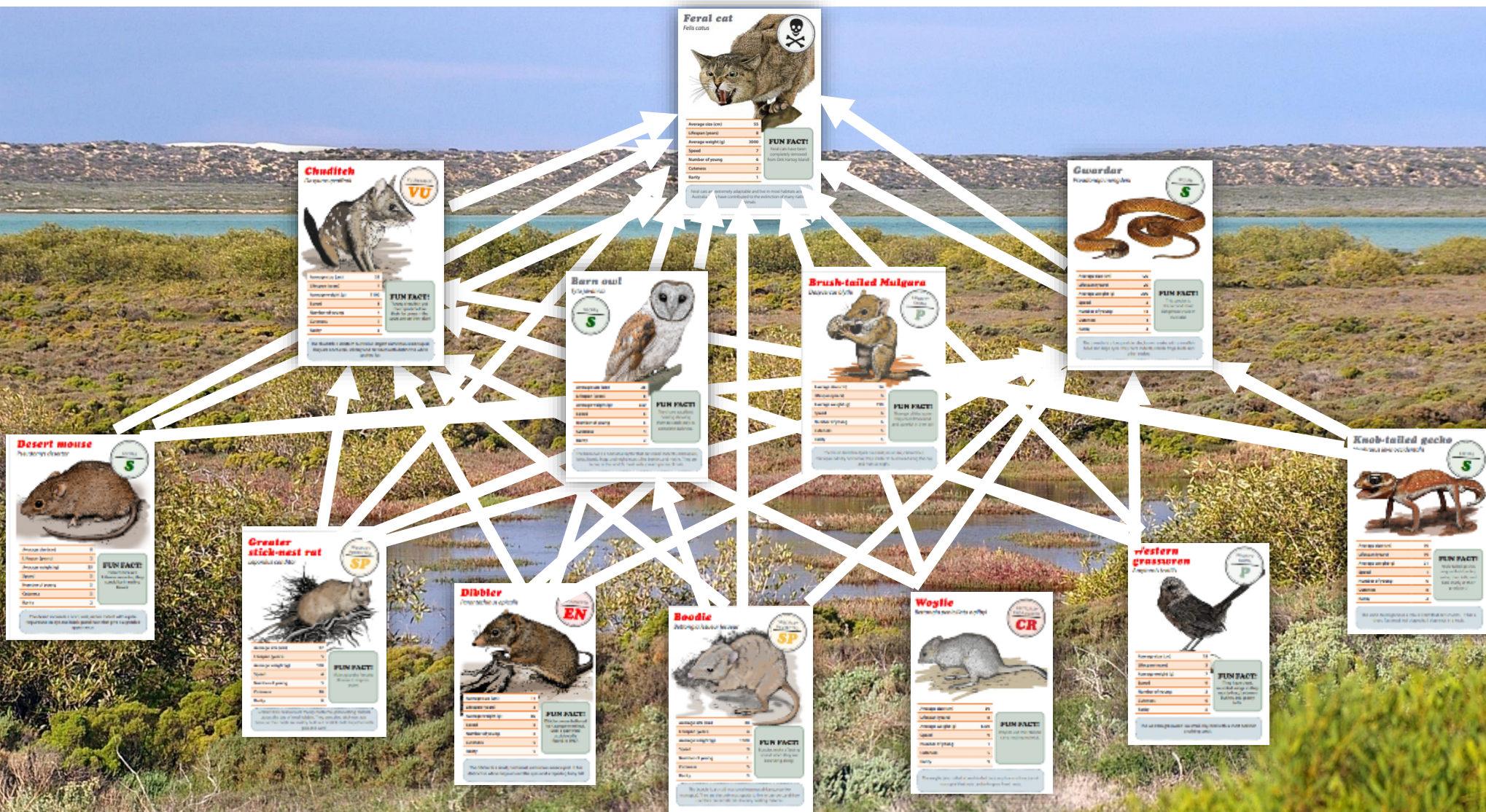
Average size (cm)	35
Lifespan (years)	4
Average weight (g)	1100
Speed	8
Number of young	4
Cuteness	7
Rarity	6

FUN FACT!
Young chuditch get their spots before their fur grows - the spots are on their skin!

The chuditch is Western Australia's largest carnivorous marsupial. They are nocturnal, solitary and cat sized with distinctive white spotted fur.

Return to 1616 Food Web

Many food chains make up a food web. Conduct some research to learn more about food webs and how they represent energy flow. Can you use the *Return to 1616* playing cards to create a food web such as the example below? Can you create some different examples? Share and discuss your food webs with others. As an extension, you may like to find a way to represent other aspects such as plants and invertebrates. Cards can be printed from [here](https://www.dca.wa.gov.au/return-to-1616).



Return to 1616 Trophic Levels

Can you use the *Return to 1616* playing cards to represent trophic levels? Research trophic levels and select an appropriate method to create and display your example. Cards can be printed from [here](#). Identifying trophic levels can be quite challenging and may not always provide an accurate representation, consider contacting an expert to help.



A photograph of a grey rabbit sitting on red sand dunes, looking to the right. The background shows rolling sand dunes under a clear sky.

Information Hub

The following presentation was developed by Elaine Horne to outline the *Return to 1616* Ecological Restoration Project and the results.



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RETURN TO 1616
DIRK HARTOG ISLAND
NATIONAL PARK

Return to 1616

Dirk Hartog Island National Park
Ecological Restoration Project

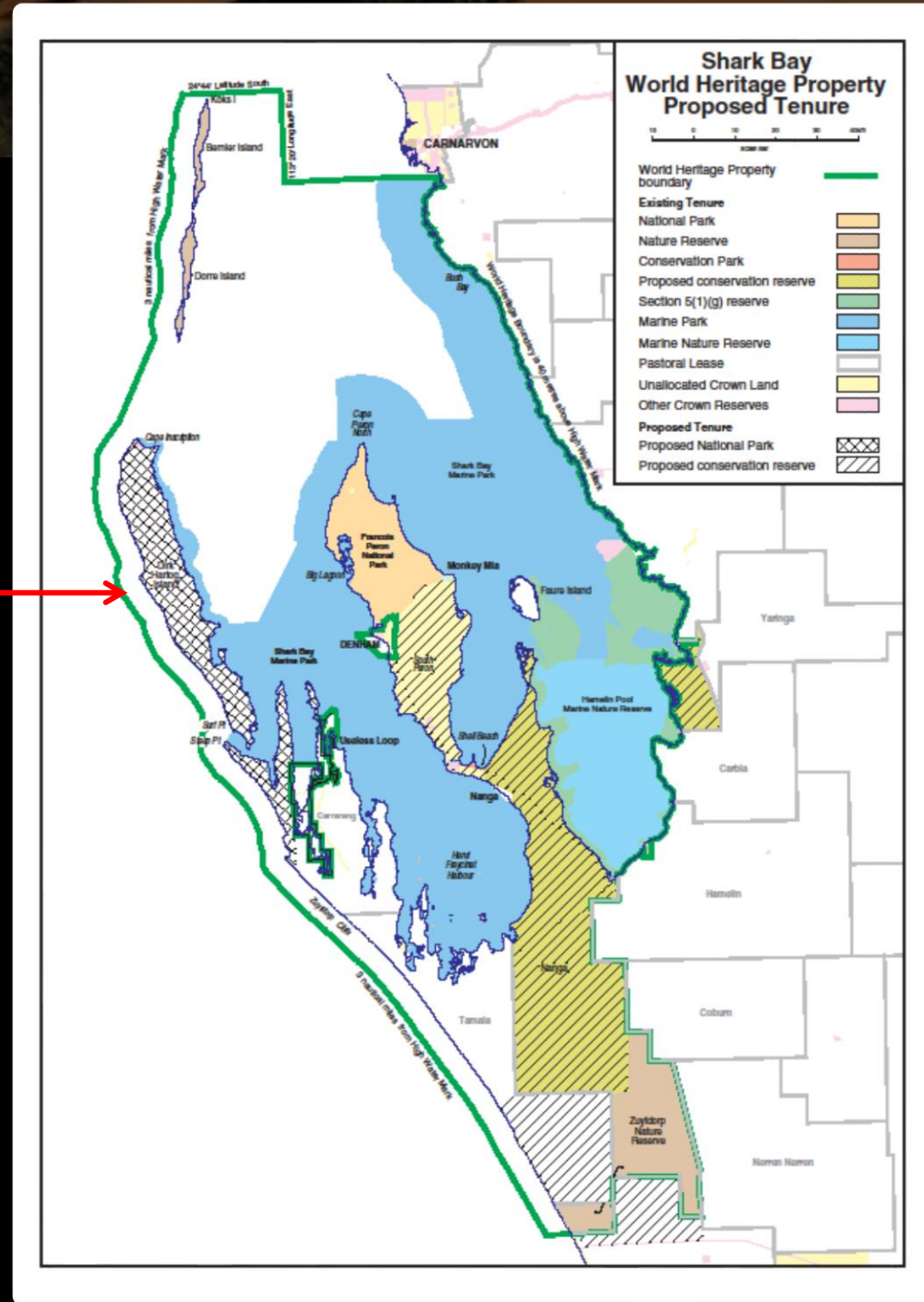
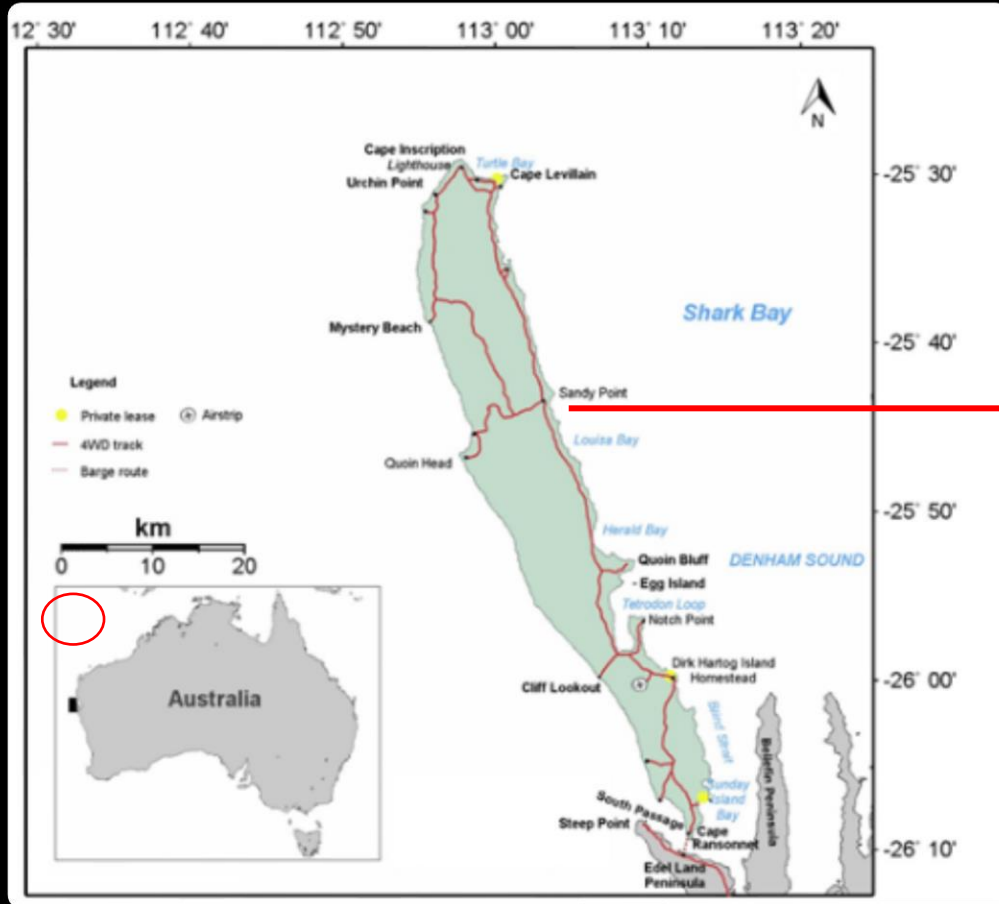


The Vision



- A special place with healthy vegetation and ecosystem processes which supports a suite of reintroduced native mammal species.
- The removal of introduced grazing animals (sheep and goats) and feral predators (cats).
- The ecological restoration of the island is appreciated and strongly supported by the community.

Dirk Hartog Island



The story before...

- Dirk Hartog, the first European to make landfall on Western Australia, landed on the island in 1616 and left an inscribed plate.
- Dirk Hartog Island (in the Shark Bay World Heritage Property) is the largest island off the Western Australian coast at about 62,000 ha.
- Pastoralism established from 1867 – 2009.
- Grazing of introduced herbivores.
- Invasion of feral predators (cats) 19th and early 20th Century.

The plan to restore an ecosystem

- Eliminate feral and non-native animals from the island,
- Habitat regeneration and fauna recovery,
- Reintroductions,
- Ecotourism & community support,
- Continued scientific research.



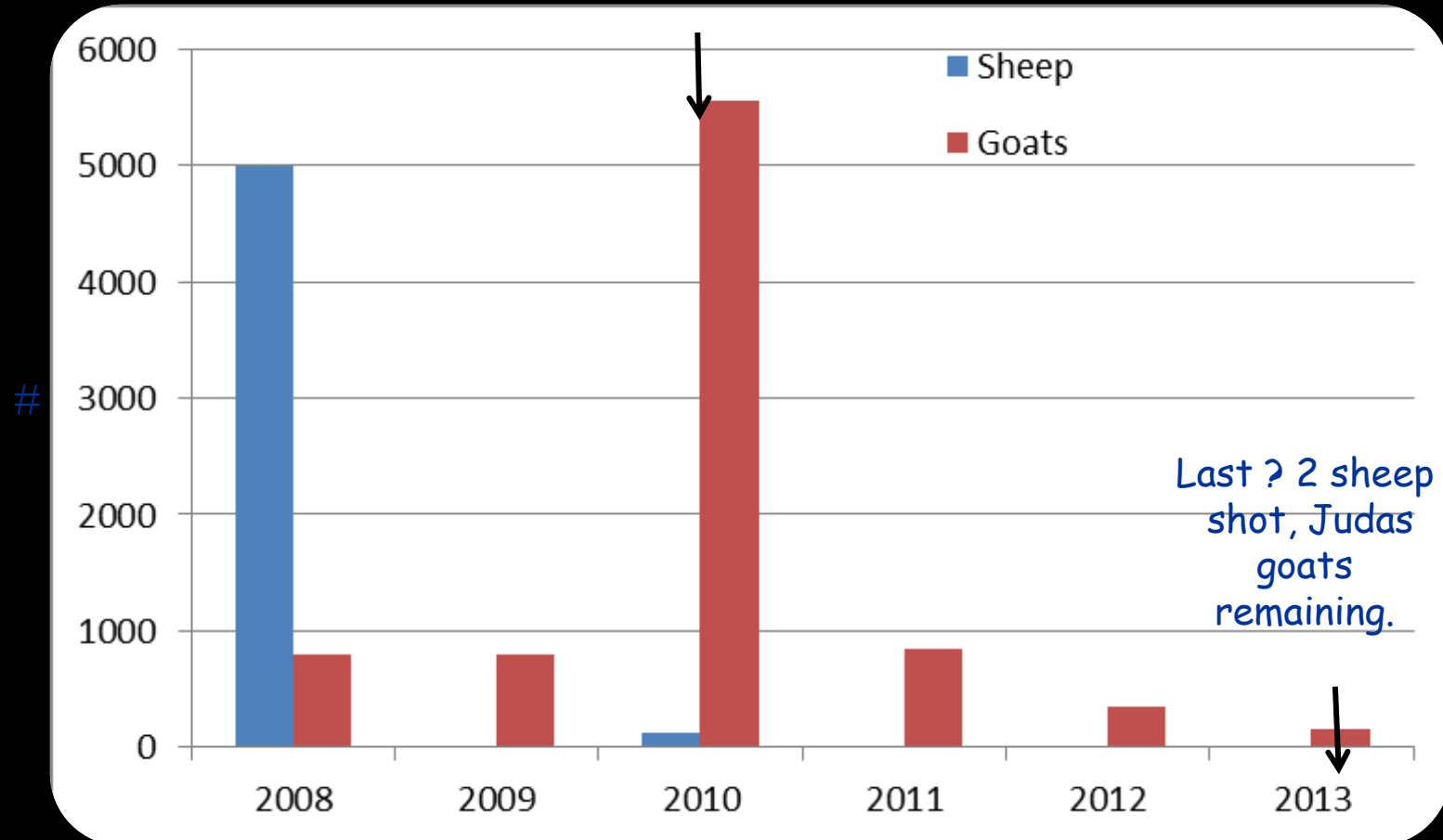
Feral Control - Introduced Herbivores - Goats and Sheep



- Over 5,000 sheep and 11,000 goats have been removed from Dirk Hartog Island. Habitat and vegetation has shown recovery.

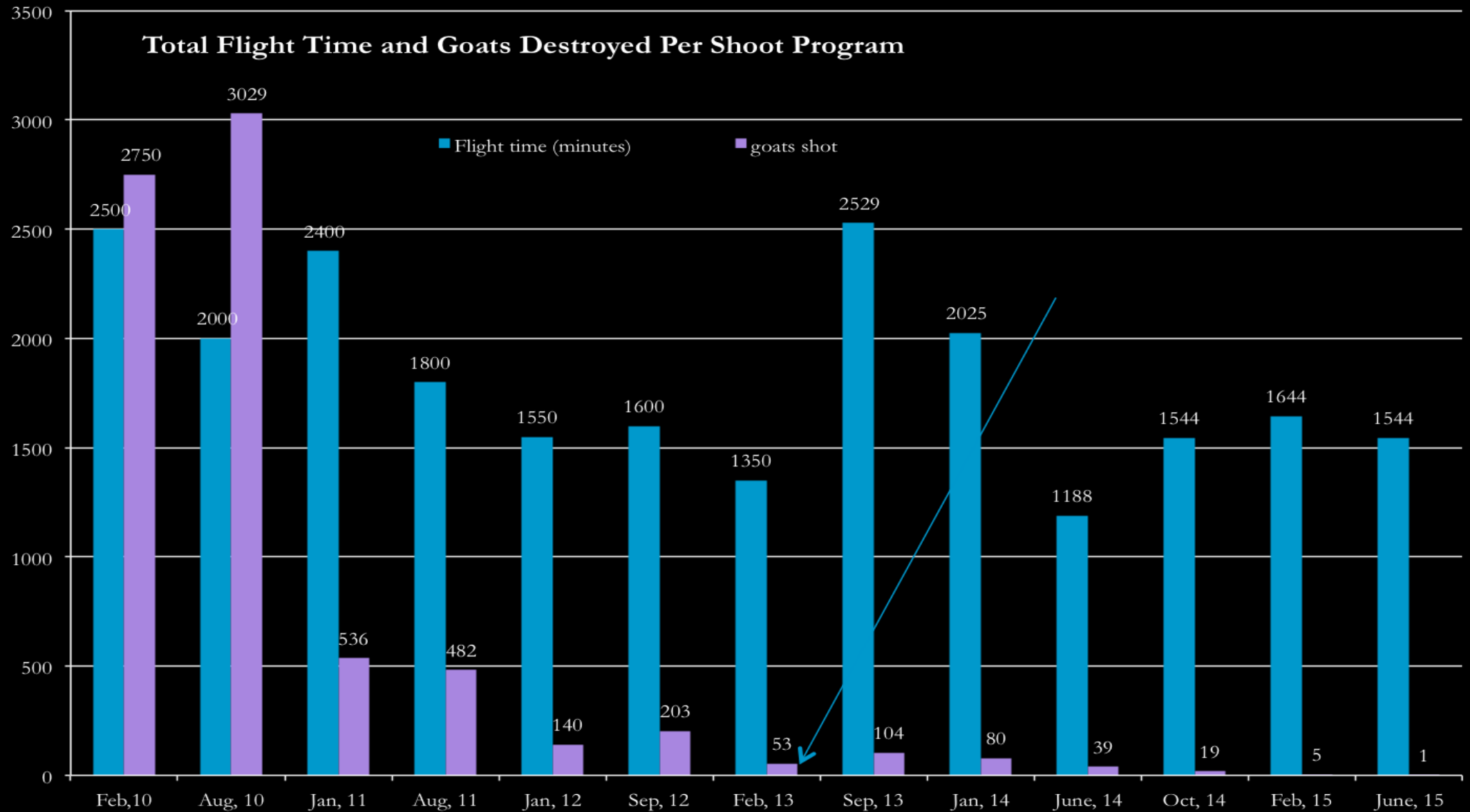
Sheep and Goat Eradication

Aerial shooting commenced



Numbers of sheep and goats removed from Dirk Hartog Island

Sheep and Goat Eradication



Feral Control - Introduced Predator

Feral Cats

- Feral cats were removed using a mixture of baiting and traps.
- Specially trained dogs, automated cameras and sand pads were used to check for any remaining feral cats.
- Translocation of native fauna back to the island began once it was declared feral cat free in 2018.



Fauna Monitoring

- Track counts
- Trapping
- Diggings
- Radio telemetry
- IR remote cameras
- Spotlighting



Dirk Hartog Island Small Vertebrate Monitoring

- Using pitfall traps and Elliott traps, this study began in 2007 and has been running for 13 years.
- Its function is to monitor the changes in vertebrate animal numbers before and after feral animal removal.

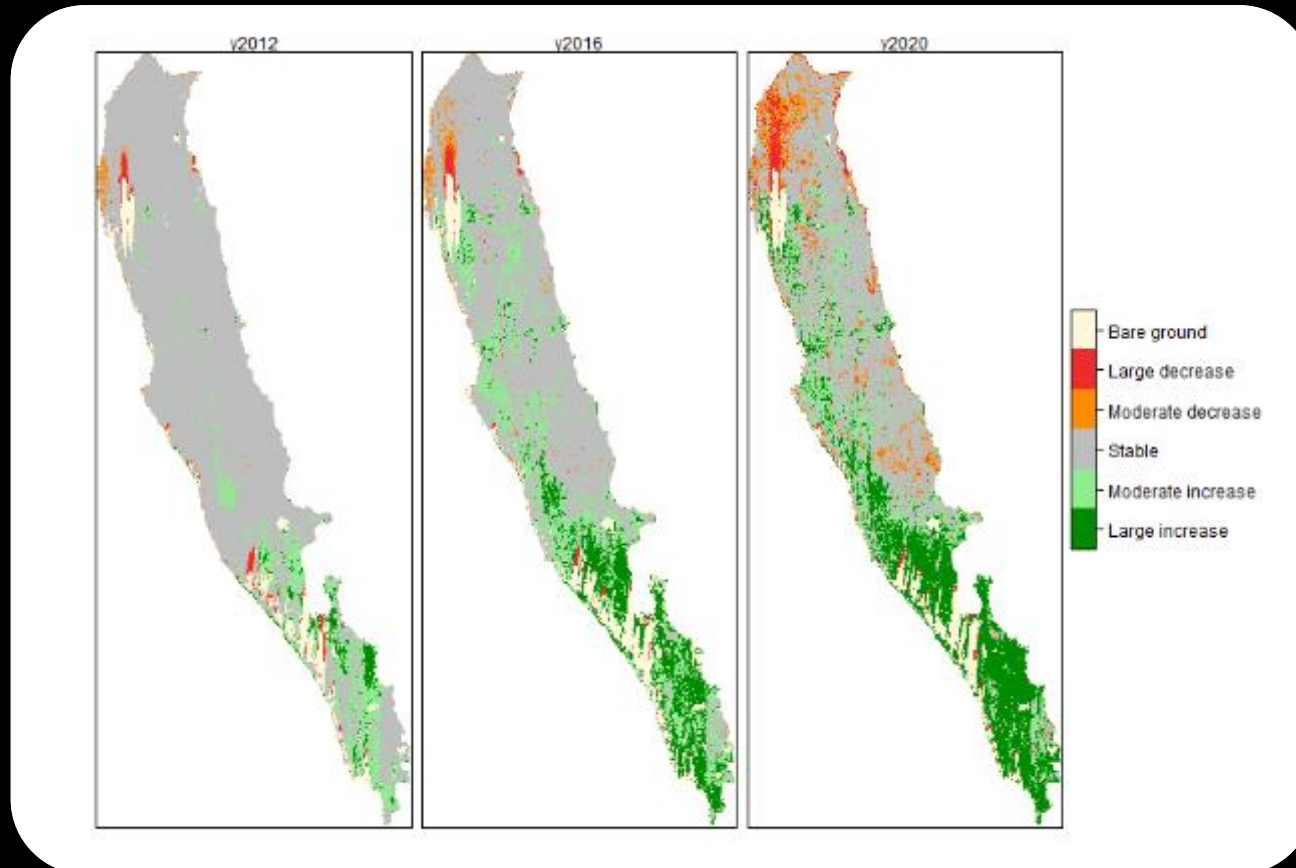


Fauna Reconstruction

- Translocation strategies are developed for each species.
- 10 mammal species and one bird species will be reintroduced to the island and two additional mammal species will be introduced over ten years.
- Translocations began, after feral cats were declared eradicated, with two hare-wallaby species.

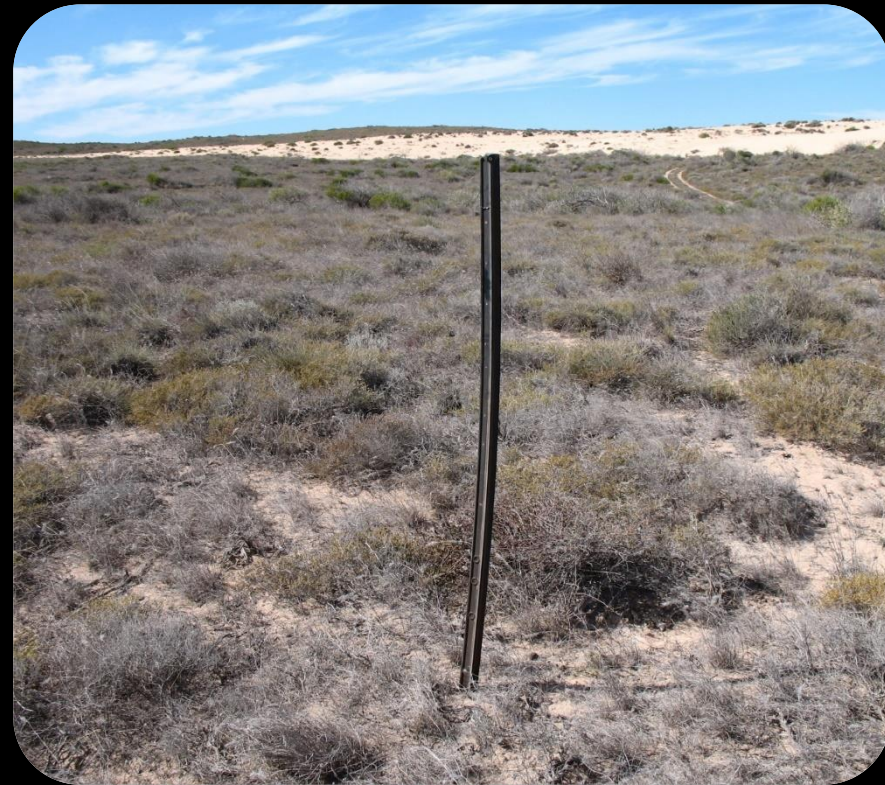


Vegetation Cover Change



Dirk Hartog Island Vegetation Monitoring

Vegetation photo points



Weed Management

- Weed survey, 68 species, distributions mapped.
- Assessed using DBCAs invasive plant prioritisation process
- Weed management plan developed.
- Monitor island access points, part of biosecurity plan.



Mammals for Re-Introduction

DHI Mammals for Re-Introduction

Boodie - *Bettongia lesueur*,

Woylie - *Bettongia penicillata*,

Shark Bay Bandicoot - *Perameles bougainville*,

Chuditch - *Dasyurus geoffroii*,

Brush-tailed Mulgara - *Dasycercus blythi*,

Dibbler - *Parantechinus apicalis*,

Greater Stick-nest Rat - *Leporillus conditor*,

Desert Mouse – *Pseudomys desertor*,

Shark Bay Mouse - *Pseudomys gouldii*,

Heath Mouse - *Pseudomys shortridgei*.

Additional mammals for introduction to DHI

Banded Hare-wallaby - *Lagostrophus fasciatus*.

Rufous Hare-wallaby - *Lagorchestes hirsutus*.

Bird species for introduction to DHI

Thick-billed grasswren

Banded hare-wallaby



Reintroductions began in 2017

Rufous hare-wallaby



Reintroductions began in 2017

Shark Bay bandicoot



Reintroductions began in 2019

Restoration of DHI Ecosystem

- involves management of an island ecosystem,
- would result in original, more complex ecosystems and increased biodiversity,
- would preserve threatened species and important habitats,
- achieves the aims of its National Park status and World Heritage listing,
- would be a world showcase of successful rehabilitation and conservation.



Return to 1616...



This presentation was developed by Elaine Horne to outline the *Return to 1616* Ecological Restoration Project and the results.



Teacher Section



Education Package for Schools

Department of Biodiversity,
Conservation and Attractions



Dirk Hartog Island National Park

Return to 1616



How to Use

Learners will be passionate about learning when it involves solving problems that matter to them. This resource is designed to facilitate learner engagement in real-world action, big or small. Select an Inquiry Activity and let it lead the way. The Information Hub is there to support knowledge construction. Student Activities provide more opportunities to enrich your program. The Teacher Section is there to support teachers as they support learners in their achievement of curriculum expectations.



Return to 1616 Background Information

Learn about the incredible project to restore biodiversity of Dirk Hartog Island to its natural state.



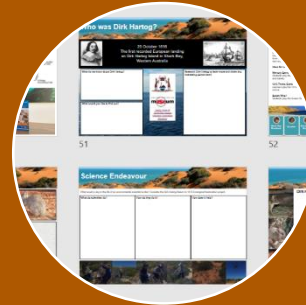
Virtual Tour

Interact with 360-degree images within Google Earth to explore the island and the *Return to 1616* project.



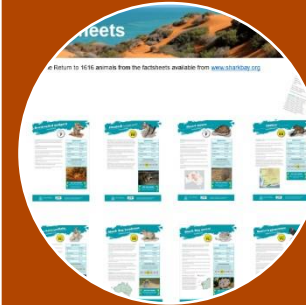
Inquiry Projects

Use 'Information Fluency' to guide your research or 'Solution Fluency' to guide you to real-world action!



Student Activities

Browse activities to complement your current programs and curriculum. These can be used as 'one-off' activities or as a series.



Information Hub

Search here for information you need when you need it. Find the information that best suits your inquiry and use it for real-world action. Share the information with others.



Teacher Section

This section includes curriculum links and other supporting materials for busy teachers.



Suitable Year Levels



Where to use this education package

These resources align with the Achievement Standards from the Australian Curriculum and feature Assessment Pointers developed by the Western Australian School Curriculum and Standards Authority (SCSA).

Please use them in a way that will work best for you (data projector, student devices or printed worksheets). It will usually be best to display and discuss the key learning intentions as a group before selecting methods to capture evidence of learning. For younger learners, some activities will be best done as a class.

Resource	Achievement Standards	F	1	2	3	4	5	6	7	8	9	10
Factsheets	Science, HASS, English	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Virtual Tour	Science, HASS, English			✓	✓	✓	✓	✓	✓	✓	✓	✓
Inquiry Project – Knowledge Construction	Science, HASS, English	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inquiry Project – Real-World Action	Science, HASS, English, Technologies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Boneheads	Science			✓	✓	✓	✓	✓	✓	✓	✓	✓
Status of Species	Science					✓	✓	✓	✓	✓	✓	✓
Conducting Scientific Surveys	Science					✓	✓	✓	✓	✓	✓	✓
Conservation Codes and Threatened Species	Science, HASS, English						✓	✓	✓	✓	✓	✓
Native Animal Survey	Science	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Animal Research	HASS, Science, English			✓	✓	✓	✓	✓	✓	✓	✓	✓
Create a Fact Sheet	HASS, Science, English			✓	✓	✓	✓	✓	✓	✓	✓	✓
Biodiversity Brochure	English, Science, HASS, Technologies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Discovery Day	Science, HASS, English			✓	✓	✓	✓	✓	✓	✓	✓	✓
Habitat Diorama	Technologies, Science, HASS				✓	✓	✓	✓	✓	✓	✓	✓
Science Endeavour	Science, HASS					✓	✓	✓	✓	✓	✓	✓
National Park Treasure Hunt	Science			✓	✓	✓	✓	✓	✓	✓	✓	✓
History of Dirk Hartog Island	HASS, English, Science				✓	✓	✓	✓	✓	✓	✓	✓
Who was Dirk Hartog?	HASS, English				✓	✓	✓	✓	✓	✓	✓	✓
Land Use at Dirk Hartog Island	HASS, English				✓	✓	✓	✓	✓	✓	✓	✓
Create a Diary Extract	English, HASS				✓	✓	✓	✓	✓	✓	✓	✓
Positive Persuasion	English, Science, HASS						✓	✓	✓	✓	✓	✓
Online Quiz	English, Science, HASS				✓	✓	✓	✓	✓	✓	✓	✓
Colouring Activities	Science, Art	✓	✓	✓	✓	✓						
Wild Challenge Playing Cards	Science, English				✓	✓	✓	✓	✓	✓	✓	✓
Food Chains	Science				✓	✓	✓	✓	✓	✓	✓	✓
Food Web	Science				✓	✓	✓	✓	✓	✓	✓	✓
Trophic Levels	Science						✓	✓	✓	✓	✓	✓

Relevant Pre-Primary Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Uses a range of comprehension strategies, explaining meanings made from texts.	Uses comprehension strategies, describing meanings made from texts.	Uses predicting and questioning strategies to make meaning from texts.	With prompting, uses some predicting or questioning strategies to make simple or disconnected meanings from texts.
	Interpreting	Reads short, age-appropriate texts with less predictable vocabulary and supportive images, with developing fluency.	Reads short, decodable and predictable texts with familiar vocabulary and supportive images, practising fluency.	Reads short, decodable and predictable texts with familiar vocabulary and supportive images.	With guidance, reads short, decodable and predictable texts with familiar vocabulary and supportive images.
HASS	Questioning and Researching	Orally poses focused questions to investigate the topic and responds with detail.	Orally poses focused questions related to the topic and responds with detail.	Orally poses and responds to questions related to the topic.	Orally responds to questions with little connection to the topic.
	Analysing	Represents relevant and detailed information in different ways.	Represents relevant information in different ways.	Represents information in different ways.	Requires differentiation and support to represent information.
	Evaluating	Draws a relevant and detailed conclusion based on observations and discussions.	Draws a conclusion, supported by reasoning and based on observations and discussions.	Draws simple conclusions, providing some reasoning.	Requires differentiation and support to make a simple statement.
	Communicating and Reflecting	Develops a detailed and appropriate text to communicate ideas and observations.	Develops an appropriate text to communicate ideas and observations.	Develops a simple text to communicate ideas and observations.	Requires differentiation and support to communicate ideas and observations.
Technologies	Collecting, managing and analysing data and Digital implementation	Models safety strategies while collecting and sorting data and using relevant information from an online source.	Models safety strategies while collecting and sorting data and using information from an online source.	Models safety strategies while collecting data and using information from an online source.	With guidance, follows strategies to stay safe online in an attempt to collect or use some information.
	Investigating and defining	Investigates and explains needs for designing simple solutions.	Explores and describes needs for designing simple solutions.	Explores needs for designing simple solutions.	States a need for designing simple solutions.
	Designing	Generates and records design ideas, with relevant examples, through explaining, drawing, modelling and/or a logical sequence of written or spoken steps.	Generates and records design ideas, with examples, through describing, drawing, modelling and/or a logical sequence of written or spoken steps.	Generates and records design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps.	States, draws or models some basic, incomplete design ideas.
	Evaluating	Provides personal preferences to evaluate the success of simple solutions and recommends an improvement or change.	Provides personal preferences to evaluate the success of simple solutions, including a general statement for change.	Provides personal preferences to evaluate the success of simple solutions.	Provides brief personal preferences to evaluate simple solutions.
Science	Biological sciences	Describes ideas about familiar living things and explains how the environment affects them.	Describes ideas about familiar living things and uses examples to describe their basic needs.	Describes ideas about familiar living things and their basic needs.	Describes ideas about familiar living things.
	Science Inquiry Skills	Asks specific questions and responds to questions in detail, making connections with other examples.	Asks and responds to questions about familiar objects and events in some detail.	Asks and responds to questions about familiar objects and events.	Requires guidance to respond to questions.

Relevant Year 1 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Describes, in detail, key ideas, and literal and implied meaning in a range of texts.	Describes key ideas, and recognises literal and implied meaning in a range of texts.	Recalls key ideas, and recognises literal and implied meaning in texts.	Recalls some ideas, and recognises literal meaning in texts.
	Interpreting	Effectively uses knowledge of sounds and letters, high-frequency words, sentence boundary punctuation and directionality with phrasing that reflects meaning when reading short texts with unfamiliar vocabulary.	Uses knowledge of sounds and letters, high-frequency words, sentence boundary punctuation and directionality to monitor meaning when reading short texts.	Uses knowledge of sounds and letters, high-frequency words, sentence boundary punctuation and directionality to make meaning when reading.	Uses limited knowledge of sounds and letters, high-frequency words and directionality, attempting to read short texts with familiar vocabulary.
HASS	Questioning and Researching	Orally poses related questions and responds with a detailed explanation.	Orally poses relevant questions and responds with some detail.	Orally poses and responds to questions relevant to the topic.	Orally poses and responds to questions with little connection to the topic.
	Questioning and Researching	Independently sorts and records information and/or data.	Sorts and records information and/or data, with little scaffolding.	Requires some scaffolding to sort and record information and/or data.	Requires differentiation and support to sort and record information and/or data.
	Analysing	Independently selects a way to represent gathered information.	Independently represents gathered information in a given format.	Represents gathered information in a given format.	Requires differentiation and support to represent gathered information in a given format.
	Evaluating	Draws conclusions based on information and/or data to make a detailed statement.	Draws a conclusion based on information and/or data to make a general statement.	Draws a simple conclusion based on information and/or data to make a simple statement.	Gives a simple statement, based on personal opinions.
Technologies	Collecting, managing and analysing data and Digital implementation	Selects and uses a variety of digital tools to clearly present relevant information in an online environment, modelling strategies to stay safe online.	Selects and uses a variety of digital tools to present relevant information in an online environment, modelling strategies to stay safe online.	Selects and uses a variety of digital tools to present information in an online environment, modelling strategies to stay safe online.	Uses some digital tools to present inaccurate or incorrect information in an online environment and omits to model strategies to stay safe online.
	Investigating and defining	Explores efficient opportunities when designing products or solutions.	Explores and describes opportunities when designing products or solutions.	Explores opportunities when designing products or solutions.	Explores simple designs for products or solutions.
	Designing	Creates and clearly communicates detailed design ideas through describing, labelled drawing, modelling and/or a sequence of written or spoken steps.	Creates and communicates detailed design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps.	Creates and communicates design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps.	Develops and communicates simple design ideas.
	Evaluating	Provides personal preferences to evaluate the success of design processes and recommends an improvement or change.	Provides personal preferences to evaluate the success of design processes and includes a general statement for change.	Provides personal preferences to evaluate the success of design processes.	Provides brief personal preferences to evaluate simple design processes.
Science	Biological sciences	Describes and groups the common external features of different living things, using detail.	Describes, using detail, the common external features of living things.	Describes the common external features of living things.	With guidance, describes some common external features of living things.
	Biological sciences	Describes and explains, using examples, how the environment meets the needs of living things.	Describes several ways in which the environment meets the needs of living things.	Describes how the environment meets the needs of living things.	Describes living things in the environment.

Relevant Year 2 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Explains literal and implied meanings in different types of literature, describing main ideas using supporting detail.	Describes literal and implied meaning, and main ideas using supporting detail in a range of texts.	Identifies literal and implied meaning, main ideas and supporting detail in a text.	Recalls some main ideas and identifies literal, and some implied, meaning in a text.
	Interpreting	Reads a range of texts that contain varied, unfamiliar sentence structures, unfamiliar vocabulary, a number of high-frequency sight words and interprets images that provide additional information.	Reads less predictable texts that contain varied, unfamiliar sentence structures, some unfamiliar vocabulary, a number of high-frequency sight words and images that provide additional information.	Reads texts that contain varied sentence structures, some unfamiliar vocabulary, a number of high-frequency sight words and images that provide additional information.	Reads a limited range of short, less predictable texts that contain some varied sentence structure, some unfamiliar vocabulary and some high-frequency words.
HASS	Questioning and Researching	Orally poses related questions and responds with a detailed explanation.	Orally poses relevant questions and responds with some detail.	Orally poses and responds to questions relevant to the topic.	Orally poses and responds to questions with little connection to the topic.
	Questioning and Researching	Independently sorts and records information and/or data.	Sorts and records information and/or data, with little scaffolding.	Requires some scaffolding to sort and record information and/or data.	Requires differentiation and support to sort and record information and/or data.
	Analysing	Independently selects a way to represent gathered information.	Independently represents gathered information in a given format.	Represents gathered information in a given format.	Requires differentiation and support to represent gathered information in a given format.
	Evaluating	Draws conclusions based on information and/or data to make a detailed statement.	Draws a conclusion based on information and/or data to make a general statement.	Draws a simple conclusion based on information and/or data to make a simple statement.	Gives a simple statement, based on personal opinions.
Technologies	Collecting, managing and analysing data and Digital implementation	Selects, accurately presents and uses relevant data, using a variety of digital tools in a safe, online environment.	Selects, presents and uses relevant data, using a variety of digital tools in a safe, online environment.	Selects, presents and uses data, using a variety of digital tools in a safe, online environment.	Presents incomplete or inaccurate data, using minimal digital tools in a safe, online environment.
	Investigating and defining	Describes how to meet needs and opportunities by exploring design.	Identifies how to meet needs and opportunities by exploring design.	Explores design to meet needs or opportunities.	Explores some simple ideas for design.
	Designing	Develops, communicates and clearly explains, in a variety of ways, detailed design ideas and/or logically sequenced steps.	Develops, communicates and explains design ideas through describing, drawing, modelling and/or logically sequenced steps.	Develops, communicates and discusses design ideas through describing, drawing, modelling and/or sequenced steps.	Develops and communicates simple design ideas, listing some steps.
	Evaluating	Uses simple criteria to evaluate the success of design processes and solutions, explaining an improvement and/or possible change/s.	Uses simple criteria to evaluate the success of design processes and solutions, suggesting possible change/s.	Uses simple criteria to evaluate the success of design processes and solutions.	Provides a brief statement to evaluate a design process or solution.
Science	Biological sciences	Describes and compares the growth and change of a number of living things through stages of their life, identifying similarities and differences between parent and offspring and recognising common elements within life cycles.	Describes how living things grow and change through different stages of their life, identifying some similarities between parent and offspring.	Describes how living things grow and change through different stages of their life.	Describes with limited understanding how living things grow and change through different stages of their life.
	Science Inquiry Skills	Poses specific and relevant questions and responds to questions making detailed predictions about objects and events.	Poses relevant questions, responds to questions and makes predictions about objects and events.	Poses relevant questions, responds to questions and makes simple predictions about familiar objects and events.	Requires guidance to pose and respond to questions and to make predictions.

Relevant Year 3 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Connects ideas throughout different parts of texts to describe literal and implied meanings.	Connects ideas throughout different parts of texts to build literal and implied meanings.	Identifies literal and implied meaning connecting ideas in different parts of a text.	With assistance, locates literal meanings in texts and connects ideas in different parts of a text.
	Text structure	Explains how the organisation and structure of a text differs and depends on the purpose and audience of the text.	Discusses how the organisation and structure of a text can be presented in different ways and depends on the purpose of the text.	Identifies how content can be organised using different text structures depending on the purpose of the text.	Recognises that texts can have different structures and that content can be presented in different ways.
HASS	Questioning and Researching	Develops a range of detailed and relevant questions to investigate.	Develops a range of relevant questions to investigate.	Develops questions to investigate.	Poses simple questions.
	Questioning and Researching	Develops a range of detailed and relevant questions to investigate.	Develops a range of relevant questions to investigate.	Develops questions to investigate.	Poses simple questions.
	Analysing	Interprets information and/or data to accurately and comprehensively sequence information, make connections or identify patterns.	Interprets information and/or data to accurately sequence information, make connections or identify patterns.	Interprets information and/or data to sequence information, make connections or identify patterns.	Interprets information and/or data, with some inaccuracies.
	Analysing	Interprets information and/or data to accurately and comprehensively sequence information, make connections or identify patterns.	Interprets information and/or data to accurately sequence information, make connections or identify patterns.	Interprets information and/or data to sequence information, make connections or identify patterns.	Interprets information and/or data, with some inaccuracies.
	Evaluating	Draws a detailed conclusion, supported by relevant information and/or data.	Draws a conclusion, supported by relevant information and/or data.	Draws a simple conclusion, supported by some information and/or data.	Provides a statement.
Technologies	Representation of data	Organises and clearly represents data in a variety of ways.	Organises and represents data in a variety of ways.	Represents data in a variety of ways.	Presents data in a variety of ways with inaccuracies.
	Investigating and defining	Investigates ideas and creates logical and detailed sequenced steps to solve a given task.	Explores ideas and creates logical sequenced steps to solve a given task.	Creates sequenced steps to solve a given task.	Provides simple but incomplete steps to solve a given task.
	Designing	Develops and explains design ideas with clearly labelled and detailed drawings, using relevant technical terms correctly.	Develops and explains design ideas with clearly labelled drawings, using appropriate technical terms correctly.	Develops and communicates ideas using labelled drawings and appropriate technical terms.	Presents simple ideas using drawings and few technical terms.
	Evaluating	Uses criteria to evaluate, in detail, the design processes and solutions developed, explaining an improvement and/or change/s.	Uses criteria to evaluate, in detail, design processes and solutions developed, identifying possible change/s.	Uses criteria to evaluate design processes and solutions developed.	Uses criteria to briefly comment on design processes and/or solutions.
Science	Biological sciences	Groups living things based on observable features and distinguishes them from non-living things, comparing similarities and differences and providing reasons for these.	Groups living things based on observable features and distinguishes them from non-living things, providing some reasons.	Groups living things based on observable features and distinguishes them from non-living things.	Groups living things based on irrelevant observable features.
	Science Inquiry Skills	Identifies relevant investigable questions and makes specific predictions related to the investigation, based on a wide range of prior knowledge.	Identifies investigable questions and makes specific predictions related to the investigation, based on prior knowledge.	Identifies investigable questions and makes general predictions related to the investigation, based on some prior knowledge.	With guidance identifies a simple investigable question related to the investigation, with limited use of prior knowledge.

Relevant Year 4 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Analyses literal and implied meaning in texts, integrating ideas across a range of texts.	Describes literal and implied meaning and explains connection of ideas in different texts.	Describes literal and implied meaning, connecting ideas in different texts.	Locates literal meaning and connects ideas in different texts.
	Text structure	Makes connections between features of text structure and recognises how they can be represented in different ways to identify purpose and context across a range of text types.	Describes differences in text structures and recognises how they can be represented in different ways depending on purpose and context.	Identifies different text structures depending on purpose and context.	Recognises simple text structures and language choices depending on purpose of the text.
HASS	Questioning and Researching	Develops a range of detailed and relevant questions to investigate.	Develops a range of relevant questions to investigate.	Develops questions to investigate.	Poses simple questions.
	Questioning and Researching	Records detailed and relevant information and/or data using different methods, some of which may be scaffolded.	Records relevant information and/or data using different methods, some of which may be scaffolded.	Records information and/or data using different methods, some of which may be scaffolded.	Records some information and/or data, which may be irrelevant, using simple methods.
	Analysing	Interprets information and/or data to accurately and comprehensively sequence information, make connections or identify patterns.	Interprets information and/or data to accurately sequence information, make connections or identify patterns.	Interprets information and/or data to sequence information, make connections or identify patterns.	Interprets information and/or data, with some inaccuracies.
	Analysing	Describes, in detail, different viewpoints contained in the information and/or data.	Describes different viewpoints contained in the information and/or data.	Identifies different viewpoints contained in the information and/or data.	Identifies a viewpoint contained in the information and/or data.
	Evaluating	Draws a detailed conclusion, supported by relevant information and/or data.	Draws a conclusion, supported by relevant information and/or data.	Draws a simple conclusion, supported by some information and/or data.	Provides a statement.
Technologies	Collecting, managing and analysing data	Uses simple visual programming to develop a logical and detailed sequence of steps (algorithms) and a variety of relevant user decision-making (branching).	Uses simple visual programming to develop a logical sequence of steps (algorithms) and relevant user decision-making (branching).	Uses simple visual programming to develop a sequence of steps (algorithms) and user decision-making (branching).	Uses simple visual programming, with some errors, to develop a sequence of steps (algorithms) and user decision-making (branching).
	Digital implementation	Creates and clearly communicates ideas and information. Uses software to collect, store and accurately present different types of data, using agreed protocols (netiquette).	Creates and clearly communicates ideas and information. Uses software to collect and accurately present different types of data, using agreed protocols (netiquette).	Creates and communicates ideas and information. Uses software to collect and present different types of data, using agreed protocols (netiquette).	Communicates simple ideas and/or information. Uses software to collect and present different types of data that may not be relevant, omitting the use of agreed protocols (netiquette).
	Investigating and defining	Investigates and defines ideas and develops a logical and detailed sequence of steps to design a solution.	Investigates and defines ideas and develops a logical sequence of steps to design a solution.	Defines and uses sequenced steps to design a solution.	Provides some simple steps when attempting to design a solution for a given task.
	Designing	Develops, clearly communicates and justifies design ideas and decisions, using clearly annotated drawings and appropriate technical terms.	Develops and clearly communicates design ideas and decisions, using clearly annotated drawings and appropriate technical terms.	Develops and communicates design ideas and decisions, using annotated drawings and appropriate technical terms.	Lists simple design ideas, with incomplete and/or irrelevant drawings, using few technical terms.
Science	Biological sciences	Using examples, explains relationships between living things and their environment that assist their survival.	Explains relationships between living things and the environment that assist their survival.	Describes relationships between living things and the environment that assist their survival.	Makes simple connections between living things and their relationship with their environment.
	Science as a Human Endeavour	Identifies situations and describes when science is used to understand the effects of their and others' actions on the Earth's surface, objects, the environment and living things.	Identifies and describes situations when science is used to understand the effects of their actions on the Earth's surface, objects, the environment and living things.	Identifies situations when science is used to understand the effects of their actions on the Earth's surface, objects, the environment and living things.	Requires guidance to identify some situations when science is used to understand the effect of human actions on the Earth's surface, the environment and living things.
	Science Inquiry Skills	Communicates detailed ideas, information and findings in a range of task-appropriate formal and informal ways.	Communicates ideas, information and findings in a range of task-appropriate formal and informal ways.	Communicates ideas, information and findings in formal and informal ways.	Communicates simple ideas, information and findings using formal and informal ways.

Relevant Year 5 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Analyses and explains, in detail, literal and implied information, integrating ideas from a variety of texts.	Analyses and explains, in detail, literal and implied information from a variety of texts.	Analyses and explains literal and implied information from a variety of texts.	Describes literal and implied information from a variety of texts.
	Text structure	Selects information, ideas and images from a range of resources to clearly develop and explain a point of view.	Selects information, ideas and images from a range of resources to clearly communicate a point of view.	Selects information, ideas and images from a range of resources to develop a point of view.	Attempts to develop a point of view using some information, ideas and images.
	Text structure	Creates appropriately structured written, digital and multimodal imaginative, informative and persuasive texts, experimenting with stylistic features for a range of different purposes and audiences.	Creates written, digital and multimodal imaginative, informative and persuasive texts, using appropriate text structures for different purposes and audiences.	Creates written, digital and multimodal imaginative, informative and persuasive texts for different purposes and audiences.	Creates simple written, digital and multimodal imaginative, informative and persuasive texts for different purposes.
HASS	Questioning and Researching	Locates and collects relevant, detailed information and/or data, using primary and/or secondary sources.	Locates and collects relevant information and/or data using primary and/or secondary sources.	Locates and collects information and/or data from primary and/or secondary sources.	Uses provided sources to locate and collect information and/or data, which may be irrelevant.
	Questioning and Researching	Independently records and organises information and/or data using a variety of appropriate methods.	Records and organises information and/or data using a variety of appropriate methods.	Records and organises information and/or data using a variety of methods.	Records information and/or data using simple methods.
	Analysing	Interprets information and/or data to identify cause and effect, and make relevant and detailed connections.	Interprets information and/or data to identify cause and effect, and make relevant connections.	Interprets information and/or data to identify cause and/or effect, and make connections.	Attempts to interpret information and/or data in order to make a simple connection.
	Analysing	Explains different perspectives and motives within sources.	Describes different perspectives and motives within sources.	Identifies different perspectives and/or motives within sources.	Attempts to identify different perspectives from sources.
	Evaluating	Draws a detailed conclusion based on relevant and accurate evidence from information and/or data.	Draws a conclusion based on relevant and accurate evidence from information and/or data.	Draws a conclusion based on evidence from information and/or data.	States a simple conclusion based on personal opinions.
Technologies	Collecting, managing and analysing data	Uses software to efficiently collect, store and clearly present different types of data for a specific purpose.	Uses software to collect, store and clearly present different types of data for a specific purpose.	Uses software to collect, store and present different types of data for a specific purpose.	Uses software to collect data; however, storage and/or presentation is incomplete and/or inefficient.
	Digital Implementation	Consistently creates and clearly communicates information for online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct).	Creates and clearly communicates information for online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct).	Creates and communicates information for online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct).	Communicates some information; however, inappropriately uses agreed social, ethical and technical protocols (codes of conduct).
	Investigating and defining	Defines a problem with clarity, identifies available resources and creates a set of detailed, logically sequenced steps to assist in user decision-making to create a solution for a given task.	Defines a problem with clarity, identifies available resources and creates a set of logical sequenced steps to assist in user decision-making to create a solution for a given task.	Defines a problem, identifies available resources and creates a set of sequenced steps to assist in user decision-making to create a solution for a given task.	States a problem and some resources, listing a set of sequenced steps to assist in user decision-making.
	Designing	Develops, clearly communicates and justifies alternative solutions, and uses clearly annotated diagrams, storyboards and a range of appropriate technical terms when following design ideas.	Develops and clearly communicates alternative solutions, and uses clearly annotated diagrams, storyboards and appropriate technical terms when following design ideas.	Develops and communicates alternative solutions, and uses annotated diagrams, storyboards and appropriate technical terms when following design ideas.	Follows basic design ideas, using simple diagrams or storyboards with few technical terms.
Science	Biological sciences	Analyses and explains how and why the physical features and adaptations assist the survival of living things in their environment, providing detailed examples.	Analyses how physical features and adaptations help living things function in their environment, providing examples.	Describes some physical features and adaptations that help living things function in their environment.	Lists simple examples of the physical features of a living thing.
	Science as a Human Endeavour	Identifies that life produces problems that scientists try to solve. Explains, making reference to significant historical and cultural contributions, and provides examples from Science Understanding, such as justifying planning gardens using native plants.	Identifies that life produces problems that scientists try to solve. Explains and provides examples from Science Understanding, such as planning gardens using native plants.	Identifies that life produces problems that scientists try to solve. Provides examples from Science Understanding, such as planning gardens using native plants.	Identifies, in simple ways, that scientists solve problems.
	Science Inquiry Skills	Comprehensively communicates ideas, explanations and processes using scientific language and representations in a variety of ways.	Clearly communicates ideas, explanations and processes using scientific representations in a variety of ways.	Communicates ideas, explanations and processes using scientific representations in a variety of ways.	With guidance, communicates simple ideas and findings.

Relevant Year 6 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Interpreting	Compares and analyses information and ideas across a range of text types to explain literal and implied meaning, in detail.	Compares and analyses information across a range of text types to explain literal and implied meaning.	Compares and analyses information in different texts, explaining literal and implied meaning.	Explains literal and implied meaning across different texts.
	Text structure	Creates detailed written, digital and multimodal texts, effectively elaborating on key ideas, and experiments with text structures in innovative ways appropriate to a range of purposes and audiences.	Creates detailed written, digital and multimodal texts, elaborating on key ideas, and experiments with text structures appropriate to a range of purposes and audiences.	Creates detailed written, digital and multimodal texts, elaborating on key ideas for a range of purposes and audiences.	Creates written, digital and multimodal texts, elaborating on some ideas for familiar purposes and audiences.
	Language features	Makes sophisticated vocabulary choices and selects a range of sentence types, effectively enhancing cohesion and structure in their writing.	Makes considered and effective vocabulary choices and uses a range of sentence types to enhance cohesion and structure in their writing.	Makes considered vocabulary choices and uses complex sentences to enhance cohesion and structure in their writing.	Uses familiar vocabulary, attempting cohesion through varied sentence structures in their writing.
HASS	Questioning and Researching	Locates and collects relevant, detailed information and/or data using primary and/or secondary sources.	Locates and collects relevant information and/or data using primary and/or secondary sources.	Locates and collects information and/or data from primary and/or secondary sources.	Uses provided sources to locate and collect information and/or data which may be irrelevant.
	Questioning and Researching	Independently records and organises information and/or data using a variety of appropriate methods.	Records and organises information and/or data using a variety of appropriate methods.	Records and organises information and/or data using a variety of methods.	Records information and/or data using simple methods.
	Analysing	Interprets information and/or data to identify cause and effect, and make relevant and detailed connections.	Interprets information and/or data to identify cause and effect, and make relevant connections.	Interprets information and/or data to identify cause and/or effect, and make connections.	Attempts to interpret information and/or data in order to make a simple connection.
	Evaluating	Draws a detailed conclusion based on relevant and accurate evidence from information and/or data.	Draws a conclusion based on relevant and accurate evidence from information and/or data.	Draws a conclusion based on evidence from information and/or data.	States a simple conclusion based on personal opinions.
Technologies	Collecting, managing and analysing data	Collects, logically sorts and accurately interprets and visually presents with clarity different types of data using software to accurately manipulate data for a range of purposes.	Collects, logically sorts and accurately interprets and visually presents different types of data using software to manipulate data for a range of purposes.	Collects, sorts, interprets and visually presents different types of data using software to manipulate data for a range of purposes.	Collects and sorts but incorrectly interprets some data from familiar sources. Visually presents some data, but it may not suit the purpose.
	Digital Implementation	Manages, creates and communicates relevant and detailed information for online collaborative projects, using agreed social, ethical and technical protocols.	Manages, creates and communicates relevant information for online collaborative projects, using agreed social, ethical and technical protocols.	Manages, creates and communicates information for online collaborative projects, using agreed social, ethical and technical protocols.	Manages, creates and communicates incorrect and/or irrelevant information for online collaborative projects, using some agreed social, ethical and/or technical protocols.
	Investigating and defining	Defines a problem with clarity, identifying suitably available resources, and creates a set of clearly detailed sequenced steps, to assist in user decision-making.	Defines a problem with clarity, identifying available resources, and creates a set of clear sequenced steps, to assist in user decision-making.	Defines a problem, identifying available resources, and creates a set of sequenced steps, to assist in user decision-making.	States a problem, listing available resources and creates a set of simple sequenced steps, to assist in user decision-making.
	Designing	Develops and explains alternative solutions by consistently designing, modifying, representing and following, both diagrammatically and in written text, using a range of relevant appropriate technical terms, technologies and appropriate techniques.	Develops and explains alternative solutions by designing, modifying, representing and following, both diagrammatically and in written text, using a range of relevant appropriate technical terms, technologies and techniques.	Develops alternative solutions by designing, modifying, representing and following, both diagrammatically and in written text, using a range of appropriate technical terms, technologies and techniques.	Designs and follows both diagrams, and written text; however, only partially develops alternative solutions using familiar techniques, appropriate technical terms and/or technology.
Science	Biological sciences	Provides detailed explanations and predictions about the effects of environmental changes on the growth and survival of individual living things, giving specific examples.	Explains and predicts the effects of environmental changes on the growth and survival of individual living things, giving specific examples.	Describes and predicts the effect of environmental changes on individual living things.	Identifies that environmental changes can affect individual living things.
	Science as a Human Endeavour	Explains, using examples, how science assists in solving problems and informing decisions about the environment, natural events and forms of energy. Identifies significant historical or cultural contributions and relates these to the impact on their own life.	Explains, using examples, how science assists in solving problems and informing decisions about the environment, natural events and forms of energy. Identifies significant historical or cultural contributions.	Explains how science assists in solving problems and informing decisions about the environment, natural events and forms of energy. Identifies significant historical or cultural contributions.	Requires guidance to identify how science assists in solving problems about the environment, natural events and forms of energy.
	Science Inquiry Skills	Uses a variety of ways to clearly represent and communicate complex ideas, scientific knowledge, methods and findings.	Uses a variety of ways to clearly represent and communicate detailed ideas, methods and findings.	Uses a variety of ways to represent and communicate ideas, methods and findings.	Uses simple ways to represent and communicate ideas, methods and findings.

Relevant Year 7 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A Excellent achievement	B High achievement	C Satisfactory achievement	D Limited achievement
English	Use of evidence	Justifies responses to a text by drawing on relevant specific examples, showing that texts are constructed to promote particular viewpoints, where relevant.	Explains how texts reflect different viewpoints, and provides specific details from texts to support responses.	Selects specific details from texts to develop their own response, and to show that texts reflect different viewpoints.	Refers broadly to aspects of texts to support ideas.
	Text structure	Creates an engaging and well-structured text, such as a narrative, that presents ideas with an effective orientation, well-developed characters, an appropriate conflict and logical resolution.	Creates an engaging and structured text with clear purpose and audience, such as a narrative that includes an interesting introduction, a clear storyline, including a conflict, resulting in an appropriate resolution.	Creates a structured and coherent text for a particular purpose and audience; for example, a narrative with a clear introduction, conflict and resolution.	Creates a simple text which has a sense of structure and purpose.
	Text structure	Develops a convincing persuasive argument, with each point well developed, closely tied to the topic and supported with appropriate evidence.	Constructs a cohesive persuasive argument, using specific details and examples to support each point.	Presents a simple persuasive argument that states a position in relation to the topic and makes some points supported with examples.	Presents a few simple, relevant points for both sides of an argument, drawing mostly on personal opinion and experience.
HASS	Questioning and Researching	Locates relevant and detailed information and/or data from a range of appropriate sources and selects the best methods to record the information and/or data.	Locates relevant information and/or data from a range of appropriate sources and uses a variety of methods to record the information and/or data.	Locates information and/or data from a range of sources and uses a variety of methods to record the information and/or data.	Locates and copies information and/or data from a narrow range of sources using a provided format.
	Analysing	Interprets information and/or data to describe, in detail, key relationships and alternative perspectives.	Interprets information and/or data to describe relationships and alternative perspectives.	Interprets information and/or data to identify simple relationships and alternative perspectives.	Identifies some simple patterns from information and/or data.
	Analysing	Selects and consistently applies relevant subject-specific skills and concepts in familiar and new situations.	Selects and applies relevant subject-specific skills and concepts in familiar and new situations.	Applies subject-specific skills and concepts in familiar and new situations.	Applies some subject-specific skills in familiar situations.
	Evaluating	Evaluates information and/or data to draw a comprehensive conclusion, make comparisons and support discussions, using evidence.	Evaluates information and/or data to draw a conclusion, make comparisons and support discussions, using evidence.	Uses information and/or data to draw a simple conclusion, make limited comparisons and support discussions, using some evidence.	States a simple conclusion based on limited evidence.
Technologies	Collecting, managing and analysing data	Creates and clearly presents information using relevant software, and creates data to effectively display objects and/or events.	Creates information using relevant software, and creates data to effectively display objects and/or events.	Creates information using relevant software, and creates data to display objects and/or events.	Attempts to create information using familiar software, and creates data to display objects and/or events.
	Digital Implementation	Works collaboratively online to comprehensively create and communicate information, with consideration of a range of relevant social contexts.	Works collaboratively online to create and communicate information, with consideration of relevant social contexts.	Works collaboratively online to create and communicate information, with consideration of social contexts.	Works collaboratively online while attempting to create and communicate information, with minimal consideration of familiar social contexts.
	Investigating and defining	Describes constraints and lists components/resources to consider when developing solutions.	Identifies constraints and lists components/resources to consider when developing solutions.	Identifies constraints and considers components/resources to develop solutions.	Lists some familiar components and/or resources to develop solutions.
	Designing	Uses a wide range of techniques, appropriate technical terms and technologies to design, develop, review and clearly communicate comprehensive design ideas, detailed plans and processes.	Uses a range of techniques, appropriate technical terms and technologies to design, develop, review and clearly communicate design ideas, detailed plans and processes.	Uses a range of techniques, appropriate technical terms and technologies to design, develop, review and communicate design ideas, plans and processes.	Uses a few techniques, technical terms and technologies to design, communicate, develop and/or review brief design ideas, plans and/or processes.
Science	Biological sciences	Classifies unfamiliar organisms using observable similarities and differences, constructing and applying varied classification keys.	Classifies organisms using observable similarities and differences, constructing and applying classification keys.	Classifies organisms using observable similarities and differences and applying simple classification keys.	Makes statements or labels categories based on observable differences.
	Biological sciences	Makes predictions about and explains the effect of environmental change on the entire food web or community.	Makes predictions about and explains the effect of environmental change on populations within the food web.	Makes predictions about the effects of environmental change on directly-connected organisms within a food web.	Identifies that an environmental change has happened.
	Science Inquiry Skills	Comprehensively communicates their ideas, methods and findings in detail using scientific language and appropriate representations.	Communicates their ideas, methods and findings in detail using scientific language and appropriate representations.	Communicates their ideas, methods and findings using some scientific language and appropriate representations.	Communicates their ideas, methods and findings using everyday language and simple representations. Responses are often incomplete or irrelevant.

Relevant Year 8 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Use of evidence	Integrates relevant examples and details from a text to justify own interpretations of the events, situations and people represented.	Uses evidence to draw inferences about the events, situations and people represented in a text.	Selects evidence from a text to show how events, situations and people can be represented.	Identifies simple examples from a text to illustrate ideas.
	Text structure	Creates an engaging text that accurately replicates or manipulates the language and style of other texts for a particular purpose.	Creates a text that replicates or manipulates some aspects of the language and/or style of other texts for a particular purpose.	Creates a text by combining ideas, images and language features from other texts to express ideas.	Creates a text that presents simple ideas based on familiar plots or styles of popular texts.
	Text structure	Constructs a clearly structured, logical text that maintains focus on the question or topic.	Constructs a clear text, making relevant points that address the question or topic.	Constructs a clear, simple text, using a formulaic structure.	Constructs a simple response, adhering to some elements of a formulaic text structure.
HASS	Questioning and Researching	Locates relevant and detailed information and/or data from a range of appropriate sources and selects the best methods to record the information and/or data.	Locates relevant information and/or data from a range of appropriate sources and uses a variety of methods to record the information and/or data.	Locates information and/or data from a range of sources and uses a variety of methods to record the information and/or data.	Locates and copies information and/or data from a narrow range of sources and uses a provided format.
	Analysing	Interprets information and/or data to describe, in detail, key relationships and alternative perspectives.	Interprets information and/or data to describe relationships and alternative perspectives and new situations.	Interprets information and/or data to identify simple relationships and alternative perspectives.	Identifies some simple patterns from information and/or data.
	Analysing	Selects and consistently applies relevant subject-specific skills and concepts in familiar and new situations.	Selects and applies relevant subject-specific skills and concepts in familiar and new situations.	Applies subject-specific skills and concepts in familiar and new situations.	Applies some subject-specific skills in familiar situations.
	Evaluating	Evaluates information and/or data to draw a comprehensive conclusion, make comparisons and support discussions, using evidence.	Evaluates information and/or data to draw a conclusion, make comparisons and support discussions, using evidence.	Uses information and/or data to draw a simple conclusion, make limited comparisons and support discussions, using some evidence.	States a simple conclusion based on limited evidence.
Technologies	Collecting, managing and analysing data	Uses a range of software to clearly create information; uses structured data to correctly model objects or events and to evaluate visualise data using appropriate and effective criteria.	Uses a range of software to clearly create information; uses structured data to model objects or events and evaluate and visualise data using appropriate criteria.	Uses a range of software to create information; uses structured data to model objects or events and to evaluate and visualise data.	Presents an incomplete evaluation of data, using software and provides minimal information.
	Digital Implementation	Works collaboratively with efficiency online to effectively create and communicate relevant interactive ideas with consideration for appropriate social contexts.	Works collaboratively online to effectively create and communicate interactive ideas with consideration for appropriate social contexts.	Works collaboratively online to create and communicate interactive ideas with consideration for social contexts.	Creates and communicates interactive ideas online; however, makes inappropriate use of social contexts.
	Investigating and defining	Investigates and comprehensively describes a given need or opportunity for a specific purpose.	Investigates and describes a given need or opportunity for a specific purpose.	Investigates a given need or opportunity for a specific purpose.	Outlines a given need or opportunity for a specific purpose.
	Designing	Uses a range of appropriate technical terms and technology to design, develop and evaluate a variety of alternative solutions that are communicated in a comprehensive manner.	Uses a range of appropriate technical terms and technology to design, develop, evaluate and communicate a variety of alternative solutions.	Uses appropriate technical terms and technology to design, develop, evaluate and communicate alternative solutions.	Designs and communicates simple alternative solutions, using limited technical terms and technology.
Science	Science as a Human Endeavour	Explains the importance of collaboration in the development of a solution for real-life problems, showing the importance of gathering evidence to support the scientific process.	Explains the importance of evidence and collaboration in the development of scientific ideas using real-life contexts, illustrating with examples.	Explains the importance of evidence and collaboration in the development of scientific ideas.	Identifies scientific ideas.
	Science Inquiry Skills	Clearly presents data in a range of representations, explains patterns and trends using collected data and relevant scientific concepts to justify conclusions.	Presents data in a range of representations, describes patterns and trends using collected data to justify conclusions.	Presents data using simple representations to identify patterns and trends which are used to draw conclusions.	Presents some data and draws general conclusions.
	Science Inquiry Skills	Comprehensively communicates information and concepts using appropriate scientific language and detailed representations.	Communicates information and concepts generally using appropriate scientific language and representations with some detail.	Communicates information and concepts without detail, using some scientific language and representations.	Communicates information using everyday language and simple representations. Responses are often incomplete.

Relevant Year 9 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Text structure	Develops and supports points through incorporating appropriate evidence for example, quotes and examples, and clearly explains its significance.	Incorporates relevant evidence to support points, with a general explanation of its significance.	Includes evidence to support points and provides some explanation of its significance.	Makes generalisations without providing supporting evidence.
	Text structure	Manipulates text structures to enhance communication, experimenting with unconventional choices to engage or influence a reader.	Uses appropriate text structures, incorporating elements from other text types, where relevant, to engage a reader.	Uses appropriate text structures to communicate ideas clearly to a reader.	Structures texts logically to communicate with the readers.
	Language features	Makes effective language choices and uses literary terminology appropriately.	Makes appropriate language choices and integrates literary terms correctly.	Makes conventional language choices and uses familiar literary terms.	Uses mostly simple language and some colloquial expressions that may be inappropriate for the task.
HASS	Questioning and Researching	Constructs, selects and evaluates a wide range of open, relevant, complex questions and hypotheses involving cause and effect, patterns and trends, and different perspectives.	Constructs and selects a range of open, relevant questions and hypotheses involving cause and effect, patterns and trends, and different perspectives.	Constructs a range of questions and hypotheses involving cause and effect, patterns and trends.	Constructs a narrow range of questions with a tenuous connection to the analysis required.
	Analysing	Analyses information and/or data in a variety of formats to explain, in detail, cause and effect relationships, make comparisons, evaluate trends and changes over time, and explain alternative perspectives.	Analyses information and/or data in a variety of formats to describe cause and effect relationships, make comparisons, explain trends and changes over time, and describe alternative perspectives.	Analyses information and/or data in a variety of formats to identify cause and effect relationships, describe trends and changes over time, and identify alternative perspectives.	Analyses information and/or data to identify simple trends or patterns, and sequences events.
	Analysing	Selects and accurately applies subject-specific skills and concepts in familiar and new situations.	Applies subject-specific skills and concepts in familiar and new situations.	Applies some subject-specific skills in familiar and new situations.	Uses minimal subject-specific skills in familiar situations.
	Evaluating	Draws a comprehensive conclusion and applies a range of relevant evidence.	Draws a conclusion and applies a range of relevant evidence.	Draws a conclusion and applies some evidence.	Makes broad, unsubstantiated statements.
	Communicating and Reflecting	Accurately selects and uses a wide range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Accurately selects and uses a range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Uses a range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Uses simple formats to communicate findings.
Technologies	Digital implementation	Creates and uses well-planned interactive solutions for sharing ideas and information online, relevant to user requirements, and considering social contexts.	Creates and uses interactive solutions for sharing ideas and information online, relevant to user requirements, and considering social contexts.	Creates and uses interactive solutions for sharing ideas and information online, taking into account social contexts.	Creates incomplete interactive solutions for sharing ideas and/or information online.
	Designing	Consistently applies detailed design thinking, creativity and enterprise skills.	Applies detailed design thinking, creativity and enterprise skills.	Applies design thinking, creativity and enterprise skills.	Applies some design thinking, creativity or enterprise skills, although ideas may be unclear.
	Producing and implementing	Consistently selects, safely implements, tests with modifications (when necessary), using a range of appropriate technologies and processes, to make solutions.	Selects, safely implements, tests and uses a range of appropriate technologies and processes, to make solutions.	Selects, safely implements, tests and uses appropriate technologies and processes.	Selects and implements some appropriate technologies to make simple solutions.
	Evaluating	Provides a comprehensive evaluation, justifying reasons for design processes and outcomes, against student-developed criteria; using a range of relevant examples.	Provides a detailed evaluation of design processes and outcomes against student-developed criteria; using relevant examples.	Evaluates design processes and outcomes against student-developed criteria.	Provides a simple and brief evaluation of design processes and solutions, using student-developed criteria.
Science	Biological sciences	Analyses in detail how biological systems function and respond to external changes, and describes how different biological systems coordinate.	Analyses how biological systems function and respond to external changes and compares the functions of different biological systems.	Analyses how biological systems function and respond to external changes, describing them in general terms.	Identifies some of the functions of a biological system.
	Biological sciences	Predicts and explains, in terms of flow of energy and matter, the possible consequences of changes to an ecosystem.	Predicts the consequences of a change in the population of a particular organism in terms of flow of energy and matter within an ecosystem.	Describes how parts of an ecosystem are interdependent, and how energy and matter move through an ecosystem.	Identifies that plants and animals depend on each other.
	Science Inquiry Skills	Analyses issues and presents well-developed arguments, supported by scientific evidence. Uses clear and detailed scientific models and appropriate language and representations when communicating their ideas.	Presents well-developed arguments, supported by scientific evidence. Uses scientific models and appropriate language and representations when communicating their ideas.	Presents general arguments or statements supported by scientific evidence. Uses simple scientific models and appropriate language and representations when communicating their ideas.	Presents statements of ideas with limited development of an argument or use of evidence. Uses everyday language in simple, brief descriptions.

Relevant Year 10 Assessment Pointers

Derived from Judging Standards developed by Western Australian Schools Curriculum and Standards Authority

SCSA Assessment Pointers		A	B	C	D
		Excellent achievement	High achievement	Satisfactory achievement	Limited achievement
English	Text structure	Writes clearly and concisely, communicating with the reader in an engaging manner, drawing on a variety of language features, stylistic devices, text structures and images which complement and enhance the text.	Writes in an engaging manner, demonstrating control of some language features, stylistic devices, text structures and images to communicate effectively with the reader.	Communicates clearly, experimenting with language features, stylistic devices, text structures and images, where appropriate.	Creates texts which draw on simple and familiar language features, stylistic devices, text structures and images.
	Text structure	Draws on their wider reading to create a text which uses and manipulates a variety of relevant structural devices for impact and to influence the reader.	Selects and manipulates some appropriate structural devices to communicate effectively with the audience; for example, by separating a single sentence from the body of a text for emphasis.	Creates a text which communicates viewpoints, attitudes and perspectives through the development of a cohesive and logical persuasive, informative or imaginative text.	Writes with a general sense of structure; for example, including an introduction, conflict and resolution in a narrative text, but which may not follow a logical internal sequence.
	Language features	Writes with clarity and precision, using a variety of figurative, technical and literal language to communicate with the reader in an engaging way which is appropriate to the purpose, context and audience of the text.	Uses a variety of language features to ensure accuracy in communication with the reader, combining figurative, technical and literal language, where appropriate.	Selects language features to achieve precision and stylistic effect when creating a text.	Uses language features which communicate with the reader but which may not reflect nuance or depth of meaning.
HASS	Questioning and Researching	Constructs, selects and evaluates a wide range of open, relevant, complex questions and hypotheses involving cause and effect, patterns and trends, and different perspectives.	Constructs and selects a range of open, relevant questions and hypotheses involving cause and effect, patterns and trends, and different perspectives.	Constructs a range of questions and hypotheses involving cause and effect, patterns and trends.	Constructs a narrow range of questions with a tenuous connection to the analysis required.
	Questioning and Researching	Locates, compares, selects and records relevant and detailed information and/or data from an extensive range of primary and/or secondary sources that reflect the requirements of a task.	Locates, selects and records relevant information and/or data from a range of primary and/or secondary sources that reflect the requirements of a task.	Locates, selects and records information and/or data from a range of primary and/or secondary sources that reflect the requirements of a task.	Records information and/or data from a limited range of sources with little connection to a task.
	Analysing	Analyses information and/or data in a variety of formats to explain, in detail, cause and effect relationships, make comparisons, evaluate trends and changes over time, and explain alternative perspectives.	Analyses information and/or data in a variety of formats to describe cause and effect relationships, make comparisons, explain trends and changes over time, and describe alternative perspectives.	Analyses information and/or data in a variety of formats to identify cause and effect relationships, describe trends and changes over time, and identify alternative perspectives.	Analyses information and/or data to identify simple trends or patterns and sequences events.
	Evaluating	Draws a comprehensive conclusion and applies a range of relevant evidence.	Draws a conclusion and applies a range of relevant evidence.	Draws a conclusion and applies some evidence.	Makes broad, unsubstantiated statements.
	Communicating and Reflecting	Accurately selects and uses a wide range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Accurately selects and uses a range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Uses a range of appropriate formats to communicate findings, based on their effectiveness to suit audience and purpose.	Uses simple formats to communicate findings.
Technologies	Digital implementation	Consistently creates and uses interactive solutions for sharing ideas and information online, relevant and engaging for the user, and taking into account appropriate social contexts and legal responsibilities.	Creates and uses interactive solutions for sharing ideas and information online, relevant to the user, and taking into account social contexts and legal responsibilities.	Creates interactive solutions for sharing ideas and information online, taking into account social contexts and legal responsibilities.	Creates incomplete and/or incorrect interactive solutions for sharing ideas and information online.
	Designing	Applies complex design thinking, creativity, enterprise skills and innovation to develop, modify and communicate design ideas of increasing sophistication.	Applies detailed design thinking, creativity, enterprise skills and innovation to develop, modify and communicate design ideas of increasing sophistication.	Applies design thinking, creativity, enterprise skills and innovation to develop, modify and communicate design ideas of increasing sophistication.	Provides simple ideas for design, creativity, enterprise skills or innovation in an attempt to develop and communicate design ideas.
	Producing and implementing	Selects, justifies, and safely implements and tests appropriate technologies and processes, with modifications to make complex solutions.	Selects, justifies and safely implements and tests appropriate technologies and processes, with modifications to make solutions.	Selects, justifies and safely implements and tests appropriate technologies and processes to make solutions.	Selects and safely implements some appropriate technologies and processes to make simple solutions.
	Evaluating	Provides a comprehensive analysis of design processes and justifies solutions against student-developed criteria, using a range of relevant examples.	Provides a detailed analysis of design processes and explains solutions against student-developed criteria, why relevant examples.	Provides a relevant analysis of design processes and solutions against student-developed criteria.	Provides a simple and brief analysis of design processes and solutions, using student-developed criteria.
Science	Biological Sciences	Explains evolution in a population, correctly outlining the influences of heredity, describing the sources of variation which support survival and lead to natural selection and changes in the gene pool.	Explains evolution in a population, describing the influences of variation which support survival and lead to natural selection.	Explains the influences of competition and variation on natural selection and evolution.	Identifies that life has changed over time.
	Science Inquiry Skills	Accurately interprets data and diagrams and describes complex relationships between data and concepts.	Interprets data and diagrams correctly and describes relationships between data and concepts.	Interprets data and diagrams correctly and describes simple relationships between data and concepts.	Interprets some data and diagrams with misconceptions and describes some relationships in data using simple concepts.
	Science Inquiry Skills	Analyses issues and presents well-developed arguments, supported by detailed scientific evidence.	Presents well-developed arguments supported by scientific evidence.	Presents general arguments or statements supported by some scientific evidence.	Presents statements of ideas with limited use of evidence.
	Science Inquiry Skills	Applies scientific concepts and models to accurately explain and link complex processes in detail, using scientific terminology, supporting examples and diagrams where appropriate.	Applies scientific concepts and models to accurately explain and link simple processes using scientific terminology, supporting examples and diagrams where appropriate.	Applies scientific concepts and models to describe some systems and processes, using some scientific terminology, supporting examples and diagrams where appropriate.	Inconsistently applies scientific concepts and models to describe systems and processes using everyday language and including some irrelevant or incorrect information.

Additional Information



Websites:

For more resources and information visit - www.sharkbay.org/restoration

Western Australian Threatened Animals - <https://www.dbca.wa.gov.au/wildlife-and-ecosystems/animals/list-threatened-and-priority-fauna>

Western Australian Threatened Plants - <https://www.dbca.wa.gov.au/wildlife-and-ecosystems/plants/list-threatened-and-priority-flora>

World Animal Protection - <https://www.worldanimalprotection.org.au>

Kids Guide to Threatened Species: 9 Ways You Can Help - <https://www.awe.gov.au/environment/biodiversity/threatened/publications/factsheet-green-kids-guide-threatened-species-9-ways>

'Species Directory' World Wildlife Fund https://www.worldwildlife.org/species/directory?direction=desc&sort=extinction_status

Videos:

[Chuditch](https://www.youtube.com/watch?v=ANXCEGcTzig) - <https://www.youtube.com/watch?v=ANXCEGcTzig>

Shark Bay bandicoot release - <https://www.youtube.com/watch?v=TMVjnFrrlQw>

Shark Bay Bandicoots - <https://www.youtube.com/watch?v=mk10Jk2zmsl>

Banded Hare Wallaby - <https://www.youtube.com/watch?v=-OSM8tGhab4>

Endangered Species in Australia' Swirk Online Education YouTube February 26, 2012 - https://www.youtube.com/watch?v=Osr_xJWEVOM

Returning wallabies to Dirk Hartog Island - https://www.youtube.com/watch?v=iJyd_TuLKaY&t=2s

Dibblers released onto Dirk Hartog Island National Park - <https://www.youtube.com/watch?v=8vLsHG8xLgU>

Returning greater stick-nest rats to Dirk Hartog Island - <https://www.youtube.com/watch?v=gOf7Vt8u5Tw&list=PLwKOFN5-6PcQPw9iPMtPp7TGxbULdJtXc&index=33>

Feral cat eradication - <https://www.youtube.com/watch?v=vfxJEOOF47g&list=PLwKOFN5-6PcQPw9iPMtPp7TGxbULdJtXc&index=102&t=13s>

Mulgaras returned to Dirk Hartog Island as modern science, traditional culture fight 'tide of extinctions' - ABC News - <https://www.abc.net.au/news/2023-08-19/tiny-marsupials-mulgaras-relocated-to-dirk-hartog-island/102673550>

Loggerhead turtles [Landscape, Winter 2023, Vol 38, Number 4, Tagging turtles on a remote and historic island beach \(youtube.com\)](#)

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- WA Museum
- Global Digital Citizen Foundation
- Wabisabi Learning



RETURN TO 1616

DIRK HARTOG ISLAND NATIONAL PARK



Department of **Biodiversity,
Conservation and Attractions**

Gorgon Barrow Island
Net Conservation Benefits Fund
www.gorgon-ncb.org.au



Bamford
Consulting Ecologists



Micheal Bryant

Return to 1616 Construct a Food Web



Dirk Hartog Island Food Web

A food web is used to show how organisms interact with each other, and the flow of energy through an ecosystem. Research some examples of food chains and food webs (Eg. using a Google image search). Using the Wild Challenge card set, see if you can create your own food web for Dirk Hartog Island. Use arrows to show the flow of energy from one organism to another.

Use the following clues to help:

Discussion Questions:

1. Western Grasswren (Insectivore and Seed Eater) - How does the Western Grasswren's dual diet of invertebrates and seeds contribute to its survival? What role does it play in nutrient cycling? Can you think of specific invertebrates that the Western Grasswren might prey upon, and how this interaction affects both the grasswren and its prey?

2. Greater Stick-nest Rat (Herbivore) - How does the Greater Stick-nest Rat shape the island's vegetation by feeding on succulent and semi-succulent shrubs? What impact does this have on the ecosystem? What other animals might benefit from the habitat created by the stick-nest rat's nest-building behavior?



Western Grasswren (Insectivore and Seed Eater):

- Consumes a variety of invertebrates (termites, bugs, beetles, ants, centipedes, grasshoppers, caterpillars, spiders).
- Also feeds on seeds of grasses and various dicotyledons, as well as small berries.



Greater Stick-nest Rat (Herbivore):

- Feeds on leaves and shoots of succulent and semi-succulent shrubs.
- Plays a role in the ecosystem by shaping vegetation and creating habitat.



Banded Hare-wallaby (Browsing Herbivore):

- Broad and varied diet, including grasses, shrubs, and other dicotyledonous plants.
- Prefers species like *Acacia ligulata*, *A. ramulosa*, *A. sclerosperma*, and *A. tetragonophylla*.



Rufous Hare-wallaby (Flexible Herbivore):

- Consumes perennial grasses, grass seeds, and seeds of sedges.
- May also eat insects during dry periods.
- Adapts to available food sources.



Shark Bay Mouse (Vegetarian / Omnivore):

- Stomach and scat content includes plant materials (petals, flowers, leaf fragments) and invertebrate fragments (spiders).
- Plays a role in nutrient cycling.



Mulgara (Generalist Predator):

- Eats a wide range of prey items that fit in its mouth.
- Includes invertebrates and small vertebrate animals.
- Influences prey populations.



Dibbler (Generalist Omnivore):

- Consumes arthropods (75%) and plant matter (25%).
- Eats flowers, invertebrates, berries, and succulents.

Return to 1616

Construct a more complex Food Web

Dirk Hartog Island Food Web

A food web is used to show how organisms interact with each other, and the flow of energy throughout the system in an ecosystem. Using the Wild Challenge card set, see if you can create your own food web for Dirk Hartog Island. Use arrows to show the flow of energy from one organism to another.

Use the following clues to help!



Berries:

1. These juicy fruits are an essential food source for various animals on the island.
2. Consider which species might rely on berries for energy.



Bushes:

1. Bushes provide shelter, nesting sites, and food for both herbivores and insectivores.
2. Think about which animals interact with the bushy vegetation.



Flowers:

1. Flowers attract pollinators like bees, butterflies, and birds.
2. Explore the connections between flowering plants and their visitors.



Fungi:

1. Some mammals consume fungi and spread spores in their scats.
- Decomposers play a crucial role in nutrient cycling.
1. Consider how fungi break down organic matter and impact other organisms.



Grasses:

1. Spinifex and other grasses are producers, forming the base of the food web.
2. Grasses are important food for many herbivores and omnivores.



Invertebrates:

1. Insects, spiders, and other invertebrates are abundant on the island.
2. Explore predator-prey relationships involving these small creatures.



Seeds:

1. Seeds from various plants contribute to the diet of seed-eating animals.
2. Investigate which species rely on seeds for survival.



Small Vertebrate Animals:

1. These include small mammals, reptiles, frogs and birds.
- Some are insectivores and others are omnivores or herbivores.
1. Think about who preys on these vertebrates and how they fit into the web.



Succulent Shrubs:

1. Succulent shrubs store water and provide sustenance for herbivores.
2. Consider which animals feed on succulent leaves and stems.



Goald's Goanna:

1. A large monitor lizard that hunts smaller animals.
2. Explore its role as a predator in the ecosystem.



Brush-tailed Mulgara:

1. A nocturnal predator that feeds on small invertebrates (like insects) and occasionally small vertebrates.
2. Connects to other species as both predator and prey.



Banded Hare-wallaby:

1. A browsing herbivore that consumes grasses, shrubs, and other dicotyledonous plants.
2. Provides energy to predators in the ecosystem.



Boodie (Burrowing Bettong):

1. A herbivorous marsupial that feeds on grasses, seeds, and plant material.
2. Interacts with other herbivores and influences vegetation dynamics.



Chuditch (Western Quoll):

1. A carnivorous marsupial that preys on small mammals, birds, and insects.
2. Plays a role in controlling prey populations.



Desert Mouse:

1. An omnivorous species that consumes insects, seeds and other plant matter.
2. Consider where it sits in the food web.
- How would you describe its trophic level?



Dibbler:

1. An omnivore that primarily eats arthropods (insects, spiders) and also consumes plant matter.
2. Links to various parts of the food web.



Shark Bay Bandicoot:

1. A small marsupial that forages for insects, seeds and other plant material.
2. Influences vegetation structure and nutrient cycling.



Heath Mouse:

1. A herbivore that feeds on grasses and other vegetation.
2. Forms part of the primary consumer level.



Western Grasswren:

1. An insectivorous bird that gleans food from litter and sand.
2. Consumes invertebrates (like ants, beetles, spiders) and seeds.



Greater Stick-nest Rat:

1. Herbivorous, feeding on leaves and shoots of succulent and semi-succulent shrubs.
2. Shapes vegetation and provides habitat.



Woylie (Brush-tailed Bettong):

1. A nocturnal herbivore that eats grasses, seeds, and plant material.
2. Connects to other herbivores and influences plant communities.



Shark Bay Mouse:

1. A vegetarian omnivore that includes plant materials (petals, leaves) and invertebrate fragments (spiders) in its diet.
2. Plays a role in nutrient cycling.



Rufous Hare-wallaby:

1. A flexible herbivore that consumes perennial grasses, grass seeds, and seeds of sedges.
2. Adapts to available food sources.

Discussion Questions:

Let's explore some thought-provoking questions related to the fascinating species on Dirk Hartog Island:

1. Berries - Which animals might rely on berries for energy? How do these animals contribute to the overall ecosystem? How does the availability of berries impact the population dynamics of certain species?
2. Bushes - Consider the interactions between herbivores and insectivores with the bushy vegetation. How do these interactions affect the ecosystem? How do bushes provide essential resources (shelter, nesting sites, and food) for different animals?

Return to 1616 Food Web Clues - Existing Species



Dirk Hartog Island Food Web

A food web is used to show how organisms interact with each other, and the flow of energy throughout the system in an ecosystem. Using the Wild Challenge card set, see if you can create your own food web for Dirk Hartog Island using the animals that were already on the island. Use arrows to show the flow of energy from one organism to another. Use the following clues to help:



Sandhill Frog:

1. A burrowing amphibian that lives in sand hills.
2. Consider its role in the ecosystem and interactions with other species.



Loggerhead Turtle:

1. An endangered species that nests on the island's beaches.
2. Explore its position in the marine food web.



Golden Ghost Crab:

1. A scavenger that feeds on detritus and small organisms.
2. Connects to both terrestrial and marine ecosystems.



Gwardar (Western Brown Snake):

1. A venomous snake that preys on small mammals and reptiles.
2. Investigate its impact on prey populations.



Dirk Hartog Island Black and White Fairy-wren:

1. A small bird that forages for insects and seeds.
2. Consider its interactions with other birds and insects.



Knob-Tailed Gecko:

1. A nocturnal reptile that hunts insects.
2. Connects to the invertebrate population.



Dugong:

1. One of the world's only marine mammal herbivores.
2. Feeds on seagrass meadows in Shark Bay.



Barn Owl:

1. A nocturnal predator that hunts small mammals and birds.
2. Investigate its interaction with rodent populations.



Humpback Whale:

1. Migrates along the coast of Western Australia.
2. Consider its interactions with krill and other marine organisms.



Eastern Osprey:

1. A fish-eating bird of prey.
2. Connects to the marine food chain.



Manta Ray:

1. A filter-feeding ray that consumes plankton.
2. Investigate its role in nutrient cycling.



Feral Cat:

1. An introduced predator that impacts native wildlife.
2. Explore its interactions with small mammals and birds.



Western Bearded Dragon:

1. A lizard that feeds on insects and vegetation.
2. Connects to the terrestrial food web.



Western Spiny-Tailed Skink:

1. Another lizard species that plays a role in insect control.
2. Investigate its diet and habitat.



Whale Shark:

1. The largest fish in the world, feeding on plankton.
2. Consider its impact on the marine ecosystem.



Tiger Shark:

1. A top predator in the ocean.
2. Investigate its interactions with other marine species.



Indo-Pacific Bottlenose Dolphin:

1. A social marine mammal that hunts fish and squid.
2. Connects to the marine food chain.

Discussion Questions:

1. Why were feral cats removed from Dirk Hartog Island National Park as part of the Return to 1616 Ecological Restoration Project? How does this change your food web?
2. How might the presence of loggerhead turtles nesting on the island's beaches impact the terrestrial ecosystem?
3. The dugong is a herbivorous marine mammal that feeds on seagrass meadows. How does its diet influence the health of seagrass ecosystems, and what other species might benefit or be affected by its presence?


Feel free to explore these questions further during your food web discussions!

Return to 1616 Food Web Clues - Translocated Species




Dirk Hartog Island Food Web

A food web is used to show how organisms interact with each other, and the flow of energy throughout the system in an ecosystem. Using the Wild Challenge card set, see if you can create your own food web for Dirk Hartog Island. Use arrows to show the flow of energy from one organism to another. Use the following clues to help:




Brush-tailed Mulgara:

1. A nocturnal predator that feeds on small invertebrates (like insects) and occasionally small vertebrates.
2. Connects to other species as both predator and prey.



Banded Hare-wallaby:

1. A browsing herbivore that consumes grasses, shrubs, and other dicotyledonous plants.
2. Provides energy to predators in the ecosystem.




Boodie (Burrowing Bettong):

1. A herbivorous marsupial that feeds on grasses, seeds, and plant material.
2. Interacts with other herbivores and influences vegetation dynamics.




Chuditch (Western Quoll):

1. A carnivorous marsupial that preys on small mammals, birds, and insects.
2. Plays a role in controlling prey populations.



Desert Mouse:

1. An omnivorous species that consumes seeds, insects, and plant matter.
2. Connects to both plant-based and animal-based food sources.




Dibbler:

1. An omnivore that primarily eats arthropods (insects, spiders) and also consumes plant matter.
2. Links to various parts of the food web.




Shark Bay Bandicoot:

1. A small marsupial that forages for insects, seeds, and plant material.
2. Influences vegetation structure and nutrient cycling.




Heath Mouse:

1. A herbivore that feeds on grasses and other vegetation.
2. Forms part of the primary consumer level.




Western Grasswren:

1. An insectivorous bird that gleans food from litter and sand.
2. Consumes invertebrates (like ants, beetles, spiders) and seeds.




Greater Stick-nest Rat:

1. Herbivorous, feeding on leaves and shoots of succulent and semi-succulent shrubs.
2. Shapes vegetation and provides habitat.




Woylie (Brush-tailed Bettong):

1. A nocturnal herbivore that eats grasses, seeds, and plant material.
2. Connects to other herbivores and influences plant communities.



Shark Bay Mouse:

1. A vegetarian omnivore that includes plant materials (petals, leaves) and invertebrate fragments (spiders) in its diet.
2. Plays a role in nutrient cycling.



Rufous Hare-wallaby:

1. A flexible herbivore that consumes perennial grasses, grass seeds, and seeds of sedges.
2. Adapts to available food sources.

Discussion Questions:

Disease Impact:

1. What might happen if a species in this food web gets a disease? How would it affect other organisms?
2. Consider the cascading effects on energy flow and population dynamics.

Chuditch Translocation:

1. Why is the Chuditch (Western Quoll) the last animal to be translocated to Dirk Hartog Island National Park as part of the Return to 1616 Ecological Restoration Project?
2. Explore factors related to habitat suitability, ecological niches, and conservation priorities.

Return to 1616 Food Web Clues - Supplementary Cards



Dirk Hartog Island Food Web

A food web is used to show how organisms interact with each other, and the flow of energy throughout the system in an ecosystem. Using the original Wild Challenge card set to construct a food web for Dirk Hartog Island and then try adding the supplementary cards. Use arrows to show the flow of energy from one organism to another.

Use the following clues for the supplementary cards!



Berries:

1. These juicy fruits are an essential food source for various animals on the island.
2. Consider which species might rely on berries for energy.



Bushes:

1. Bushes provide shelter, nesting sites, and food for both herbivores and insectivores.
2. Think about which animals interact with the bushy vegetation.



Flowers:

1. Blooming flowers attract pollinators like bees, butterflies, and birds.
2. Explore the connections between flowering plants and their visitors.



Fungi:

1. Decomposers play a crucial role in nutrient cycling.
2. Consider how fungi break down organic matter and impact other organisms.



Grasses:

1. Grasses serve as primary producers, forming the base of the food web.
2. Connect herbivores (like kangaroos or wallabies) to grass consumption.



Invertebrates:

1. Insects, spiders, and other invertebrates are abundant on the island.
2. Explore predator-prey relationships involving these small creatures.



Seeds:

1. Seeds from various plants contribute to the diet of seed-eating animals.
2. Investigate which species rely on seeds for survival.



Small Vertebrate Animals:

1. These include small mammals, reptiles, and birds.
2. Think about who preys on these vertebrates and how they fit into the web.



Succulent Shrubs:

1. Succulents store water and provide sustenance for herbivores.
2. Consider which animals feed on succulent leaves and stems.



Gould's Goanna:

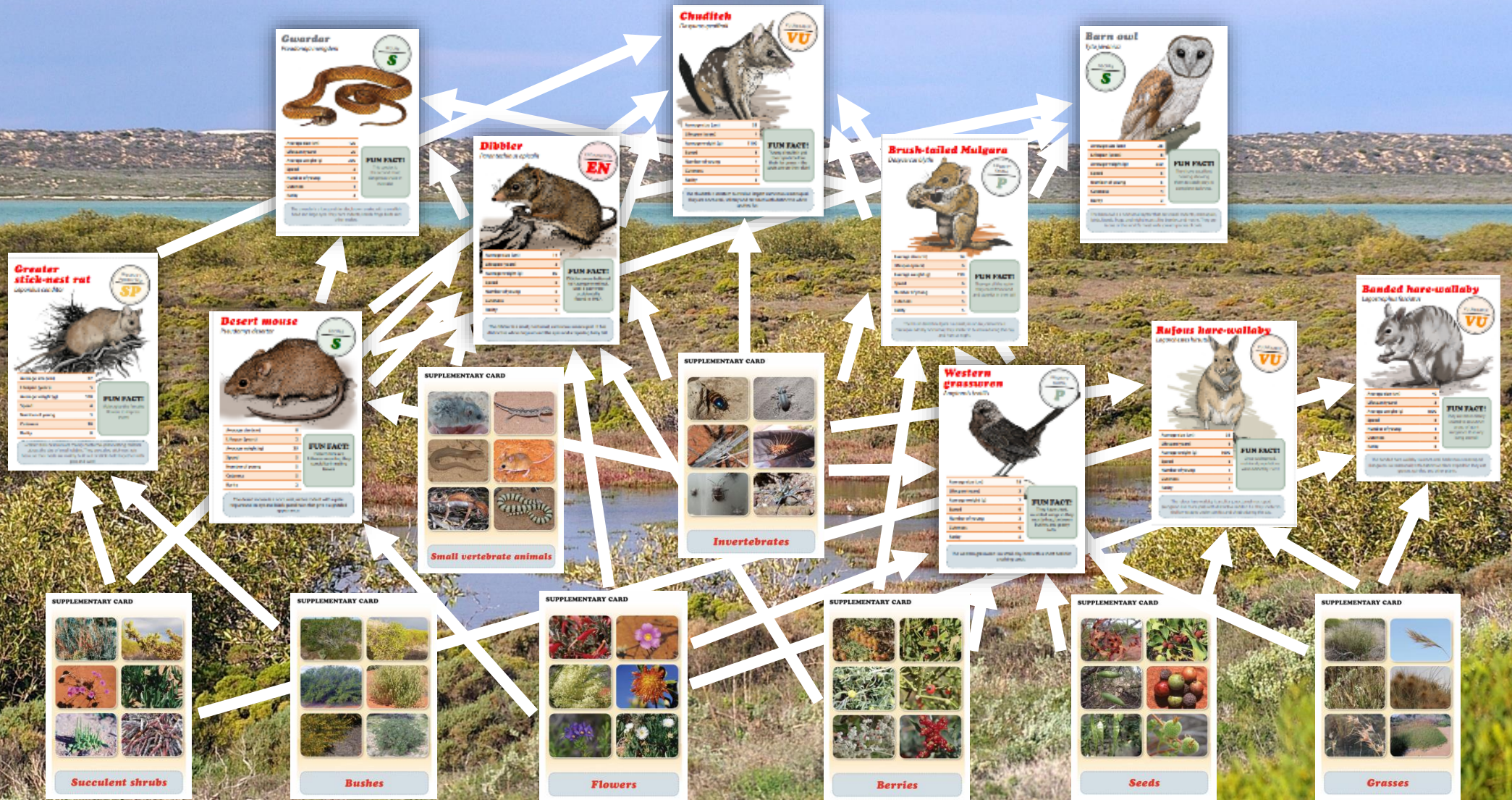
1. A large monitor lizard that hunts smaller animals.
2. Explore its role as a predator in the ecosystem.

Discussion Questions:

1. How do berries, flowers, and grasses interact with invertebrates? Consider pollination, seed dispersal, and herbivory.
2. What role do fungi play in the ecosystem? Think about decomposition, nutrient cycling, and symbiotic relationships.
3. How are small vertebrate animals connected to succulent shrubs and gould's goanna? Explore predator-prey dynamics and habitat dependencies.

Return to 1616 Example Food Web

Many food chains make up a food web. Conduct some research to learn more about food webs and how they represent energy flow. Can you use the *Return to 1616* playing cards to create a food web such as the example below? Can you create some different examples? Share and discuss your food webs with others. As an extension, you may like to find a way to represent other aspects such as how many individual plants and invertebrates are required to support a herbivore or carnivore. Cards can be printed from [here](#).



Return to 1616 More Wild Challenge Card Games



1. Wildlife Habitat Match:

Objective: Match the Wild Challenge Cards (plants) with the appropriate Animal Cards (animals) based on their ecological interactions.

How to Play:

- Shuffle the Wild Challenge Cards and Animal Cards separately.
- Participants take turns drawing one card from each deck.
- Explain how the chosen plant and animal interact (e.g., pollination, food source, shelter).
- The player with the most accurate matches wins.

2. Ecosystem Dominoes:

Objective: Create a chain of interconnected species using the Wild Challenge Cards.

How to Play:

- Each participant receives a set of Wild Challenge Cards.
- Start with a card (e.g., a berry plant) and place it face up.
- Players take turns adding cards that connect (e.g., an animal that feeds on the berries).
- The goal is to form a continuous chain of interactions.

3. Habitat Builders:

Objective: Collaboratively construct a balanced ecosystem using the Wild Challenge Cards.

How to Play:

- Divide participants into small groups.
- Each group receives a set of cards
- Players take turns placing cards to create a habitat.
- Discuss the ecological relationships as the habitat grows.

4. Animal Adaptations Snap:

Objective: Recognize animal adaptations using the Animal Cards.

How to Play:

- Shuffle the Animal Cards and deal them evenly among players.
- Participants take turns revealing their top card.
- If two animals have a clear ecological connection (e.g., predator-prey), shout "Snap!"
- The first to recognize the adaptation wins both cards.

5. Restoration Quest:

Objective: Collect specific combinations of Wild Challenge Cards to restore different island habitats.

How to Play:

- Create a list of restoration goals (e.g., "Coastal Dunes: 3 grasses + 2 succulent shrubs").
- Participants draw cards and try to fulfill the goals.
- The first to complete all restoration quests wins.

6. Animal Reintroduction Memory:

Objective: Match Animal Cards with their corresponding Wild Challenge Cards (habitats or food sources).

How to Play:

- Lay out all Animal Cards face down.
- Participants take turns flipping two cards.
- If they match (e.g., Shark Bay bandicoot with a specific plant), the player keeps the pair.
- The player with the most matches wins.

Return to 1616 Even More Wild Challenge Card Games



7. Eco-Explorer Quest:

Objective: Explore the island's ecosystems by collecting sets of Wild Challenge Cards.

How to Play:

- Shuffle the cards and deal five to each player.
- Participants take turns drawing a card from the deck or picking one from the discard pile.
- Collect sets (e.g., three that form a food chain).
- The first to complete three sets wins.

8. Habitat Snapshots:

Objective: Capture snapshots of different habitats using the Wild Challenge Cards.

How to Play:

- Divide participants into pairs.
- Each pair receives a set of cards representing a specific habitat (e.g., coastal dunes).
- Players take turns describing the habitat using their cards.
- The most creative and accurate description wins.

9. Species Survival Race:

Objective: Help native species survive by strategically using the Wild Challenge Cards.

How to Play:

- Create a track with spaces representing different habitats.
- Participants move their game pieces (representing animals) along the track.
- Draw cards to determine which habitat they encounter.
- Use the cards to adapt (e.g., find food, build shelter).
- The first animal to reach the finish line wins.

10. Eco-Puzzle Match:

Objective: Assemble ecological puzzles by combining Wild Challenge Cards.

How to Play:

- Shuffle the cards and distribute them.
- Participants work together to assemble complete puzzles (e.g., a grassland ecosystem).
- Discuss the interactions depicted in each puzzle.

11. Restoration Relay:

Objective: Collaborate to restore different island habitats using the Wild Challenge Cards.

How to Play:

- Divide participants into teams.
- Each team receives a set of cards representing a specific habitat.
- Relay-style, players take turns placing cards to build the habitat.
- Discuss the ecological roles of each card.
- The first team to complete their habitat wins.

12. Animal Adaptation Charades:

Objective: Act out animal adaptations using the Animal Cards.

How to Play:

- Shuffle the Animal Cards and draw one.
- Without speaking, act out the animal's adaptation (e.g., digging, climbing).
- Teammates guess the adaptation.
- Rotate roles and continue.

Return to 1616 Example Trophic Levels

Can you use the *Return to 1616* playing cards to represent trophic levels? Research trophic levels and select an appropriate method to create and display your example. Cards can be printed from [here](#). Identifying trophic levels can be quite challenging as some species have characteristics of more than one trophic level. Consider contacting an expert to help.

Tertiary Consumers

Secondary Consumers

Primary Consumers

Primary Producers

Sun

