



WILD Kids: Food webs & Lifecycles

Year 3-4



MERLIN
education

Key Questions



What is a food chain? What is a food web?



What are examples of producers, consumers and decomposers and how do they affect one another?



What features do certain animals have to make sure they can survive within their food chain?



Why do animals have different lifecycles?



How does the habitat or environment impact an animal's lifecycle?



How do humans impact an animal's lifecycle or their food chain? What can we do to help?



Vocabulary

Adaptation

An ecosystem is made up of all of the living and nonliving things in an area. This includes all of the plants, water, rocks, earth, animals and other living things that make up the communities of life in an area.

Producer

Organisms that make their own energy by using an external source (e.g. sun)

Consumer

Organisms that eat plants or animals in order to create energy

Decomposer

Organisms that cause decay and break down waste products and dead tissue of living things turning them into organic compounds essential to life (e.g. oxygen carbon etc).

Food web

Food webs show how plants and animals are connected in many ways. These show the energy flow between a variety of animals and plants as they consumed and are consumed/eaten.

Food chain

The term food chain describes the order in which organisms, or living things, depend on each other for food.

Predator

Animals that eat other animals.

Prey

Animal hunted or being caught for food.

Pre-Visit Activities

Activity 1.

KWL chart - What do we already know about Australian animals? What would we like to know? Complete 'What have we learnt' after your excursion.

Activity 2.

Students select one of our unique Australian animals from WILD LIFE to complete an animal profile (see template). These are then used to create an information report on and can then be compiled into a class book.

Activity 3.

Students plan a simple STEM investigation by observing the lifecycle of a plant. Teacher to provide the groups with various seeds e.g. Broad bean or tomato and ask students to plan an experiment observing the stages of its lifecycle. As an extension, ask them to modify the variables such as limiting light, less water etc.

Activity 4.

Students research and create their own parents and young flip book to present to Junior levels. They can draw and match juvenile animals to their parent animal.



Hi there and thank you for choosing to visit Wildlife Sydney Zoo!

The only zoo to be found amongst the skyscrapers of the Sydney CBD.

We opened in 2006 as Sydney Wildlife World, and after extensive renovations in 2011, we officially became Wildlife Sydney Zoo.

In the time we've been operating, our zoo family has evolved to what you see today. Our animals are a representation of some

of the amazing critters that can be found here in Australia.

We are involved with the protection and conservation of our vulnerable animals, and as a zoo we are incredibly proud of

the conservation partnerships held with Science for Wildlife and Rainforest Rescue.

Zone: Scrub Python Area

Welcome to the home of Australia's largest python species – the Scrub Python. These snakes are found in north-eastern Queensland and the Torres Strait Islands.

Key things to know about this habitat

Being found in tropical northern Queensland, (and further north into Indonesia and Papua New Guinea) means that these snakes like warm, humid rainforest conditions. Our scrub python exhibit maintains temperatures between 22-34 degrees Celsius. We also have water misters to replicate the rainfall that occurs in this region.

Juvenile scrub pythons like to hang out in the trees, while larger pythons prefer to be in the leaf litter on the ground. We provide branches, rock wall ledges and ground areas for the pythons to rest.

The water bowl is for their drinking, as snakes rely on hydration just like us, but they can also use it to assist in shedding their skin. If a snake is having a difficult time shedding, they will lie in their water bowl to help shift the scales. Alternatively, if they have mites, they will again seek out water to do a forced shed to rid themselves of the pests.

Boyd's Forest Dragon

These lizards share not only the same exhibit as our Scrub Python, but also the same regions out in the wild (north-east QLD). They are masters of hiding and will often move around a tree keep the tree trunk or branch between you and it. Males are slightly larger and darker than females and have a blockier shaped head. All have a crest on their head, and a dewlap under their chin used for mating displays and defence. Males are territorial and will defend their area. They sit and wait for their prey to come to them. Their diet consists of invertebrates (insects) with a large portion of their diet consisting of earthworms and ants.

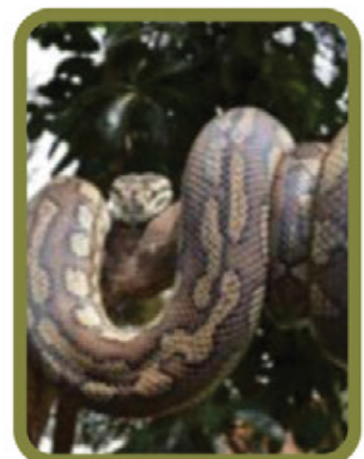


Key Creatures you will find in this habitat

Scrub Python

The Scrub Python, is also known as the amethystine python due to its iridescent scales, that shine just like an amethyst gemstone. These pythons can grow anywhere from 3-8 metres, and commonly reaches lengths of 5 metres. These impressive lengths make it one of the six largest snakes in the entire world!

Being a python means they are non-venomous. They rely on their razor-sharp teeth to hold the prey while they use their muscular coils to crush their prey before swallowing it whole. Scrub pythons are carnivores and will eat birds, rats, possums, rabbits and even wallabies just to name a few!



How might they fit a wallaby into that small head? Snakes have a much different jaw system than us. They have additional bones between the jaw and skull which allows them to open their mouths much wider than we can. Add to this, the ability to move the left and right sides of their lower jaw separately allows snakes to 'walk' their mouth over their prey to swallow it. Their lower jaw is connected by stretchy ligaments allowing each side of their jaw to move independently of the other. This along with a LOT of backwards facing teeth, means the prey is pushed back further into the snake's mouth until it disappears. Once it enters the snake's body their ribs, skin and spine all work together to push the food into the snake's stomach for digestion.

Here at Wildlife, our scrub pythons are fed large rats or rabbits.

If you get up nice and close, you may be able to spot our scrub python's heat sensing pits embedded along the jawline. These pits allow mammal hunting snakes to sense slight changes in temperature and in turn find their warm-blooded prey. That's why our Boyds Forest Dragons are perfectly safe sharing their home with these pythons.

Conservation

While our scrub pythons are considered least concern in terms of numbers, our scaly friends need to be protected. They are a vital part of our ecosystems and provide free pest control. Without these scaly friends, we would be overrun with pests like rats and mice.

Breeding/Life Cycle

Scrub pythons breed in cooler weather and a female will lay a clutch of up to 20 eggs. She will coil around them for around 3 months. During this time, she will not eat and will only leave her eggs to bask in the sun to raise her body temperature to return to the eggs. Baby snakes are called snakelets.

Cool Facts – Did You Know?

Because scrub pythons can be considered dangerous to humans, we always ensure two keepers are present whenever we need to enter the exhibit, to ensure someone is there to raise an alarm if necessary.

You have something in common with our snakes! Snake's scales are actually made of keratin just like our fingernails and hair (and a rhino's horn!)

Scrub pythons are great swimmers. They have been known to travel through water when required.



Zone: Tricky Tongues and Treetops

You may be wondering why this area has a name such as 'Tricky Tongues and Treetops!' Well, let us explain, each of the inhabitants here have a tongue worthy of every licking prize. Both our echidna and numbat possess long sticky tongues for getting into tricky places. While our tree kangaroo – well the tree-tops are where he's at.

Key things to know about this habitat

Each exhibit found in this zone is careful to meet the needs of each inhabitant. The tree kangaroo prefers a to be up in the trees, so he is provided with lots of branches, perches and platforms to rest and feet on.

Our Numbat is a ground and tunnel dweller, so this exhibit has lots of hides and nest boxes and pipe systems under the ground, hollow logs and ground areas for the numbat to feel right at home.

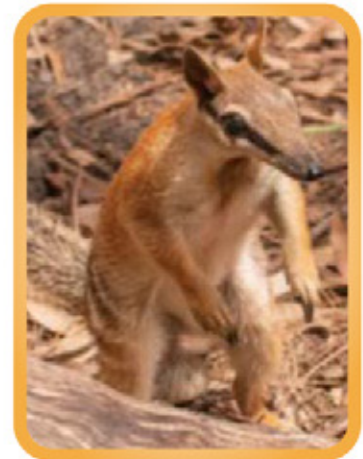
Our echidnas have heated nest boxes, hollow logs and soft soil to allow them to display their natural behaviours of digging and hiding.

Key creatures you will find in this habitat

Numbat

The numbat is a small, endangered marsupial that used to be found along the southern borders of Australia. Now they're only found in small pockets in the south-west area of Western Australia.

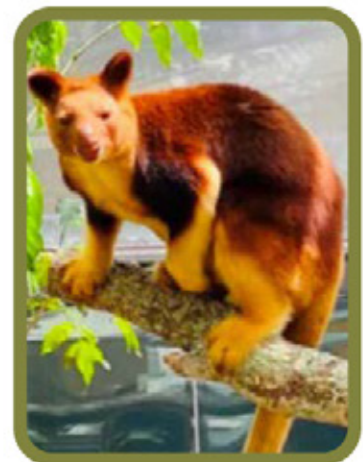
There is believed to be less than 1000 left of this fearless critter left in the wild. They are also known as the banded anteater due to their penchant for termites.



Goodfellow's Tree Kangaroo

The Goodfellow's Tree Kangaroo is found in Papua New Guinea and Indonesia. They are different to Australian kangaroos in that they are able to move their back legs independently of each other, and the patterns on their tail, is unique to each tree kangaroo just like a zebra's stripes. They are built for their life in the trees and can jump up to 9 metres across the treetops, and up to 18 metres when travelling at speed along the ground.

They are herbivores – just like kangaroos. Here at Wildlife, our tree kangaroo is fed a variety of foods like; grass pellets, fruits, vegetables and different tree species including hibiscus. Bananas are a definite favourite treat.



Echidna

Echidnas (also known as spiny anteaters) are elusive creatures are hard to spot – which is their natural behaviour. The short beaked echidna is a very special animal indeed! They belong to a group of animals called, monotremes. Monotremes are egg laying mammals and there are only two types in the world. The short beaked echidna, the long beaked echidna (found in Papua New Guinea) and the platypus. Baby echidnas are called Puggles, and they emerge from leathery eggs after incubating for approximately 10 days after being laid. The puggle will then suckle on milk that secreted into mum's pouch area. Echidnas,

even though they are hard to spot live all across Australia. If you can find ants there, you can also find echidnas. If you look really hard, you may just see one in this exhibit. But they do like to burrow under the ground and sleep away the day.

Creature in Focus

Numbat

Numbats are a small marsupial that have a small, pointed head, brownish to reddish fur with stripes and legs that end in sharp claws. Numbats can sit up like meerkats when they are looking around. When they sense danger, they will either freeze or run under the nearest bush/log for protection.

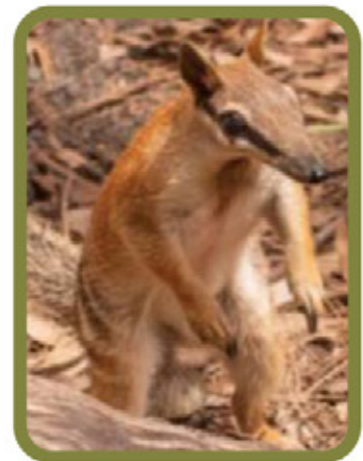
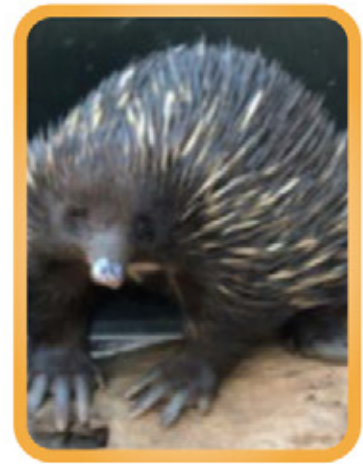
They are solitary animals because termites are hard to come by, they can't afford to live in groups and share the food. They shelter in hollow logs and underground tunnel systems with a chamber at the end and females will use these dens to keep her young safe when they're old enough to leave.

Their small head and pointed jaw allow them to squeeze into small spaces in search of termites. They can eat up to 20 000 a day!

Being covered in stripes, helps the numbat to camouflage from birds of prey when they are out in search of termites.

Numbats have a long, sticky tongue approximately 10-11cm in length that helps in removing termites from their nests. This makes them insectivores. Interestingly numbats don't have sharp teeth like other carnivorous marsupials, they instead have pegs used for crushing as they don't need to chew up their food.

Here at the zoo, our numbat is a supplemented protein and scrambled egg to substitute the 20 000 termites required each day. The food will be spread throughout the enclosure to encourage natural foraging behaviours and is also used to enrich his habitat.



Conservation

Numbats are endangered and face many threats. These include predation by foxes and cats, habitat destruction, and also bushfires mean the loss of termite populations in areas which affects the survival of the numbat. Currently, numbats are being bred in captivity in Perth Zoo, and small populations are being released back into the wild.

What can we do? Always ensure our dogs and cats are locked up, as all native wildlife is affected by predation by these clever animals.

Breeding/Life Cycle

Females are pregnant for a period of 14 days and give birth to four young. Because it is a very short gestation period, the young are born very underdeveloped. They suckle until they are too big – around 6-7 months. After this the mum will leave them in the den and return often to suckle until they are weaned at 10-11 months of age. At around 12 months of age, they are considered independent and leave their mum to find their own territory.

Even though numbats are considered a marsupial, they don't have an actual pouch. Instead, they have skin folds and long hair that fold over the young to keep them safe when they're suckling.

Cool Facts/Did You Know?

Numbats don't drink water as they get enough moisture from the ants they eat.

They are considered 'skittish' as they make quick, sharp movements as they go about their day.

Numbats are one of only two marsupials that are strictly diurnal (awake during the day and asleep at night). As cool as this is, it means they need to be extra careful to stay of sight of birds of prey like eagles.

Zone: Devils Den

Key things to know about this habitat

The Tasmanian Devils you can see here at Wildlife, have been a part of a breeding program at a different facility. It is common for devils in zoos to have been a part of such programs, due to them being listed as endangered.

Tasmanian Devils are ground dwellers who seek shelter in caves, burrows, hollow logs and dens in bushland throughout Tasmania. The Devil's Den exhibit mimics their wild habitat with our devils having multiple areas to seek shelter. This enclosure features 3-4 dens in both the front of house (what the public can see) and the back of house (an extra sheltered area not visible to the public) to allow the girls to seek extra shelter whenever they desire.

Key creatures you will find here

Tasmanian Devil

The Tasmanian Devil is the largest carnivorous marsupial in the world. Today they can only be found in the wild in Tasmania, however, before they became extinct on the mainland (approximately 3000 years ago), they used to roam freely across Australia. Their habitat includes, forest, scrubland, coastal areas and our National Parks.

Tasmanian Devils are incredibly unique looking, with a large head, front legs that are longer than their hind legs, a tail used to store fat, and they possess a (some would say) blood-curdling scream. Most devils have a white chest and lighter/white fur on their rump.

Tasmanian Devils have a large head to hold their bone crunching jaws. Typical of marsupials, the male is larger than the female and stands approximately 30 centimetres tall and weighs up to around 14 kilograms.

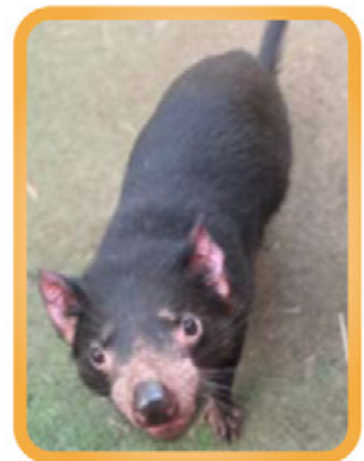
Being a complete carnivore means the Tasmanian Devil will hunt out most protein food items including, frogs, reptiles and small mammals. They are considered scavengers, preferring to eat animals that are already dead, even eating the bones and fur, leaving nothing behind. This makes the devils an essential part of the forest ecosystem, cleaning up carcasses and reducing maggots, which in turn, reduces fly strike in nearby farming stock.

These nocturnal marsupials live a solitary life and are often portrayed as being ill-tempered. Although it is common for devils to congregate around a carcass and feed. This will result in squabbling, fighting and the unusual scream they are known for.

Conservation

Tasmanian Devils have had a tough time throughout Australian history, beginning with the arrival of the Europeans. Devils were mistakenly accused of killing off livestock, and due to their ferocious self-defence mannerisms, were thought of as dangerous, resulting in them being hunted to almost extinction. Thankfully, in the 1940s laws were introduced to protect them. Just in the nick of time!

Fast forward to today and our devils are facing other threats, as with most of our native species, habitat



destruction is of concern as is car strike. But it doesn't stop there. Tasmanian Devils are dying from a disease called Devil Facial Tumour Disease (DFTD). This disease is the only known contagious cancerous growth that develops on the face of devils. It eventually makes eating too painful, and the devils are dying from starvation. The disease can be passed on from devil to devil through biting and fighting – which are natural breeding and food motivated behaviours. Scientists are working hard to find a cure for this cruel disease. Save the Tasmanian Devil Program is an initiative created by the Australian and Tasmanian Government to aid in the research and hopefully cure for DFTD.

It is estimated that there are approximately 20 000 devils left in the wild meaning they are now classified as endangered by the International Union for the Conservation of Nature.

How can you help? Be careful when driving through Tasmanian Devil habitat to reduce car strike.

Donate where you can, and visiting zoos helps support conservation programs.

Breeding/Life Cycle

Tasmanian Devils breed once per year in March, giving birth in April. Being marsupials, Tasmanian Devils have a short gestation period of 21 days. They can give birth to between 20-40 young which are about the size of a grain of rice. That being said, as soon as they are born, devils are in a race for survival. The female only has 4 teats, so only 4 of the young will survive – the one who get to the teats first!

She will protect and grow her joeys in her pouch for approximately 4 months. After this time, she will leave her young in a den while she heads off to find food, regularly returning to feed her joey's milk.

The young will be fully weaned at 10 months of age and are fully matured at 2 years old. In the wild, Tasmanian Devils live 5-6 years, but if conditions allow, they can live up to seven years of age.

As with all marsupials, Tasmanian Devil males are larger than the female. Mature females weigh in at approximately 7-8kg with males almost doubling that weight.

Tasmanian Devils only real predators are larger devils who may seek out smaller devils as food and birds of prey going after the young.



Cool Facts/Did You Know?

Tasmanian Devils were almost hunted to extinction in the 1830s due to farmers not wanting them eating their chickens and livestock. With a reward paid for each devil that was killed. Even though Tasmanian Devils look awkward – due to their foot structure, they are very good climbers.

Zone: Gumtree Valley

Welcome to Gumtree Valley. Gumtree is the name commonly given to the eucalyptus trees that are a common part of Australian landscapes. Eucalyptus forests provide, homes, camouflage and food for many animals that call these regions home.

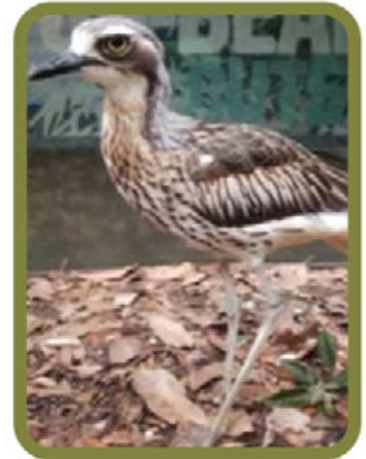
Key creatures you will find in this habitat

Bush-Stone Curlew

In this exhibit you may notice an unusual looking bird. Bush-Stone Curlews, just like the reptiles, have adaptations to help them blend seamlessly into their surroundings.

Key things to know about this habitat

Gumtree Valley mimics the eucalyptus forest that you would find both the reptiles and the bush-stone curlew in. While the Diamond Python is arboreal, the Blotched Blue Tongues, Eastern Brown snake and Tiger Snake and the curlew prefer to spend life among the leaf litter found on the floor of such forests.



Creature in focus

The bush-stone curlew could easily be mistaken as ungainly looking, ground-dwelling looking bird. But they are in fact all about trickery. They remain abundant in the northern parts of Australia; however, they are now far rarer in the southern areas. Bush-Stone Curlews can be found in eucalyptus forests, grasslands, rainforest fringes, arid scrubland to inland watercourses. Covering a broad range of habitat.

Also known as the Bush Thick-Knee (check out those knees), curlews are a mostly nocturnal bird that spend most of the daytime inactive, standing around with their eyes half-closed. During the night hours, they will do their hunting, seeking out insects, small molluscs, small reptiles, seeds, and occasionally small mammals. All food found will be at ground level, like the curlew.

Breeding/Life Cycle

Curlews perform an impressive mating dance, with wings outstretched, tail upright, neck slightly stretched out and feet stamping like soldiers marching which will coincide with screeching. Breeding season is from July to January and females will have a clutch of between 1-3 eggs that are laid into a scrape in the ground. Incubation and raising of the young will be shared between the male and female. Chicks will spend around 50 days in the nest.

Conservation

Given the Bush-Stone Curlews wide distribution, their status is dependent on the state. They are listed as

Least Concern in all states with the exception of Victoria and New South Wales, where they're listed as endangered. Curlews are not found in Tasmania.

What Can you Do?

Be aware when moving through the bush that Bush-Stone Curlews lay their eggs in depressions in the ground out in the open, so they can easily be trampled. Keep our pets locked up, Bush-Stone Curlews are amazing at being visual camouflage experts, but for animals that rely on scent like our dogs, they can be easily hunted down.

Cool Facts/Did You Know?

You're more likely to hear a Bush-Stone Curlew than see one. Their call is a drawn out, eerie high-pitched wee-ooooo that is mostly heard at dusk or at night. The call will occasionally be made during the day. The call is likened to a screaming woman or baby. In Aboriginal cultures the call is closely associated with death.



Zone: Wallaby Cliffs

You've arrived at Wallaby Cliff, home to our common wombat and our Yellow-Footed Rock Wallabies. This exhibit replicates the semi-arid home of our Yellow Footed Rock Wallabies and if you watch a while, you may see them display their amazing agility on the rock faces.

Key things to know about this habitat

While most of this exhibit is to allow for lots of movement by our Yellow Footed Rock Wallabies, our wombat also has been well looked after. Common wombats love to spend time in their den, and it is very common to see our wombat hanging out in their den. There is an area where our wallabies can climb and exhibit their natural behaviours on the rock cliff faces, and an area specifically designed with wombats in mind. A dark, cool den where it can curl up and spend the day chilling out waiting for nightfall, just as it would in the wild.

Key creatures you will find in this habitat

Wombat

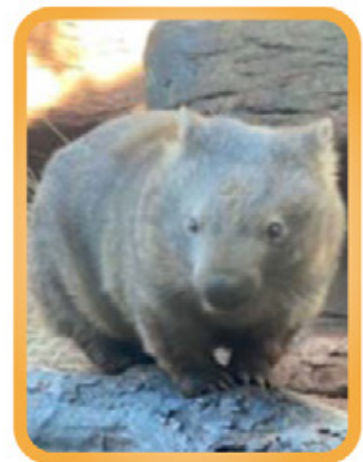
The common wombat is a nocturnal marsupial and is also known as the bare nosed wombat (to separate it from its cousins, the southern and northern hairy nosed wombats). Common wombats are one of the world's largest burrowers and are capable of building burrows up to 30 metres in length that have multiple entrances. Being excellent diggers means they have some adaptations for this. They are equipped with powerful legs and strong claws that are attached to short broad feet. Wombats possess a broad head with small eyes, slightly rounded ears, and a backwards facing pouch. A backwards facing pouch means that when digging, their pouch doesn't fill up with dirt.

As a solitary animal, wombats will spend up to two thirds of their life in their burrow. They will usually leave at sunset to graze for a few hours. However, they may return intermittently to seek refuge or rest returning to sleep before sunrise. However, in the cooler months, it is not uncommon for them to spend longer foraging in the daylight hours.

Common wombats are found in eastern Australia, ranging from Queensland all the way down to Tasmania. Although, since settlement, they are no longer found in some parts where they used to be commonly found. They are folivores with a diet that includes grasses, shrubs, roots, and bark. At wildlife our wombat is fed a variety of grass is and vegetables, browse, hay and hay pellets.

Dependent on where the wombat is found will impact on its breeding months. They are pregnant for around 21 days and typically give birth to one young. The young will be in the pouch for approximately 8-9 months and weaned at approximately 12 months of age. The joey will be independent at around 16-18 months of age.

Common wombats are listed as least concern, and in eastern Victoria they are considered as vermin due to the damage they do to fencing.



Adaptations

The wombat is the closest relative to the koala, both sharing a bony plate in their bottom. The wombat will use it as a defence mechanism to block the entrance to their burrow and will crush predators against their burrow walls if they try to predate on them in their burrow.

Cool facts/Did you Know?

Believe it or not, they have a tiny tail tucked under their fur at the base of their spine.

Wombats are the second largest marsupial after the kangaroo, and don't be fooled by their waddle - they can run faster than a human getting up to between 30-40 kilometres per hour.

During bushfires, wombat's dens can be shelter for many species of animals.

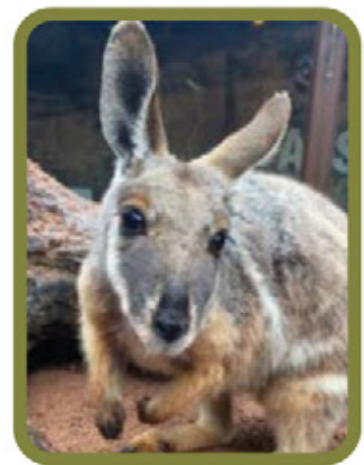
Yellow-footed Rock Wallaby

Belonging to the macropod (macro -big and pod -foot) family the yellow footed rock wallaby is likely to be the most complex of the wallaby species ranging from fawn, to grey through to orange-yellow tones throughout their bodies - thought to aid in camouflage in their habitat.

These wallabies possess specialised pads on their feet to allow their agility over their habitat - rock, gorges and cliff faces in semi-arid ranges. Due to the heat of these areas, they spend time sheltering in rock caves, and prefer to wait till after dark to emerge to forage for grasses, forbs and browse.

With a lifespan in the wild of up to ten years, the female will give birth to one joey, who will remain in the pouch up to six months and will be considered mature at approximately 18 months.

The distribution of these spectacular wallabies has dramatically declined since European settlement, with small-fragmented populations in South Australia, New South Wales, and Queensland - with many populations dying out due to loss of habitat, food competition from the introduction of species, such as goats, sheep and rabbits, and predation by feral cats and foxes.



Zone: Daintree Rainforest

Welcome to the oldest rainforest in the world. Yes – older than the world-famous Amazon, and no less impressive with its collection of unique plants and animals. A true natural wonder, documented in *Where the Forest Meets the Sea* by Australian author and illustrator Jeannie Baker.

Key things to know about this habitat

The Daintree Rainforest is replicated in this area. With our cassowary having access to an off-exhibit area and a freshwater creek. Cassowaries enjoy bathing in creeks, and this has been provided for, along with a variety of tree species and a temperature mimicking the humidity of far north tropical Queensland. At certain times, you may also notice blue items in the exhibit. This is not rubbish that has been dropped by the keepers! This is there intentionally to allow our satin bower bird to build his bower. These birds collect blue items to decorate their bower with to impress the female. By the keepers scattering offerings, means our bower bird won't steal items from around the zoo. Look for the sign in the exhibit that points out exactly where he is currently building his next offering.

Key creatures you will find in this habitat

Pademelon

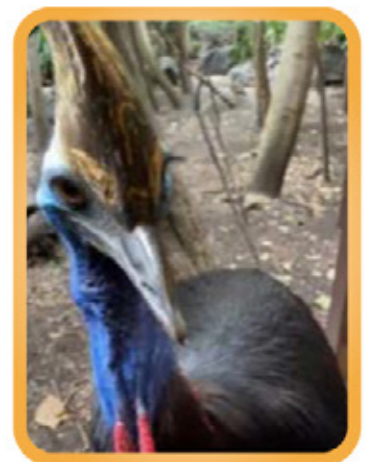
Satin Bower Bird

Key Creature in Focus

Southern Cassowary

There are two sub-species of the Southern Cassowary in the world – one found in Papua New Guinea, and one also being found in the wet tropics of far north Queensland in the Australia. The southern cassowary is the heaviest bird in Australia – although the emu is taller. Like ostriches and emus, the southern cassowary belongs to the ratite family – meaning flightless bird. The cassowary is recognised as an endangered species across Australia.

The southern cassowary has a nasty reputation of being the deadliest bird in the world. Why, you ask? This is where we take a close look at the southern cassowary's dinosaur-like feet (no accident, as these birds are direct descendants of the dinosaur!). You might notice three toes – but get a good look at the inner toe on each foot. Check out that dagger-like talon! This talon can grow up to 12cm in length! The southern cassowary is generally a shy animal but can be notoriously territorial and will defend their area, especially if there are chicks being cared for. They are very protective of their young. Despite this fierce reputation – they will often just make rumbling sounds announcing their displeasure and carry out a ritual known as 'stretching' to show off their long neck and ruffling their feathers.



Cassowaries are unique, with their glossy black feathers, blue and purple neck with long teardrop shaped red wattles, brown casque (helmet) on its head and amber coloured eyes. The purpose of the casque is still not scientifically known to this day. Some of the research includes:

- It could be used as a shock absorber when the bird pushes through the dense under scrub of the rainforest
- It may indicate age and dominance amongst other cassowaries – due to it continuing to grow throughout life
- To help the cassowary 'hear' the low 'rumbling' sounds made by other cassowaries
- While, most recently, scientists discovered that the cassowary releases less heat from the casque in winter months, so it is highly likely that it is used for heat regulation

The cassowary is known as a frugivore preferring to eat fallen fruits, but will eat small vertebrates, carrion, and plants. Over 238 species of plants/fruits have been witnessed in their diet. They are known as a keystone species, as they digest and disperse seeds over long distances, ensuring the survival of the Daintree Rainforest. Due to their size, only cassowaries can eat the larger seeds and their digestive system aids in the germination of countless plant species.

Breeding/Life cycle

The female cassowary lays 3-5 olive green eggs between June-October. Male cassowaries take on parental duties when the eggs are laid, with the female leaving as soon as laying has occurred. The male will incubate the eggs for approximately 50 days and once hatched, he will raise them to independence which will occur at up to 18 months of age. Juvenile cassowary chicks are similar to emus being a brown colour and covered in darker stripes.

Conservation

Being endangered, the southern cassowary is facing many threats including habitat loss and destruction, vehicle strike as many roads pass through their territories, fragmentation of habitat, and attacks from both domestic and wild dogs and pigs. Because of their endangered status, Wildlife Sydney Zoo is in partnership with Rainforest Rescue, a non-profit organisation that buying back land previously used as farmland, regenerate fragmented rainforest and restore areas through planting and regeneration.

Cool Facts/Did you know?

The casque atop the cassowary's head is made of keratin – just like our fingernails and is not dissimilar to a rhinoceros horn.

These birds are direct descendants of dinosaurs.

They are solitary and have large 'territories.'

Females are larger than males.



Zone: Kangaroo Walkabout

Welcome to Kangaroo Walkabout! In this area of our zoo, you can walk about and may even get the opportunity for one of our kangaroos to come and say hi. Look up in this area, as many of our free flight birds are busily going about their day and like to give our guests a scare by flying really close by on their way to a new branch.

Key things to know about this habitat

This habitat is home to a diverse number of creatures, indoors we have some of our lizards that are found throughout Australia from the bushland to semi-arid environments. Then in our outdoors area, look up to see many bird species from bush budgies to princess parrots, to emerald doves (please stop to read the sign found in Walkabout, opposite our quokka for more information). Not to mention one of Australia's most beloved and famous animals – the kangaroo. Kangaroo Walkabout is also home to our little Western Australian friend, the quokka.

Key creatures you will find in this habitat

Variety of bird species

Shingleback Lizard

Pygmy Bearded Dragon

Central Netted Dragon

Spencer's Monitor

Quokka

The quokka known as the happiest animal on earth due to its perpetual smile. It is the smallest 'cousin' of the kangaroo. This marsupial shares many similar traits, including diet and breeding patterns. A major difference is distribution. While the kangaroo is found everywhere, the quokka is limited to a small pocket south of Perth and more famously, Rottnest Island – as small island about an hour's ferry ride west of Perth. This wasn't always the case previously, where quokkas were widespread across south-western WA and its islands.

They are covered in short, coarse brown fur and have a tail that is furless. This led Dutch explorer, Willem de Vlamingh to describe the quokka, 'as kind of a rat as big as a common cat.' Quokkas move with a bounding gait, that at times, leads to hopping. They prefer to be in dense vegetation near streamside or swamps which allows for shelter, as well as forming trails and paths to move about and evade predators if required. Quokka numbers have sharply declined in the twentieth century, due to habitat loss through land clearing, backburning for bushfire prevention and the introduction of red foxes and feral cats. They are now listed as a vulnerable species.

Quokkas have a lifespan of ten years. Mainland quokkas can give birth twice a year, while Rottnest Island females have a shorter breeding season, meaning only one offspring per year. Joeys are born after 30 days and will remain in the pouch until six months of age. They then spend another two months at the



mother's foot suckling and are then considered independent.

Cool Facts/Did you know?

Quokkas can store fat in their tail in case of seasonal food shortages.

Quokkas can actually climb low trees and branches quite well to get to leaves if required.

Key Creature in Focus

Kangaroos

Kangaroos are found all over Australia, however, certain species are endemic to certain areas. The four species are the western grey (western areas), eastern grey (eastern areas), red (central areas) and antilopine (northern areas). Depending on where you are in Australia will dictate which kangaroo you will see. Kangaroos, like the yellow footed rock wallaby belong to the macropod family because of their large hind feet. They are also a marsupial, which means 'pouched mammal' and live in large groups, called mobs. Kangaroos hold deep spiritual significance for Aboriginal peoples across Australia.



Here at Wildlife Sydney Zoo, we are home to Western Grey Kangaroos and more specifically Kangaroo Island Kangaroos. They are found off the coast off South Australia on Kangaroo Island and that's the reason for their darker fur colouration. It's a chilly part of Australia, so being darker means they warm up quicker in the sunlight. Pretty cool adaptation, right?

Kangaroos are complete herbivores with a diet of native grasses, shrubs, barks and the roots of plants and trees.

Kangaroos have short fur ranging from light grey to brown, small forelimbs with sharp claws for digging up those roots and when in combat, powerful hind legs, and a muscular tail. They possess excellent eyesight and hearing, with ears that move independent of each other. Using those powerful hind legs, kangaroos can get up to speeds of over 50km/p/h – a speeding ticket in our school zones! The strong tail is used for balance when hopping and as an extra limb when moving about. The tail is used as a fifth leg when fighting and a kangaroo can balance their entire body onto it when required.

Breeding/Life cycle

Being a marsupial means that kangaroos have a short gestation period of about 35 days. When the joey (name of marsupial young) is born, it is about the size of a jellybean completely undeveloped other than a set of tiny forearms. The joey will use these forearms to help makes its way from the birth canal to the pouch. The female may choose to help the joey's journey by licking a track in her fur. Once in the pouch the joey will remain there for around nine months before becoming too large to be sustained in the pouch. It will then be at foot – being by the mother's feet learning kangaroo survival skills, starting to eat grasses, while still being milk dependent and will pop its head into the female's pouch to drink regularly. This will continue until the joey is up to 18 months of age, when it becomes independent.

Adaptations

Female kangaroos can perform what is known as embryonic diapause. This means they can pause their pregnancy for approximately a year. Why might they need to do this? If they have a joey in the pouch, they can 'wait' until that joey to leave before giving birth to their next joey. Another reason is due to Australia's harsh weather conditions, if a female is struggling to find food or water, she can again perform embryonic diapause to wait until food or water is more prolific. Another adaptation is, because a female can have a joey in the pouch and one at foot, she will produce two different milks to meet the nutritional needs of each joey's developmental stage. Amazing!

Cool Facts/Did you know?

Kangaroos are great swimmers and will use their forelimbs to drown pursuers.

The arrival of European settlers resulted in an explosion of kangaroo's numbers because of the readily available food and water created by farmlands. This means there is no need for conservation as the kangaroo's numbers are at almost 3 kangaroos per person in Australia!



Zone: Kakadu Gorge

You've arrived at Kakadu Gorge, based on beautiful Kakadu National Park in the Northern Territory. Home to the world's largest reptile, the saltwater crocodile. You may notice the huge crocodile model behind our real crocodile. That is Deinosoukis (di-no-sue-kiss) – the crocodile that roamed the earth with the dinosaurs. Thankfully, evolution means we now have much smaller crocodiles exactly like the one here in Kakadu Gorge. Kakadu is unlike other regions in Australia, having only two seasons – the wet season and the dry season.

Key things to know about this habitat

Kakadu Gorge has been created to house a saltwater crocodile. That means the water is heated to a toasty 28 degrees Celsius, the concrete beside the pond also has heat mats installed. The speed bumps you can see on the left side of the pond, raise up to reveal fencing to allow safe keeper access as a feeding platform option, and to allow cleaning of the exhibit. You might be concerned that this is not an area large enough to comfortably house a saltwater crocodile, but rest assured, this is ample room. In dry season, crocodiles will live in a puddle barely the size of their body to wait for the impending wet season. As you leave our zoo, you'll have the opportunity to be under the exhibit water level to see this amazing creature from underneath, and you may even be able to pop into the tube to get an even closer look at those pearly whites!

Key creatures you will find in this habitat

Red Collared Lorikeets

Key Creature in Focus

Saltwater Crocodile

Australia is home to only two species of crocodile, the saltwater (also known as the estuarine) and freshwater crocodiles. The saltwater crocodile measures in at up to 6 metres, while the freshwaters can get up to 3 metres. Saltwater crocodiles are only found in the northern parts of Australia where the waters are warm. These powerful reptiles can make the journey from Australia all the way to Indonesian waters. They are known as man eaters and are affectionately called 'salties.'

Saltwater crocodiles have a large head with the ears, eyes and nostrils all aligned on top of the head to allow the crocodile to use its senses while being mostly submerged. Saltwater crocodiles have between 64-68 teeth in their mouths. You may notice a series of lumps and bumps along the top of their back. These are called scutes and serve the purpose of helping to warm up the crocodile, sitting above the waterline. Their powerful tail is used to propel them quickly in the water to grab prey. Saltwater crocodiles are apex predators and will lie in wait for a meal to come to the water's edge for a drink. When the crocodile grabs its prey, it will carry out the 'death roll' that salties are famous for. This involves dragging their prey back into the water and barrel rolling to drown the prey quickly so it can be consumed. They can only produce bursts of energy for short amounts of time, so they need to also have enough energy to eat. Saltwater crocodiles are complete carnivores eating a variety of meats throughout the stages of their life. Juvenile crocodiles will eat crustaceans and fish, while larger more mature crocodiles will eat wallaby, kangaroos, turtles, birds,



and even livestock. Even though saltwater crocodiles can be huge, their stomach is only the size of a basketball. So even though they hunt bigger animals as adults, they eat surprisingly little -only needing to eat every other day and not at all during cooler months.

Breeding/Life cycle

Saltwater crocodiles have a similar lifespan to humans and lay around 50 eggs at a time in mound nests made from vegetation between November and May. The eggs are incubated for a period of 75 days and sadly only 1-2% of the hatchlings will make it to maturity. Female crocodiles are excellent mothers and are extremely protective of their eggs and have even been known to carry her hatchlings in her mouth to keep them safe.

Cool Facts/Did you know?

The sex of the hatchlings depends on the temperature in the nest – only a couple of degrees decides if males or females will hatch.

Saltwater crocodiles can hold their breath for over an hour, slowing their heart rate and only sending oxygenated blood to their vital organs.

Saltwater crocodiles were almost hunted to extinction until they were protected in 1971, but even today crocodile farms exist where their leather is used for high-end fashion.



Zone: Nightfall

Welcome to our nocturnal house, where you will find a variety of creatures that prefer to live their 'days' in the dark. Many of Australia's marsupials are also nocturnal, sadly this means many of them fall victim to attacks by feral cats who also like to hunt under darkness. No matter where you are in Australia, you will find the nightfall a busy time where our amazing animals begin their 'day' under the cloak of darkness.

Key creatures you will find in this habitat

Platypus

Yellow-bellied Gliders

Sugar Gliders

Spotted Python

Black Headed Python

Woma Python

Knob Tailed Geckos

Key things to know about this habitat

Each habitat throughout our Nightfall zone is designed specifically with that creature in mind. Be it our sandy exhibit with hides for our desert dwelling black-headed python, or our tree and branch filled exhibit for our arboreal yellow-bellied gliders. Our exhibits may differ, but all the animals' needs are being met while they all share the nightfall. The lights in this zone are on a reverse system, so after the zoo closes and everyone has gone home for the day, daytime will begin, and our nocturnal animals will go into their hides to seek shelter and rest. When the keepers arrive the next day, the lights will turn off and darkness will again descend, while our animals eagerly await their breakfast/dinner.

Creature in focus

Greater Bilby

The Greater bilby is affectionately known as Australia's Easter bunny – due to those large rabbit-like ears. There were once two species of bilby, the Greater bilby, and the Lesser bilby. Sadly, the lesser bilby became extinct sometime around the 1950s. Belonging to the bandicoot family, these ground-dwelling marsupials are now listed as endangered in Queensland and vulnerable throughout the rest of Australia. Where bilbies used to roam an area of approximately 70% of Australia, they now occupy less than 20% of their former habitat.

Greater bilbies are covered in silver-grey fur, have large, pointed ears that make up for poor eyesight, and thin black tail with a white tip. Their body is compact, and their limbs have sharp claws to enable the digging of burrows and foraging for food. Their face is narrow with a pointed snout for digging



up an omnivorous diet of roots, fungi, seeds, fruit, and insects – especially termites.

They live in arid regions through to temperate coastal areas and can go without water for periods of time as they get moisture from their food source. To shelter from the heat of the day, bilbies build complex, spiral burrows up to 3 metres long and 2 metres deep, normally butted up against a termite mound or grass plant. Their burrow is always open, however, if a predator is to enter, they rarely find the bilby due to the burrow system. Add to this, the bilby will furiously dig out the closed end to extend the burrow and avoid. These burrows are shared by males, females and their young and will be used for many years.

Breeding/Life cycle

Bilbies have a lifespan of seven years. Bilbies have two young at a time and can have up to 8 young a year. They are born after 14 days and are in the pouch for 3 months. They are fully weaned at around 15 weeks and can begin breeding soon after.

Cool Facts/Did you know?

Bilbies have a backward facing pouch (just like wombats) to avoid dirt filling up the pouch while digging. There are less than 10 000 bilbies left in the wild.

What Can You Do?

During Easter time, some retailers will sell Easter bilbies with proceeds going towards bilby conservation. Buy a bilby to help save our bilbies, these guys really need our help.

Breeding/Life cycle

Saltwater crocodiles have a similar lifespan to humans and lay around 50 eggs at a time in mound nests made from vegetation between November and May. The eggs are incubated for a period of 75 days and sadly only 1-2% of the hatchlings will make it to maturity. Female crocodiles are excellent mothers and are extremely protective of their eggs and have even been known to carry her hatchlings in her mouth to keep them safe.

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Saltwater crocodiles were almost hunted to extinction until they were protected in 1971, but even today crocodile farms exist where their leather is used for high-end fashion.



Zone: Koala Rooftop

Welcome to our Koala Rooftop, in this area you can take a well-deserved break, sit down and enjoy our iconic and most recognisable animal, the koala. Step inside to the area behind our kiosk where you can find our bug zone. If you love an arachnid, this is the area for you. You can find scorpions, some insects, and a variety of spiders.

Key things to know about this habitat

At koala rooftop you will notice the smell, that's the smell of not only the koala's home, but also their food. Eucalyptus! Koalas are simple creatures. If they have a fork of a tree to rest in, they are very happy. How many tree forks can you count? You might be wondering why there are different koalas in different exhibits? That's because we need to keep our males and females separate for breeding reasons, so having separate enclosures allows this to happen. The eucalyptus is brought in daily and just like we have our favourite chocolate, koalas have their favourite eucalyptus species. In Australia, there are well over 700 species of eucalypts, with koalas only eating a few varieties that would be on offer in their territory.

Key creatures you will find in this habitat

Koalas

Koalas are often called koala bears, but they are not bears! They are a marsupial; us humans are more closely related to bears than these cute critters are. The word koala is said to have come from the Dhurug people's language and translates to, 'no drink'. Although koalas do get most of the water they require from their leaves, they do need to drink when the leaves are drier – during blistering summer heat, drought, or bushfire-stricken areas. Koalas are only found along the eastern coast of Australia and on the eastern side towards the bottom of South Australia. They live along the coast in eucalypt forests. They are most comfortable up in the treetops and only travel to the ground to find a new tree or territory. Koalas are solitary animals who have a home range that consists of several 'home trees' and their territory can overlap that of other koalas – despite being territorial. Koalas will use their home trees to sleep in and will have separate trees to eat. They are folivores and almost exclusively only eat eucalyptus. Being a toxic and fibrous plant with very little nutritional value, means koalas will sleep up to 20 hours per day! Imagine if we were to eat lettuce all day every day, we would be tired too!



Koalas are covered in a light grey through to almost brown fur dependent on the state they are found. In Queensland, koalas are smaller and light grey, but travel down the coast away from the heat of the north and you'll notice the koalas getting not only darker in colour, but also larger in size. This adaptation allows koalas found in cooler regions to be darker (just like our Kangaroo Island kangaroos) and have a larger surface area to attract the heat of the sun to help keep them warm. Wildlife Sydney Zoo's koalas are from New South Wales. Koalas have a white speckled bottom and believe it or not this helps them to camouflage high in the forest canopy. These markings are like snowflakes and no two are alike. In fact, these marking can help zookeepers to identify the koalas here at the zoo! Koalas possess poor eyesight (notice their small eyes) and rely on their other senses. They have excellent hearing and a very keen sense of smell, using it to help them decide which leaves are best to eat.

Koalas have strong forearms, legs, and claws for climbing. With the capability to hang their entire body weight on their claws alone. Koalas have unique paws, possessing two thumbs to aid in climbing and clinging to trees, and two digits fused together on their back legs to form a grooming tool. They have pads on their paws to aid in gripping.

Breeding/Life cycle

Males are up to 50% larger than females, and they have a much more prominent nose. Males also have a scent gland on their chest that exudes an oily substance that they will use to mark their territory and to attract females. Koalas also possess a bellow that can travel for kilometres through a silent forest. This rumbling belching noise wards off males and has the opposite effect for females. The female will seek out the largest male she can find to pass on his 'strong' genes. A female will give birth November – February to a jellybean sized joey 35 days after breeding. The joey will make its way to the pouch using instinct and will remain there for approximately 6-7 months before emerging to spend time on mum's chest and back. The joey will still drink milk during this time, as well as being introduced to eucalyptus. Remember how eucalyptus is toxic? This means before eating leaves, a joey will first be fed its mum's poo to get lots of bacteria in its gut ready to break down the toxins in the eucalyptus. Once it does that – the baby is ready to take on leaves. The joey will become independent at around one year old. Females have one offspring per year and rarely have twins.

Adaptations

Koalas – just like humans (and other mammals) have a caecum. Theirs is a HUGE 2 metres long! Yes! 2 metres is coiled up in that belly! The koala's caecum is full of bacteria to break down the tough fibres in their eucalyptus diet.

Just like their wombat cousin, they have a bony plate in their bottom, which allows them to spend hours on end tucked into the forks of trees.

Conservation

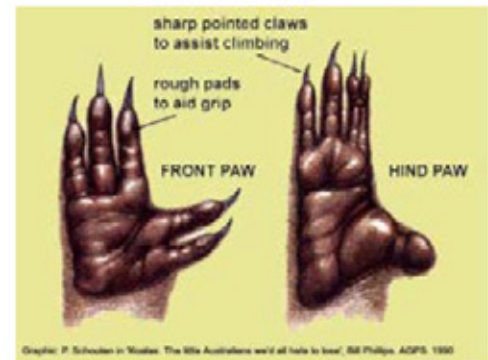
Koalas have few natural predators, with the dingo and powerful owls being capable of taking a joey. Despite this, numbers are in decline due to many factors. Dog attacks, car strike, habitat loss and most recently our devastating bushfires destroyed habitat and koala populations. Much of koala's natural habitat is on privately owned land, which means that are not protected. They are listed as vulnerable and require further protection. Wildlife Sydney Zoo have partnered with Science for Wildlife to work together in bushfire recovery and habitat protection. Wildlife are helping to raise money and awareness for the plight of koalas.

Cool Facts/Did you Know?

Koalas have individualised fingerprints just like humans do.

They don't sleep for 20 straight hours, koalas are awake in around 20 minute intervals for a position change, a stretch, to groom or eat.

Koalas eats between half a kilogram to a kilogram of leaf each day.



Graphic: P. Schouten in 'Koalas: The Wild Australians we'd all love to love', Ed Phillips, ADPS, 1990

Post-Visit Activities

Activity 1.

Students write a recount, draw a comic or develop a poster describing their visit. Ensure that they include information learnt from their excursion.

Activity 2.

Research Australian animal lifecycles where newborns resemble the parents, such as a koala, and others that do not, such as the Green Tree Frog. Students then investigate their life cycle, from early stages to adult and how they change over time.

Activity 3.

Create your own food chain or lifecycle using the template provided. These can be shared and compared. As an extension, students can label whether the organism is a decomposer, producer or consumer. They can extend their food chain into a food web by adding additional organisms and arrows to their chain.



Resources Pre-visit activities

Description: Draw & label the animal

Diet: What does it eat?

Lifecycle: Draw its lifecycle

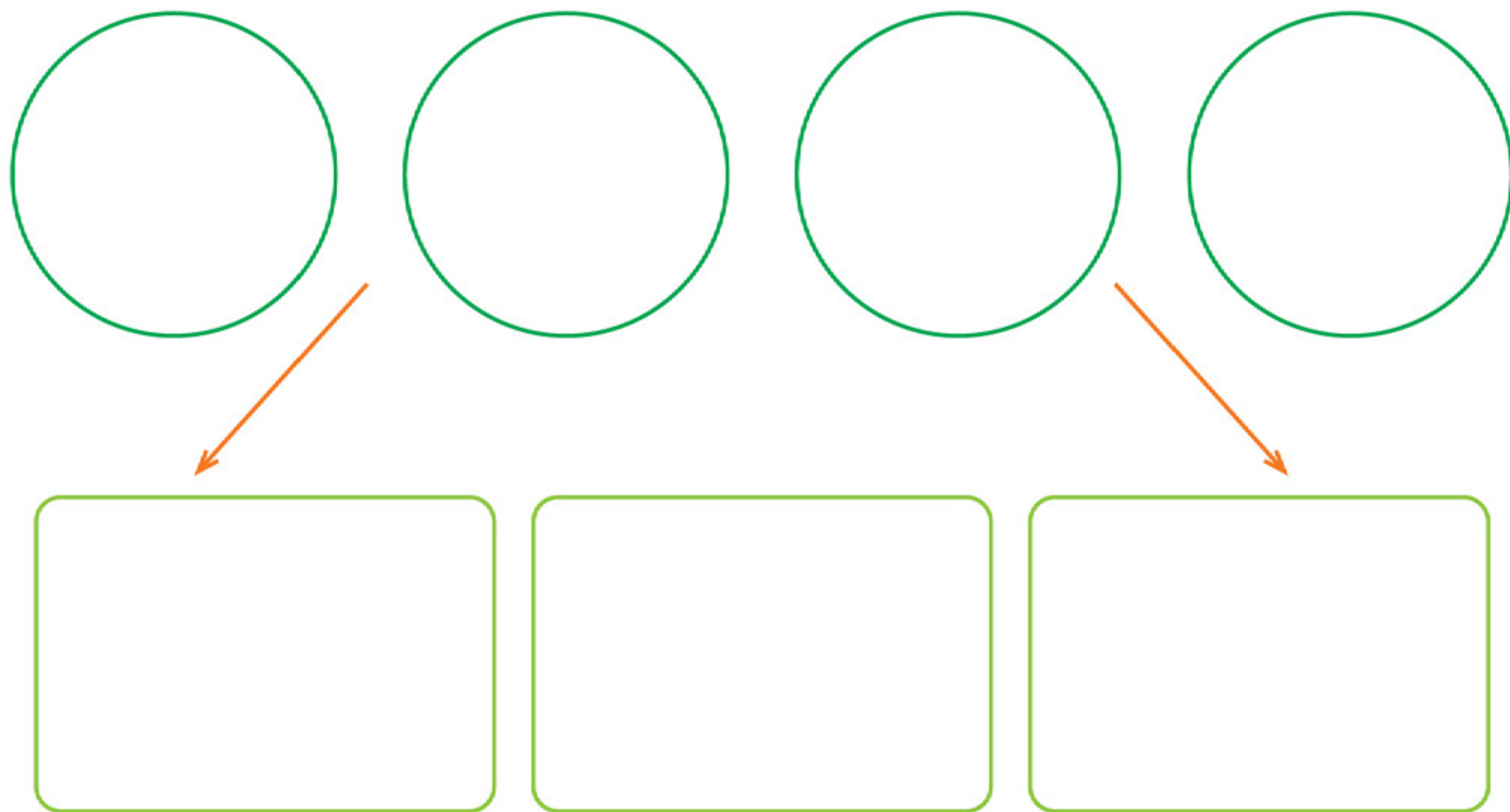
Habitat: Where is this animal found?

What are the animal's key adaptations?

Interesting facts

Resources Post-visit activities

Food chain in the _____



What can affect this food chain? Draw them in the boxes above.

Draw and label a food web



1. Pick an animal or plant and describe what would happen to the food web if it was removed?
2. Introduce a pest species such as the Fox that eats almost everything. What happens?
3. Think of human interactions with food web and how we could impact it? Are there positive impacts?

