# 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**

GOVERNMENT OF
WESTERN AUSTRALIA

DIRK HARTOG ISLAND
RETURN TO 1616

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

**Education Package**

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Department of **Biodiversity, Conservation and Attractions**
GOVERNMENT OF WESTERN AUSTRALIA

DIRK HARTOG ISLAND
RETURN TO 1616

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

# Dirk Hartog Island National Park
## Return to 1616

## 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*

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.

## 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.

## 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.

# Background Information

## 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.*

Photo: Richard Manning

## 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.

## 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 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.

*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.

## 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?



Turtle Bay - Sebastian Hartog

**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.
**Click here to begin**

**VR Ready**

www.sharkbay.org

# Return to 1616
# Virtual Tour

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

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Conservation and Attractions

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| ⊙ 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 |
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NATIONAL PARK
RETURN TO 161

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

Google ◯ 100%

Translocations b

**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.**

← Photo Sphere

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Parks and Wildlife

2D

Google 100% Report a problem

Camera: 61 m

**Google Earth Virtual Tour
Site: Welcome
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.**

← Photo Sphere

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You are here

Parks and Wildlife

2D

Camera: 9 m

Google ○ 100% Report a problem Images may be subject to copyright.

**Google Earth Virtual Tour**
**Site: Sheep, goats and weeds**
**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.**

← Photo Sphere

**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?**

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Parks and Wildlife

2D

Google  ○ 100%  Report a problem  Images may be subject to copyright.  Camera: 25 m

# 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

You are here

**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?**

Parks and Wildlife

2D

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

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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?**

🌾 Parks and Wildlife

2D

Google ◯ 100% Report a problem Images may be subject to copyright. Camera: 21 m

## 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

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Google   ○ 100%   Report a problem   Images may be subject to copyright.   Camera: 31 m

Parks and Wildlife   2D

**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.**

← Photo Sphere

**Google Earth Virtbal Tour**
**Site: Shark Bay bandicoots**
**URL: Click here**

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

You are here

**What questions does this raise for you?**

Parks and Wildlife

Google ○ 100% Report a problem Images may be subject to copyright. Camera: 10 m

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

Photo Sphere

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Parks and Wildlife

You are here

**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?**

Google  ◯ 100%  Report a problem  Images may be subject to copyright.  Camera: 25 m

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

← Photo Sphere

You are here

Parks and Wildlife

2D

Google   ◯ 100%   Report a problem   Images may be subject to copyright.   Camera: 35 m

**Google Earth Virtual Tour
Site: Western grasswrens
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

You are here

Parks and Wildlife

2D

Google  ◯ 100%  Report a problem  Images may be subject to copyright.  Camera: 15 m

**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?**

# Return to 1616
# Virtual Tour

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

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You are here

Parks and Wildlife

Google  ◯ 100%  Report a problem  Images may be subject to copyright.  Camera: 38 m

**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?**

# Virtual Tour

**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?**

# 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?

## 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!

# Knowledge Construction Project

## Ideas for research

Twelve mammal species and one bird species are being translocated onto Dirk Hartog Island. Many of these species are threatened with extinction and listed on the Australian Government's list of nationally threatened species. Select one of the animal species to research and use the Information Fluency inquiry method 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.

# Knowledge Construction Project

## 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.

How Information Fluency Leads to Rewarding Research for Learners – Wabisabi Learning

# Knowledge Construction Project

**? 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.

**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.**

**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 |

# Knowledge Construction Project

**Acquire**

This stage involves accessing and collecting informational materials from the most appropriate digital and non-digital sources.

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

# Knowledge Construction Project

**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** | **Heading** | **Heading** | **Heading** | **Heading** |
|---|---|---|---|---|
| • Key points | • Key points | • Key points | • Key points | • Key points |

**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.

**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.**

# Knowledge Construction Project

**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.

**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?

# Real-World Action Project

## 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

# Real-World Action Project

## 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.

| Climate Change | Careless Behaviour | Invasive Plants | Invasive Animals | Marine Debris |
|---|---|---|---|---|
| • Increasing ocean acidification<br>• Rising sea temperatures<br>• Changing oceanographic patterns<br>• Rising sand temperatures<br>• Increasing intensity and frequency of storms<br>• Rising sea levels<br>• Trophic cascades, phase shifts | • Litter, including risks to animals from getting caught or ingesting<br>• Increased light pollution and habitat disturbance<br>• Accidental fires<br>• Off-road driving causing damage to vegetation and animal habitat<br>• Risk to animals from vehicles travelling too fast at night<br>• Accidental introduction of disease and introduced species from vehicles | • Outbreaks of weed species<br>• 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. | • Introduction of pests (foxes, cats, non-native rodents, Asian house gecko)<br>• Outbreaks of invasive pests with cascading effects | • Smothering and entangling wildlife<br>• Ingestion causing death or injury<br>• Discarded fishing gear |

What makes me CURIOUS?

What makes me CONCERNED?

What do I want to CREATE?

## 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.



PROTECTING THE ISLAND

DIRK HARTOG ISLAND NATIONAL PARK

RYAN HICKS

# Real-World Action Project

## 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.

### solution fluency

Solution Fluency is the ability to think creatively to solve problems in real time by clearly defining the problem, designing an appropriate solution, delivering the solution and then evaluating the process and the outcome. Solution Fluency is defined by the 6Ds process.

**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.

**Discover** — This is the stage of researching and gathering, and analyzing clear knowledge about the problem. This helps us to give the problem context so that we can identify with it easier.

**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.

**Design** — This is basically the workshopping phase. Here the actual mechanics of your solution begin to take shape. It involves techniques that allow us to get the solution "on paper."

**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).

**Debrief** — The reflection stage where students get to own their learning. They look at the ways they succeeded, and ways they could improve their approach in similar future situations.

global digital citizen foundation

**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.**

# Real-World Action Project

### 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.**

# Real-World Action Project

## 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… |
|---|---|---|---|---|
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**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.**

**Step 1** Write here

**Step 2** Write here

**Step 3** Write here

**Step 4** Write here

# Real-World Action Project

**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.**

**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? |
| --- | --- |
| | |

# Real-World Action Project

## 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.

DIRK HARTOG ISLAND
RETURN TO 1616

# 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 at https://www.sharkbay.org/restoration/.

Scientists rely on clues to solve mysteries. We can get clues about animals from their skulls. Examine nasal passages, teeth and ear holes to find out how an animal lived, hunted, or obtained food, what senses it relied on and whether it was a predator or prey. Use the Boneheads Activity Sheets to study carnivore and herbivore skulls particularly the teeth and eye sockets. Then look at each of the *Return to 1616* skulls and use the clues to determine whether the animal was predator, prey, or both. Can you match each skull to the correct *Return to 1616* animal?

https://www.sharkbay.org/restoration/

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

Threatened fauna and flora may be listed in any one of the following categories:

*Threatened species under the EPBC Act | Department of Agriculture, Water and the Environment*

| Conservation dependent | Vulnerable | Endangered | Critically endangered | Extinct in the wild | Extinct |
|---|---|---|---|---|---|

| 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, up-to-date information (such as the *Return to 1616* animal factsheets available from www.sharkbay.org) to identify the current status of the *Return to 1616* animals and use arrows to indicate their current status.

# 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.

Watch this video to learn about the scientific methods used to collect data for the Dirk Hartog National Park *Return to 1616* Ecological Restoration Project.

Take a virtual tour to find out more.
**Google Earth -** This is designed for tablet devices and computers. **Click here to begin**

**KUULA -** KUULA is more interactive. This is best suited for computers or VR (virtual reality) Headsets 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 maintains listings of threatened native plants (flora), threatened native animals (fauna) and threatened ecological communities that need protection as critically endangered, endangered or vulnerable species or 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**

SECURE — SECURE S

**Animals in need of special protection under the *Biodiversity Conservation Act 2016***

**Priority and Specially protected fauna**

PRIORITY FAUNA — PRIORITY FAUNA P

SPECIALLY PROTECTED FAUNA — SPECIALLY PROTECTED SP

**Threatened fauna**

VULNERABLE — VULNERABLE VU

ENDANGERED — ENDANGERED EN

CRITICALLY ENDANGERED — CRITICALLY ENDANGERED CR

S   P   SP   VU   EN   CR

INCREASING CONSERVATION PROTECTION REQUIRED

## What did I LEARN?

## What makes me CONCERNED?

## What do I want to DO?

# 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.

| Insects Sighted | Reptiles Sighted | Birds Sighted | Mammals Sighted |
|---|---|---|---|
| | | | |

Can you source reliable identification methods to research the species sighted? Can you indicate which species are native to the area?

# Animal Research

**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

# Animal Fact Sheet

Would you like to help others learn more about the animals at Dirk Hartog Island? Investigate a species that inhabits the island and create your own fact sheet to share. Find out which species live on the island at: DHI-Other-animals.pdf (pressidium.com)

| | | Picture |
|---|---|---|
| **Animal** | | |
| **Description** | | |
| **Diet and Habitat** | | |
| **Breeding** | | |
| **Distribution** | | |
| **Status** | | |

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://parks.dpaw.wa.gov.au/park/dirk-hartog-island
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**

4-Page Single Fold
6-Page Concertina Fold
6-Page Standard Gate Fold
8-Page Right-Angle Fold or French Fold
8-Page Parallel Double Fold
8-Page Concertina Fold
8-Page Parallel Map Fold
8-Page Gate Fold
10-Page Concertina Fold

# 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.

### Create a Video Quiz
Students choose a series of short videos to learn about some of the *Return to 1616* animals and attempt a short quiz.
Rufous hare-wallaby (0:29)
https://www.youtube.com/watch?v=fhqvW5zC0HA
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
Stick nest rat (1:50)
https://youtu.be/Vm3qYfuVMfk

### Drawings
Students use the *Return to1616* animal fact sheets to create drawings of their favourite (drawings to include appearance, features, habitat, food, predators etc).

### Models
Students create a plasticine model of their favourite animal.

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

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, 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

What would a day in the life of an environmental scientist be like? Consider the Dirk Hartog *Return to 1616* Ecological Restoration Project. Learn more about the project from Biodiversity Conservation Scientist Kelly Rayner in this video and reflect on your learning below.

| What do scientists do? | How do they do it? | How does it help? |
|---|---|---|
|  |  |  |

# 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?

# History of Dirk Hartog Island

Have you ever been to Dirk Hartog Island? Consider using the virtual tour ([www.sharkbay.org](www.sharkbay.org)) 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?

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

**What do we know about Dirk Hartog?**

**What would you like to find out?**

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

# 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

DIRK HARTOG ISLAND
RETURN TO 1616

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

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

'"The Land-Animals that we saw here were only a sort of 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

# 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=hD9arWXIddM

### 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 *What if?* 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 |

# Online Quiz

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

## [Click Here to Begin!](https://forms.office.com/r/RHF7UbuYMk)

https://forms.office.com/r/RHF7UbuYMk

Have fun while you learn about the animals being returned to Dirk Hartog Island National Park. Colour in the animals being translocated to the island including the rufous hare-wallaby, banded hare-wallaby, dibbler and Shark Bay bandicoot, boodie, greater stick-nest rat, brush-tailed mulgara, Shark Bay mouse, western grasswren, woylie and finally, chuditch. Can you also draw and colour the correct habitat and food eaten by each of these animals?



Download colouring activities and fact sheets for each of the *Return to 1616* animals at:
https://www.sharkbay.org/restoration/dirk-hartog-island-return-1616/

# 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!

# Wild Challenge Playing Cards

Print out and play the *Return to 1616* card game Wild Challenge. Have fun while you learn about the animals being returned to Dirk Hartog Island National Park. Print and construct your own playing cards from www.sharkbay.org/restoration. Follow the instructions below and explore more games and activities on the upcoming pages. Have fun and enjoy learning at the same time!

# Instructions

**WILD CHALLENGE**
**RETURN TO 1616**

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!**

www.sharkbay.org/restoration

# 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 from
www.sharkbay.org/restoration/dirk-hartog-island-return-1616

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 printed from www.sharkbay.org/restoration

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.

# 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 www.sharkbay.org

*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 [www.sharkbay.org/restoration](www.sharkbay.org/restoration). Identifying trophic levels can be quite challenging and may not always provide an accurate representation, consider contacting an expert to help.

**Tertiary Consumers**

**Feral cat**
*Felis catus*

| Average size (cm) | 55 |
| Lifespan (years) | |
| Average weight (g) | 3000 |
| Speed | 7 |
| Number of young | 6 |
| Cuteness | 2 |
| Rarity | 1 |

**FUN FACT!**
Feral cats have been completely removed from Dirk Hartog Island.

Feral cats are extremely adaptable and live in most habitats across Australia. They have contributed to the extinction of many native animals.

**Sun**

**Secondary Consumers**

**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.

**Barn owl**
*Tyto javanica*
SECURE S

| Average size (cm) | 36 |
| Lifespan (years) | 6 |
| Average weight (g) | 550 |
| Speed | 5 |
| Number of young | 5 |
| Cuteness | 4 |
| Rarity | 3 |

**FUN FACT!**
They have excellent hearing allowing them to catch prey in complete darkness.

The barn owl is a nocturnal raptor that eats small rodents, marsupials, birds, lizards, frogs, and might insects like beetles and moths. They are one of the world's most widespread species of owl.

**Gwardar**
*Pseudonaja mengdeni*
SECURE S

| Average size (cm) | 120 |
| Lifespan (years) | 20 |
| Average weight (g) | 300 |
| Speed | 2 |
| Number of young | 18 |
| Cuteness | 1 |
| Rarity | 3 |

**FUN FACT!**
This species is the second most dangerous snake in Australia.

The gwardar is a long and slender, brown snake, with a smallish head and large eyes. They hunt rodents, lizards, frogs, birds and other snakes.

**Primary Consumers**

**Desert mouse**
*Pseudomys desertor*
SECURE S

| Average size (cm) | 8 |
| Lifespan (years) | 2 |
| Average weight (g) | 25 |
| Speed | 3 |
| Number of young | 3 |
| Cuteness | 5 |
| Rarity | 2 |

**FUN FACT!**
Desert mice are folivores meaning they specialise in eating leaves.

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

**Greater stick-nest rat**
*Leporillus conditor*
SPECIALLY PROTECTED SP

| Average size (cm) | 22 |
| Lifespan (years) | 5 |
| Average weight (g) | 350 |
| Speed | 4 |
| Number of young | 4 |
| Cuteness | 10 |
| Rarity | 8 |

**FUN FACT!**
Males give the females flowers to impress them!

Greater stick-nest rats are mainly nocturnal, plant eating rodents about the size of small rabbits. They are called stick-nest rats because their nests are mainly built out of sticks held together with poo and urine.

**Shark Bay mouse**
*Pseudomys fieldi*
VULNERABLE VU

| Average size (cm) | 10 |
| Lifespan (years) | 2 |
| Average weight (g) | 30 |
| Speed | 3 |
| Number of young | 4 |
| Cuteness | 9 |
| Rarity | 9 |

**FUN FACT!**
When frightened, they will play dead until danger has past!

The Shark Bay mouse is an omnivorous native mouse with longish hair giving it the nickname 'shaggy mouse.' They live in coastal dunes and other sandy areas covered by spinifex.

**Boodie**
*Bettongia lesueur*
SPECIALLY PROTECTED SP

| Average size (cm) | 38 |
| Lifespan (years) | 3 |
| Average weight (g) | 1500 |
| Speed | 9 |
| Number of young | 1 |
| Cuteness | 6 |
| Rarity | 5 |

**FUN FACT!**
Boodies make a farting sound when they are bounding along!

The boodie is a small, nocturnal macropod (kangaroo-like marsupial). They are the only macropod to live in burrows and they use their prehensile tails for carrying nesting material.

**Woylie**
*Bettongia penicillata ogilbyi*
CRITICALLY ENDANGERED CR

| Average size (cm) | 30 |
| Lifespan (years) | 8 |
| Average weight (g) | 1500 |
| Speed | 9 |
| Number of young | 1 |
| Cuteness | 5 |
| Rarity | 9 |

**FUN FACT!**
Woylies use their tails to carry nesting material.

The woylie (also called a brush-tailed bettong) is a small nocturnal marsupial that nests in grass-lined nests.

**Western grasswren**
*Amytornis textilis*
PRIORITY FAUNA P

| Average size (cm) | 18 |
| Lifespan (years) | 3 |
| Average weight (g) | 7 |
| Speed | 9 |
| Number of young | 3 |
| Cuteness | 6 |
| Rarity | 5 |

**FUN FACT!**
They have short, rounded wings so they mostly hop, between bushes and grassy tufts.

The western grasswren is a small grey bird with a short beak for crushing...

**Heath mouse**
*Pseudomys shortridgei*
VULNERABLE VU

| Average size (cm) | 11 |
| Lifespan (years) | 4 |
| Average weight (g) | 70 |
| Speed | 3 |
| Number of young | 3 |
| Cuteness | 6 |
| Rarity | 10 |

**FUN FACT!**
Heath mice are a shy species that make a faint whistling cry when disturbed.

The heath mouse is a semi-nocturnal species of native mouse with a blunt face, a hairy tail and dark grey to brown fur going to a fluffy look.

**Primary Producers**

# Information Hub

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

# *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



Last ? 2 sheep shot, Judas goats remaining.

Numbers of sheep and goats removed from Dirk Hartog Island

# Sheep and Goat Eradication



Total Flight Time and Goats Destroyed Per Shoot Program

# 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 fieldi,*
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 |
|---|---|---|---|---|---|---|---|---|
| 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 | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Animal 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<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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. |
| English | 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. |
| HASS | 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. |
| HASS | 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. |
| HASS | 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. |
| Technologies | 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. |
| Technologies | 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. |
| Technologies | 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 | 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<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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. |

School Curriculum and Standards Authority

# Relevant Year 3 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** | **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<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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. |

School Curriculum and Standards Authority

# Relevant Year 5 Assessment Pointers

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

| SCSA Assessment Pointers | | A<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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<br>Excellent achievement | B<br>High achievement | C<br>Satisfactory achievement | D<br>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. |

# Recommended Websites

VIDEOS
'For more resources and information visit the Department's web site www.sharkbay.org

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

'Endangered Species Poem' YouTube August 21, 2012 https://www.youtube.com/watch?v=yxj-uq-ztZk

'Endangered Animals/ Endangered Animals Video for Children' Kids Learning Tube (YouTube) June 6, 2015
https://www.youtube.com/watch?v=_vn_BMapo7g

The Lyrics for this song are available here: 'The Endangered Animals Song' http://lyricstranslate.com/en/kids-learning-tube-endangered-animals-song-lyrics.html

Websites 'Green Kids Guide to Threatened Species: 9 Ways You Can Help' Australian Government Department of the Environment and Energy
http://www.environment.gov.au/biodiversity/threatened/publications/factsheet-greenkids-guidethreatenedspecies-9-ways

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

World Animal Protection https://www.worldanimalprotection.org.au

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- WA Museum

- Global Digital Citizen Foundation

- Wabisabi Learning

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GOVERNMENT OF WESTERN AUSTRALIA

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

M
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Bamford
Consulting Ecologists