

BONEHEADS

Introduction

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

The Return to 1616 Project

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 first European landing on Australian soil, introduced plants and animals have degraded the island causing the local extinction of native animals.

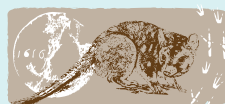
The *Return to 1616* Project is helping to restore the island's natural ecosystems. Introduced sheep and goats have been removed because their grazing and trampling damages native plants and reduces the food and shelter available for native animals. Feral cats are efficient hunters and have been eradicated from the island to make it safe for native animals that are gradually being returned. These include the Shark Bay bandicoot, dibbler, chuditch, brushtailed mulgara, greater sticknest rat, desert mouse, Shark Bay mouse, heath mouse, woylie, boodie and western grasswren. All of the above animals are in need of conservation protection. Some are threatened and others extinct on the mainland. In addition, the rufous and banded harewallabies live on islands nearby and it's very likely that they also once lived on Dirk Hartog Island. They have been included in the project to help protect them.

So how do we know which animals once lived on Dirk Hartog Island? Diaries from early explorers have helped by describing the animals they saw when they visited hundreds of years ago. Most importantly, scientists have also researched the clues that animals leave behind including bones and skulls! These help to tell us what animals once lived there.

To find out more about the Dirk Hartog Island National Park *Return to 1616* Ecological Restoration Project, visit: sharkbay.org/restoration.



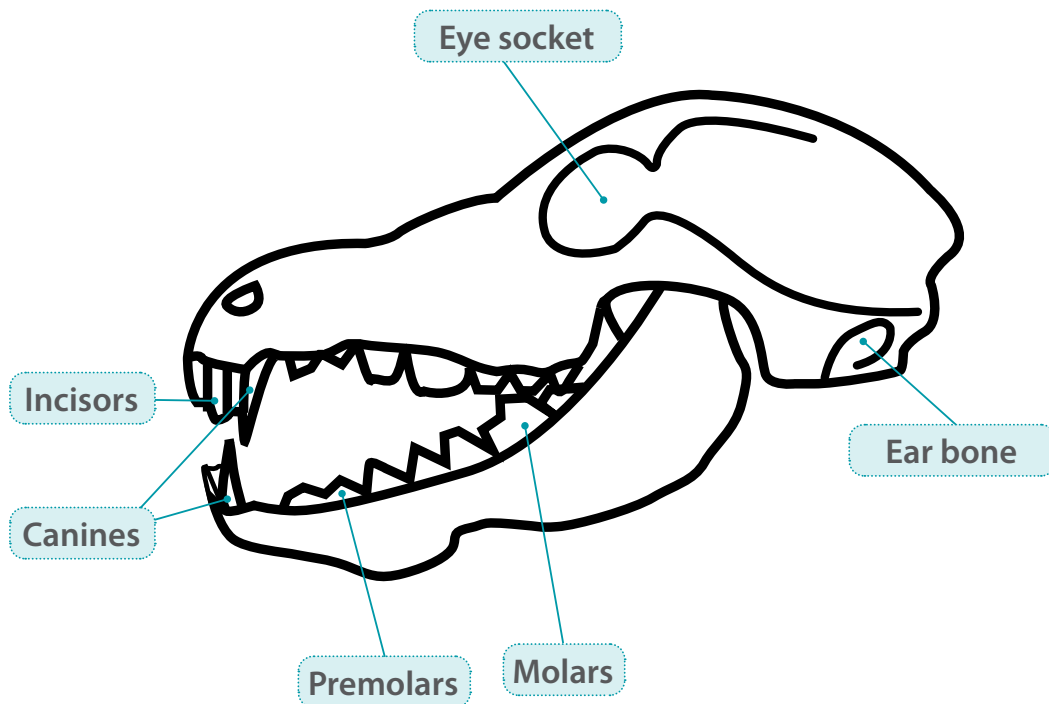
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RETURN TO 1616

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PARTS OF THE SKULL



Teeth

Carnivore or herbivore?

Carnivores have large canine teeth that they use to catch and clamp onto their prey. They need strong jaw muscles to chew through animal flesh and you can see where they are attached to the skull on the small crest towards the back of the skull. A large attachment point means large muscles for gripping prey. Their molar teeth have knife-like, slicing, cutting edges to help tear through flesh and bone.

Herbivores have forward facing incisor teeth that help to grasp and nip off vegetation. Molar teeth are rectangular with two ridges (or cusps) separated by a deep trough. The ridges help them to grind up vegetation including grass seed heads, grasses, sedges, herbs and shrubs.

They have large muscle attachments at the back of their jaw that helps them to grind their teeth forwards and backwards as well as side to side.

Eyes

Day or night?

Animals that are nocturnal and active between dusk and dawn need to have large eyes to allow more light into the eye to help them see at night. Animals that are active during the light of day, have smaller eyes.

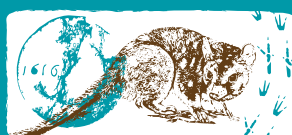
Predator or prey?

Carnivores are hunters and need to be able to judge distance when catching food. Their eyes are forward facing to help them judge how far away an animal is. This way they can chase their prey and accurately pounce when they get close enough.

Herbivores eyes are positioned on the side of the head so they can see forward AND to the side at the same time. This helps them to see food and watch out for predators at the same time, particularly when busy grazing.



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BONEHEAD

1



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

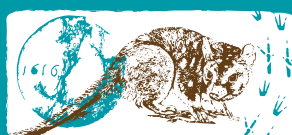
Here are some things to observe

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

Who am I?



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BONEHEAD 1



Rufous hare-wallaby *Lagorchestes hirsutus*

Their scientific name describes both their appearance and behaviour. Lagos means 'hare', orchestes means 'dancer' and hirsutus means 'hairy'. When disturbed, they dart away in a zig zag pattern which can look like dancing.

Size Adults stand about 30cm in height and weighs up to 2.3kg. The ear bone is larger than a banded hare-wallaby.

Eyes Rufous hare-wallabies are nocturnal and active between dusk and dawn. They have large eyes to allow more light into the eye to help them see at night. Their eyes are positioned on the side of the head so they can see forward and to the side at the same time. This helps them to watch out for predators, particularly when busy grazing.

Mouth They have forward facing incisor teeth that help to grasp and nip off vegetation. Molar teeth are rectangular with two ridges (or cusps) separating a deep trough. The ridges help them to grind up vegetation including grass seed heads, grasses, sedges, herbs and shrubs.

They have large muscle attachments at the back of their jaw that helps them to grind their teeth forwards and backwards as well as side to side.

Habitat These relatively solitary animals live in low scrub and spinifex on sandy soils. During the day they shelter in squats, (shallow trenches) under shrubs or spinifex hummocks. They were introduced to Dirk Hartog Island National Park in 2018

Fur, Feathers Or Skin These hare-wallabies have grey-brown fur tinged with red. Longer hairs on their lower back give them a shaggy or hairy appearance.

BONEHEAD

2



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

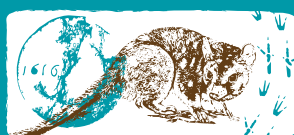
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BONEHEAD 2



Photo ©Jiri Lochman

Boodie *Bettongia lesueur*

The boodie also known as the burrowing bettong, is a small marsupial and the only macropod (kangaroo like animal) to construct and permanently shelter in burrows.

Size Boodies bodies are between 28–40 cm long, with the tail adding 22–30 cm to their overall length and weigh about 1.6 kg. They store fat in their tails that become large and ‘sausage like’.

Eyes Boodies are nocturnal and active between dusk and dawn. They have large eyes to allow more light in to help them see at night. Their eyes are positioned on the side of the head so they can see forward and to the side at the same time. This helps them to watch out for predators, particularly when busy grazing.

Mouth These animals are omnivorous which means they eat both plants and although they don’t hunt, they will eat small animals where available. They have forward facing incisor teeth that help to grasp and nip off leaves. Their premolar teeth have a serrated (jagged) edge for cutting plant material, fruits and fungus. The premolar teeth are the same height as molar teeth and angled straight up and down, in line with molar teeth. Boodie molar teeth are rectangular with two ridges (or cusps) separating a deep trough. The ridges help them to grind up plant material that makes up most of their diet. Compare Boodie canine teeth with hare-wallabies. Boodies have larger canine teeth than the hare-wallabies because of their partly meat-eating diet.

Habitat They shelter together underground in burrows or warrens during the day. Their burrows are often used as a home by other animals as well. They are planned for reintroduction to Dirk Hartog Island National Park as part of the Return to 1616 ecological restoration project.

Fur, Feathers Or Skin They have cinnamon tinged grey fur and sometimes a white tip to the ‘sausage like’ tail.

BONEHEAD

3



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Feral Cat

Felis catus

Feral cats were introduced to Australia with European settlement. As skilled predators, they have over time, devastated Australian native animal populations

Size Feral cats are usually leaner, slightly larger and more muscular than the average house cat. They have a typical body length of 40-60cm.

Eyes Feral cats are predators and need to be able to judge distance when hunting so their eyes are forward facing. This gives them the ability to judge how far away an animal is, so they can chase and accurately pounce on their prey.

Mouth Feral cats are carnivores. They have large canine teeth used to catch and clamp onto their prey. They need strong jaw muscles to chew through animal flesh and you can see where they are attached to the skull on the small crest towards the back of the skull. A large attachment point means large muscles. Their molar teeth have knife-like, slicing, cutting edges to help tear through flesh and bone.

Habitat The feral cat is extremely adaptable and found in nearly all habitats across Australia. Dirk Hartog Island is the largest island in the world to have feral cats eradicated

Fur, Feathers Or Skin Most feral cats have short fur of a variety of colours

BONEHEAD

4



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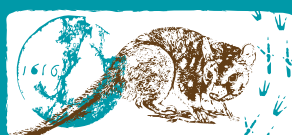
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Photo ©Jiri Lochman

Woylie

Bettongia penicillata ogilbyi

Woylies are small macropod (kangaroo like animal) marsupials also known as brush-tailed bettongs. They will be reintroduced to Dirk Hartog Island National Park in the near future.

Size Adult males grow to 36 centimetres (head-body) in length and weigh up to 1.5 kilograms. Females are slightly smaller than males.

Eyes Woylies are nocturnal and active between dusk and dawn. They have large eyes to allow more light in to help them see at night. Their eyes are positioned on the side of the head so they can see forward and to the side at the same time. This helps them to watch out for predators, particularly when busy grazing.

Mouth Woylies dig in the soil for their food and mainly eat truffles (underground fungi) as well as bulbs and tubers. They have forward facing incisor teeth that help to grasp and nip off vegetation. Their premolar teeth have a serrated (jagged) edge for cutting plant material. Woylie premolar teeth are slightly shorter than molar teeth and sit on an angle to the molars. Compare the premolar teeth of Woylies and Boodies.

Molar teeth are rectangular with two ridges (or cusps) separating a deep trough. The ridges help them to grind up plant material that makes up most of their diet.

Habitat Woylies shelter in nests they build. They live mainly in woodlands with dense tussock grass and woody scrub underneath. They improve soil health by digging over soil in the search for food and spreading plant seeds and fungi in their poo.

Fur, Feathers Or Skin The Woylie has greyish-brown fur on the upper body and pale grey fur underneath. The tail is darkly coloured with a distinctive black brush at the end. They use their tails to carry sticks and other vegetation to make nests with.

BONEHEAD

5



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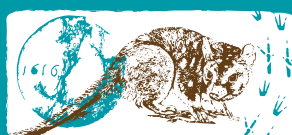
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Photo ©B&B Wells/DBCA

Shark Bay bandicoot *Perameles bougainville*

This smallest species of bandicoot is also known as the little marl. Once common throughout the northwest of Western Australia, mainland populations became extinct in the 1940's. They are now only naturally found on islands or fenced mainland reserves.

Size Being the smallest of all bandicoot species, they weigh only 220g, just slightly less than a block of chocolate.

Eyes Little marl are nocturnal and active between dusk and dawn. They have large eyes to allow more light into the eye to help them see at night. Whilst they do hunt small animals and insects in addition to eating plants, their eyes aren't forward facing like other carnivores. This is because they rely more on smell than vision to hunt their food. Their eyes are positioned on the side of the head so they can see forward and to the side at the same time. This helps them to watch out for predators.

Mouth Little marl are omnivorous (eat plants and animals) hunting and digging at night for invertebrates, small animals, seeds, roots and herbs. Their teeth are adapted to eat both plants and animals. Their premolar teeth are sharp for cutting animal flesh. Molar teeth are shaped more for grinding vegetation and not sharp like a carnivores molar teeth. This is because the invertebrates and small animals they eat aren't hard to chew. They are sometimes fight each other and use their teeth to bite their opponent's tail in a fight.

Habitat They live in dense shrubs and shelter by day in grassy nests or in leaf litter. They were reintroduced to Dirk Hartog Island National Park as part of the *Return to 1616* Ecological Restoration Project in 2019.

Fur, Feathers Or Skin They have light grey-brown fur, with two or three dark bands running across the hindquarters. As they shelter under bushes during the day, these stripes help them to blend in with the dappled shade and protects them from predators like eagles flying overhead.

BONEHEAD

6



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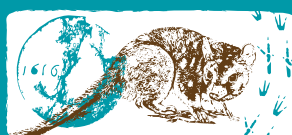
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Greater stick-nest rat

Leporillus conditor

Greater stick-nest rats are native rodents. *Leporillus* means 'hare like' and *conditor* means 'builder' referring to the nests they build of sticks held together with wee and poo.

Size The greater stick-nest rat is guinea-pig sized, ranging from 17-26 cm in body length and weighing up to 450 grams.

Eyes Their eyes are positioned on the side of the head so they can see forward and to the side at the same time. This helps them to watch out for predators, particularly when busy eating.

Mouth They carry sticks for nest building and eat hard seeds which wears down their teeth. Their incisor teeth are large and continually growing to make up for being continually ground down by eating hard food and carrying sticks. They also eat leaves, flowers, and fruits and have grinding molar teeth to chew vegetation.

Habitat Greater stick-nest rats today only live on islands having become extinct on the mainland in the 1930s. They live in communal burrows with up to 20 other rats amongst succulent and semi-succulent shrubland. They will be reintroduced to Dirk Hartog Island National Park in the coming years as part of the *Return to 1616* Ecological Restoration Project.

Fur, Feathers Or Skin The greater stick-nest rat has fluffy, yellow-brown to grey fur above, and creamy-white fur on their belly.

BONEHEAD

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Photo ©Andrew Woods

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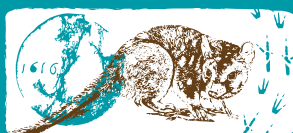
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Photo ©B&B Wells/DBCA

Chuditch

Dasyurus geoffroii

Chuditch, also called western quolls are Western Australia's largest marsupial carnivore. They will be the last animal reintroduced to Dirk Hartog Island National Park to help regulate the population of other animals.

Size Chuditch are smaller than adult domestic cats with males weighing 1.3 kg and females 0.9 kg.

Eyes Chuditch are nocturnal and active between dusk and dawn. They have large eyes to allow more light into the eye to help them see at night. They are predators and need to be able to judge distance when hunting so their eyes are forward facing. This gives them the ability to judge how far away an animal is so they can chase and accurately pounce on their prey.

Mouth Chuditch are carnivores. They have large canine teeth that they use to catch and clamp onto their prey. Their molar teeth have slicing cutting edges to help cut through flesh and bone.

Habitat Chuditch live in isolated forest areas in Australia. Although primarily ground-dwelling, they can also climb trees.

Fur, Feathers Or Skin Chuditch have brown fur with white spots on their back. The spots help them to blend into their environment at night when stalking their prey.