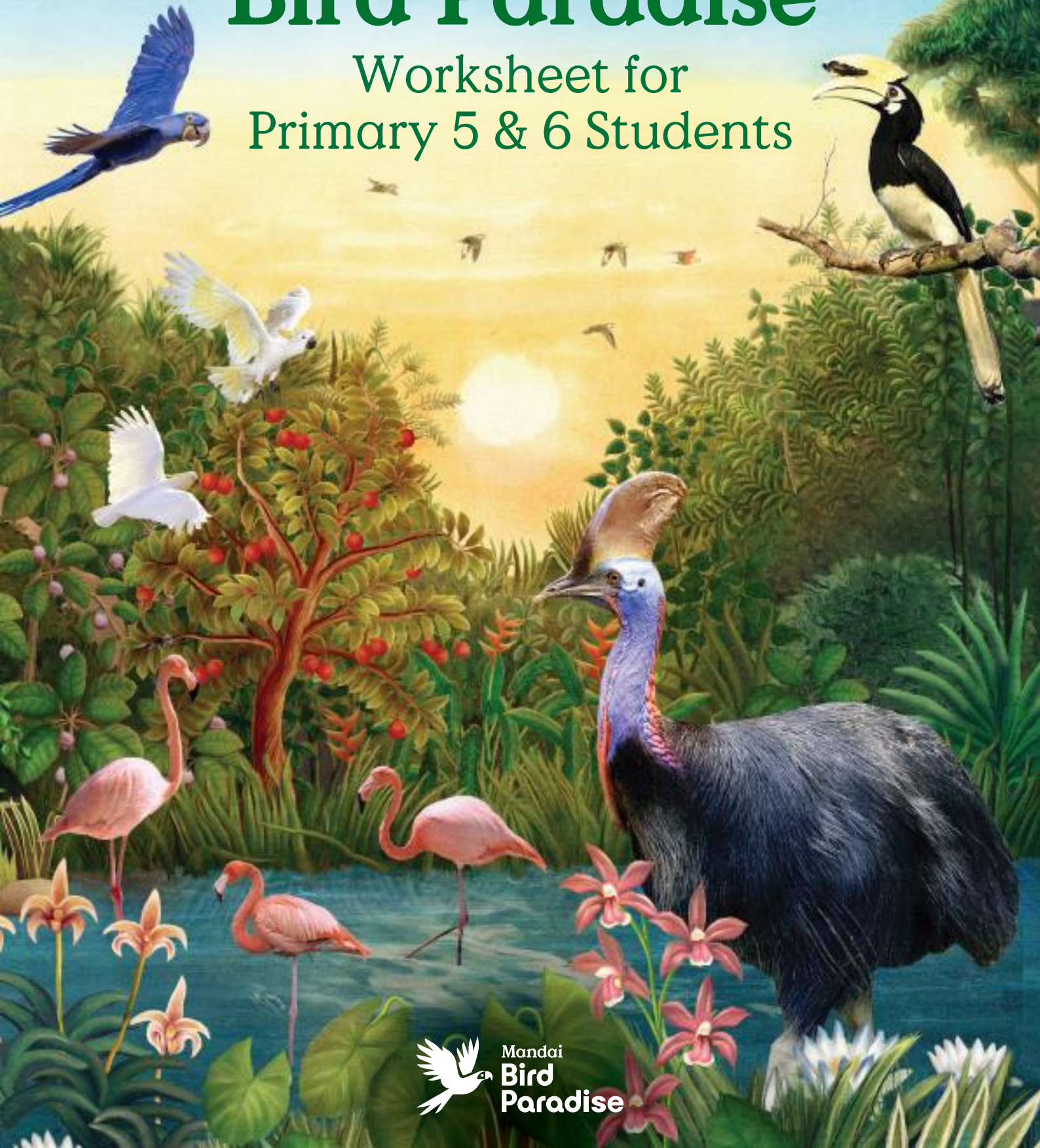


An Educators' Guide to Bird Paradise

Worksheet for
Primary 5 & 6 Students



Mandai
**Bird
Paradise**

Everybirdy, Let's Have Fun!

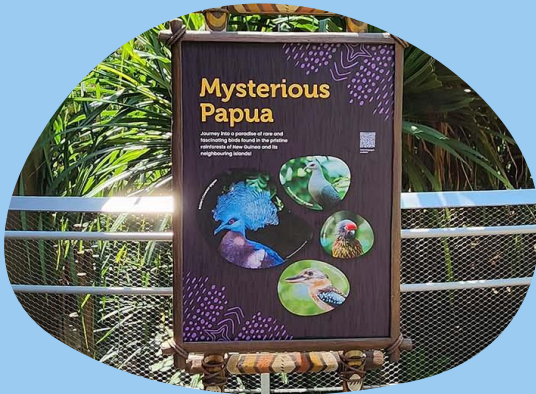
@



Penguin Cove



Australian Outback



Mysterious Papua

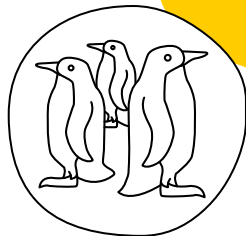


Lory Loft

What's Inside?

Bird Paradise is a huge place.
We recommend that you focus on a section of Bird Paradise
for learning journeys. This guide features:

Worksheets*
focusing on
**science syllabus of
interactions** through 3 topics:



Penguins



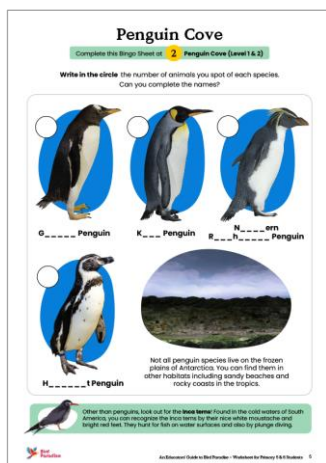
Courtship



Feet & Flight

* with answer sheets

4 bingo sheets
for bird spotting at:



Penguin Cove



Australian Outback



Mysterious Papua



Lory Loft

Suggested Itinerary

- 1 Start from entrance
- 2 Penguin Cove (Level 1 & 2)
- 3 Penguin Cove (Level 3)
- 4 Australian Outback
- 5 Mysterious Papua
- 6 Courtship Discovery Hub
- 7 Lory Loft
- 8 Feet & Flight Discovery Hub
- 9 Shuttle back to entrance



Suggested
Duration:
120 mins



Entrance



Penguin Cove
(Level 1 & 2)



Penguin Cove
(Level 3)



Australian
Outback



Mysterious Papua



Courtship
Discovery Hub



Lory Loft



Feet & Flight
Discovery Hub

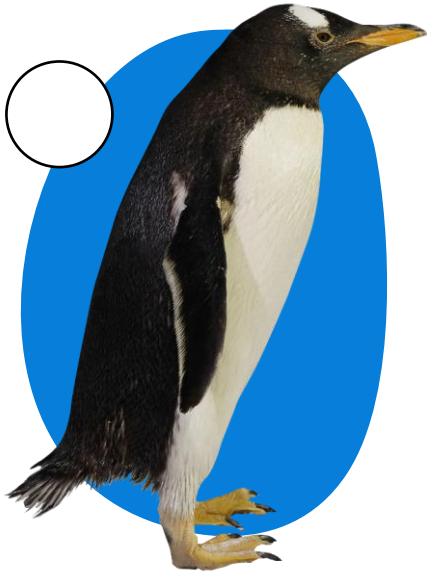


Shuttle back to
Entrance

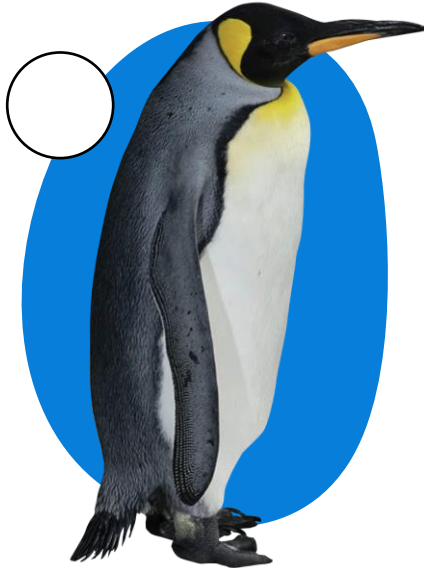
Penguin Cove

Complete this Bingo Sheet at **2** Penguin Cove (Level 1 & 2)

Write in the circle the number of animals you spot of each species.
Can you complete the names?



G_____ Penguin



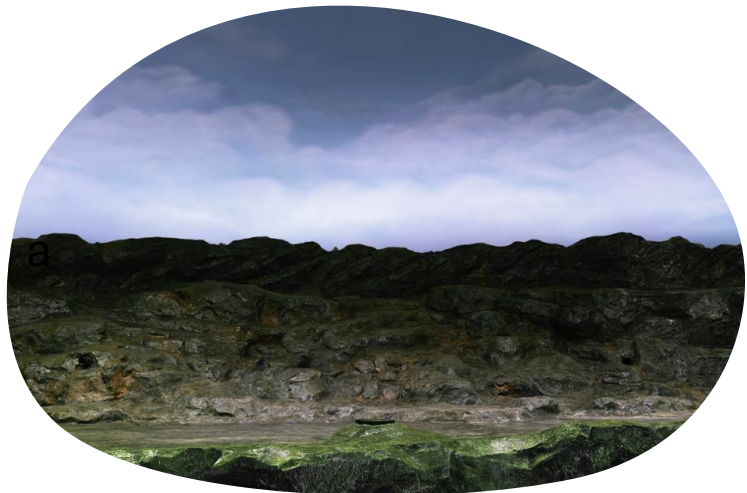
K___ Penguin



N_____ern
R___h_____ Penguin



H_____t Penguin



Not all penguin species live on the frozen plains of Antarctica. You can find them in other habitats including sandy beaches and rocky coasts in the tropics.



Other than penguins, look out for the **Inca terns**! Found in the cold waters of South America, you can recognize the Inca terns by their nice white moustache and bright red feet. They hunt for fish on water surfaces and also by plunge diving.

Penguins

Complete these activities at **2** and **3** Penguin Cove (Level 1, 2 & 3)

Who is that penguin?

Q1. Observe a penguin for 30 seconds and draw it out.

Label 2 body parts that feature their **structural adaptations** to their **habitat**.

Hint: Learn more about adaptations from the signages

E.g. Tail – used as a rudder to change direction in water

Penguins in danger

Q2. Head to the Mezzanine level (in-between Level 1 and 2) to watch the video. Read the signages on the wall and list out 2 threats faced by penguins.

1. _____

2. _____

Qn 3. You can help penguins and other marine animals by choosing **sustainably-sourced seafood**. Pick the label below that shows that the seafood has been sustainably sourced.



Act now! Share this with your friends and family members. Keep a lookout for this label the next time you go shopping for seafood!

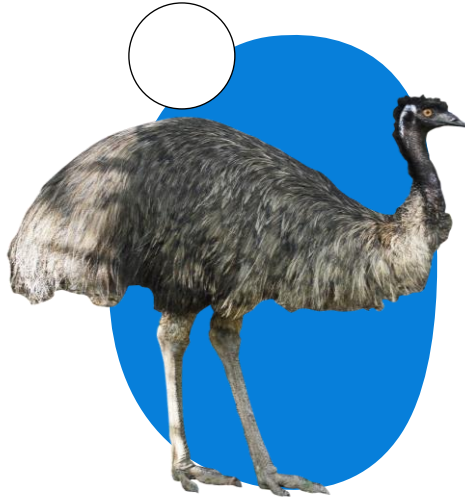
Australian Outback

Complete this bingo sheet at **4** Australian Outback

Write in the circle the number of animals you spot of each species.
Look for the interpretive to help you fill in their names!



Tawny F_____



Common E__



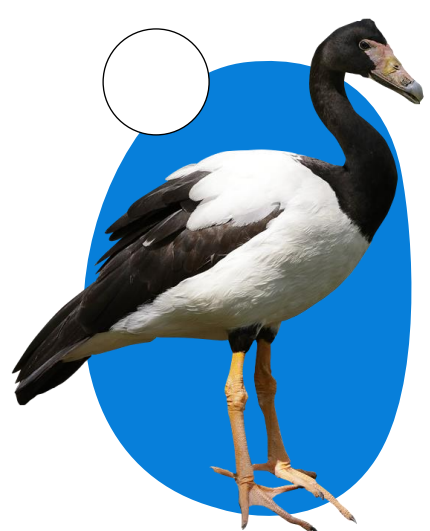
Red-necked W_____



Major Mitchell's C_____



Laughing Kookaburra



Magpie Goose



Masked Lapwing



Red-tailed Black-cockatoo



Scaly-breasted Lorikeet

Australian Outback

Complete these activities at **4** Australian Outback

1. What Do I Need?

Our exhibit designers and animal care team in Bird Paradise work closely to provide the birds with an environment that resembles, as closely as possible, the wild environment where their species is found.

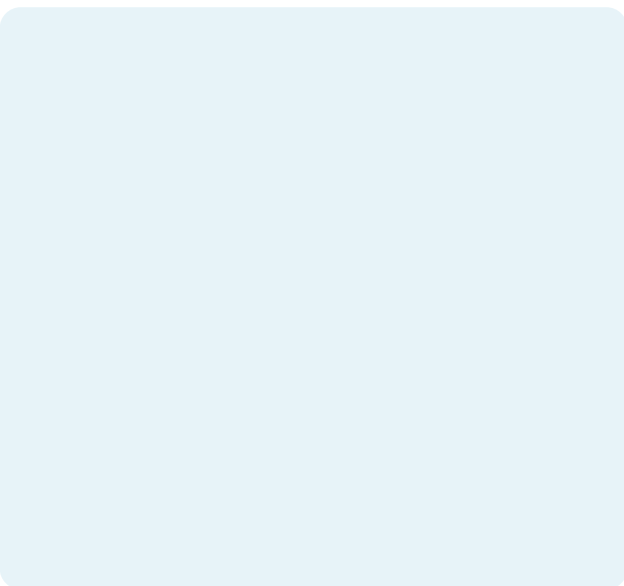
Look around the exhibit and identify **two** factors that showcase the efforts in creating a natural environment for the birds. **Explain** how such an exhibit helps the birds thrive.

2. Adaptations: Feet

There are two types of adaptations: behavioural adaptations and structural adaptations.

_____ adaptations are the physical characteristics of an animal that increases its chances of survival in an environment.

Observe the **feet** of **two** birds that live in different areas of an environment (e.g. in trees, in water, on land). **Draw** them out here and **write down** how the feet of each bird are adapted to help it survive better in the environment.



Mysterious Papua

Complete this bingo sheet at **5** Mysterious Papua

Write in the circle the number of animals you spot of each species.
Look for the interpretive to help you fill in their names!



Southern C_____



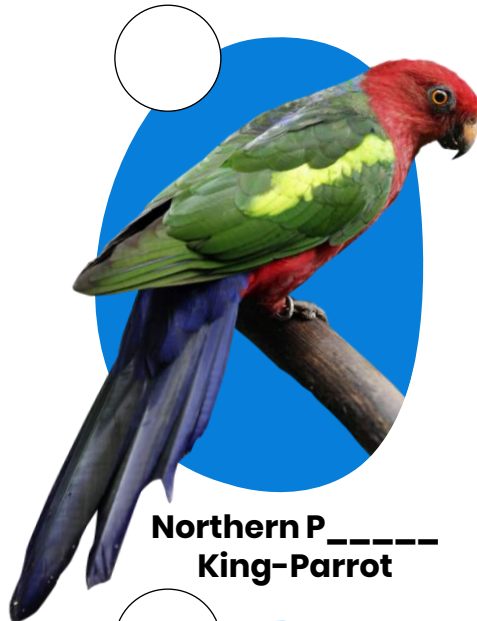
Sclater's C_____pigeon



Yellow-streaked Lory



Pinon's Imperial-pigeon



Northern P_____ King-Parrot



Palm Cockatoo



Nicobar Pigeon



Coconut L_____



Pied Imperial-pigeon

Mysterious Papua

Complete these activities at **5** Mysterious Papua

1. Adaptations: Beaks

1. Focus your attention on the beaks of the birds around you. List down as many words as you can to describe their beaks.

2. Observe a bird that is feeding. How is its beak **adapted** to help it feed better?

(Hint: Investigate what the bird is eating and watch how it feeds. Connect your observation with the size and shape of the beak.)

2. Trouble in Paradise

Hint: Find a signage with the same title

Many of our activities can result in a negative impact on the environment.

List down **2 threats** that the birds of New Guinea are facing and **explain** how they affect the birds of New Guinea negatively.

1.

2.

Courtship Discovery Hub

Complete these activities at **6** Courtship Discovery Hub

1. Adaptations for reproduction

Living things reproduce to have young. Watch the videos or explore the signages around to find out more about the wide variety of courtship methods used by male birds to attract females.

(a) List **two different types** of courtship displays used by the male birds. For each answer, suggest if it is a structural or behavioural adaptation.

1.

2.

(b) How do these adaptations help the male birds?

(c) Some of our activities might leave a negative impact on the environment. Can you think of **one** example how human activities might affect the reproduction of birds?

(d) What can we do to prevent or reduce the impact of human activities in (c)?

Lory Loft

Complete this bingo sheet at **7** Lory Loft

Write in the circle the number of animals you spot of each species.
Look for the interpretive to help you fill in their names!



Northern Cassowary



Pesquet's P_____



Victoria C_____-pigeon



Red Lory



Yellow-bibbed L____



Marigold Lorikeet



Red-billed Blue M_____



B____-eyed Cockatoo



Chattering Lory

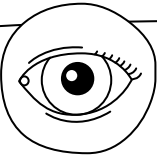
Lory Loft

Complete these activities at **7** Lory Loft

Mindfulness Activity: Sensing Nature

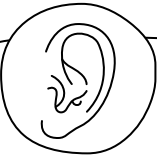
Find a comfortable spot. Now, try to name:

5 things you can see, **4** things you can hear, **3** things you can smell, **2** things you can touch and **1** thing you can taste.

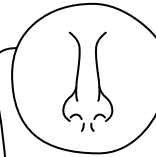


Classify the five things you see. Draw a table in the space below to show your classification. What are they classified based on?

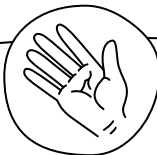
Bonus: Try to identify the birds that you have spotted using the signages.



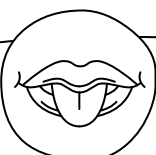
Can you draw a pattern to represent the sounds you hear?



Can you identify where/who the smell is coming from?



What types of materials are the items made of?



What might you want to taste?

Feet & Flight Discovery Hub

Complete these activities at **8** Feet (Level 1) Discovery Hub

1. Amazing Feet

(a) Bird toes can come in different shapes, adapted to help birds survive better in their environment. List down 3 different ways birds that use their feet for.

1. _____

2. _____

3. _____

Visit **Feet Hub (Level 1)** to learn more about feet adaptations.

(b) For each of your answers above, find an example of a corresponding toe shape and sketch it out below. Explain how this adaptation helps the bird.

1. _____

2. _____

3. _____

Answer Sheet



Answer Sheet

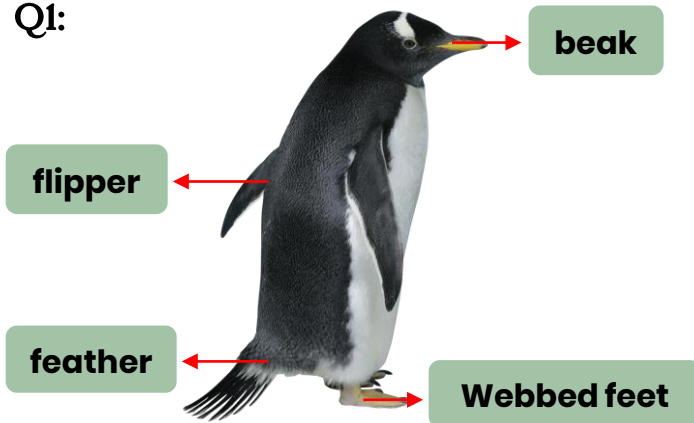
Penguin Cove [Page 5]

Clockwise from top left:

Gentoo Penguin, King Penguin, Norther Rockhopper Penguin.x

[Page 6]

Q1:



Q3:



The Marine Stewardship Council (MSC) blue fish tick label indicates that the seafood can be traced back to healthy fish populations that have been sustainably fished.

Additional Info:

Suggested Answers

- Webbed feet and flippers help them swim fast and steer effectively in water
- Tightly-packed feathers and thick down feathers to stay warm on land; and thick layer of fat to stay warm in water
- Streamlined body/shape of flippers help reduce drag in water.
- Sharp beak with curved end helps grip onto slippery fish.

Q2:

Suggested Answers

- Pollution – Oil and chemical spills
- Climate change – extreme weather and global warming
- Commercial overfishing

	<p>Forest Stewardship Council (FSC) label indicates that the forest product is obtained through sustainable harvesting practices.</p>
	<p>Rainforest Alliance label certifies sustainable chocolate, coffee, tea, juice, and all the natural foods farms and forests provide.</p>
	<p>RSPO label indicates products made with RSPO Certified Sustainable Palm Oil.</p>

Answer Sheet

Australian Outback [Page 7]

Tawny Frogmouth, Common Emu, Red-necked Wallaby,
Major Mitchell's Cockatoo




[Page 8]

Q1: Suggested Answers: Any 2

- Food/water tray for animals are easily accessible
- Trees for animals to hide/seek shelter
- Water pools for aquatic animals to swim
- Trees to provide oxygen for respiration
- Big space for animals to move about
- Water misting during hot days to cool animals down

Q2: Behavioural

Suggested Answers:

		
Webbed feet to help them swim efficiently	Sharp claws to grip onto tree branches	Strong toes for better grip when running

Answer Sheet

Mysterious Papua [Page 9: Bingo Sheet]

Southern Cassowary, Sclater's Crowned-pigeon, Northern Papuan King Parrot, Coconut Lorikeet

[Page 10]

Q1: Suggested Answers: sharp, curved, long, short, thick, thin etc

Q2: Suggested Answers:

- Parrots like cockatoos have sharp, curved beaks to for the bird to pick out the flesh from their food. It can also help them to crush nuts and crack seeds more easily.
- Pigeons have short, thick beaks to help them crack seeds and nuts.
- Kookaburras have strong, thick beaks to grab prey. They use their strong beaks to smash its prey against tree branches to immobilise them.
- Cassowary have pointed beaks to pick up fallen fruits from the forest floor.

Q3: Suggested Answers (any 2):

- Globalisation has led to a worldwide market for exotic birds and their feathers (illegal wildlife trade), resulting in more birds being caught to fulfil the demand.
- New Guinea's growing population has led to more birds being hunted for food.
- Forests are cleared (deforestation) to make way for farmland, resulting in a loss of habitat for the birds.
- Large scale mining for gold and copper contaminates the environment, resulting in bird deaths due to pollution.

Answer Sheet

Courtship Discovery Hub

[Page 11]

Q1(a): Suggested Answers

- (Structural) Shape shifters: Some birds have special feathers to transform their shapes to impress
- (Behavioural) Builders: Some birds build impressive structures
- (Behavioural) Performers: Some birds put up elaborate shows (movement, dance, call)

Q1(b): Male birds put up courtship displays to advertise their stamina and good health. These displays help female birds select a mate with the best genes to produce healthy offspring.

Q1(c): Suggested Answers

- Deforestation – birds are forced to find new homes that are further away, increasing the difficulty for male and female birds to meet. Trees with nests are cleared, killing the eggs/hatchlings.
- Pollution – birds use man-made materials to build their nests; birds become less colourful (fit) as they feed on the wrong things.

Q1(d): Suggested Answers

- Deforestation – Choose products with Rainforest Alliance , RSPO Certified Sustainable Palm Oil. and Forest Stewardship Council (FSC) logos.
- Pollution – Reduce, reuse and recycle. Bin waste properly.

Answer Sheet

Lory Loft

[Page 12: Bingo Sheet]

Pesquet's Parrot, Victoria Crowned-pigeon, Yellow-bibbed Lory, Red-billed Blue Magpie, Blue-eyed Cockatoo

[Page 13]

Suggested Answers:



Living vs Non-living things, or any other forms of classification



Drawing of bird calls, wind, voices etc



Smell of rain, soil, food, poop etc



Materials of metal railing, foot path, benches, signages, leaves etc



Imagine the taste of the fruits, nectar, leaves, water etc

Answer Sheet

Feet & Flight Discovery Hub [Page 14]

Q1a: Suggested Answers

- To swim, to walk, to grab things, to run etc

Q1b: Suggested Answers

A GOOD GRASP

Most birds have this toe formation – perfect for perching.



BACKSTOP

The two backward-facing toes of a woodpecker help anchor it to a tree trunk as it chips away at the wood.



NIMBLE FEET

What do parrots have in common with footballers? They can be right or left-footed. Their toe arrangement allows them to hold objects or manipulate them with great dexterity.



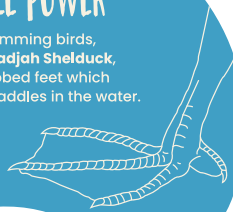
GET A GRIP

Some birds, like turacos, can swivel their toes to get a better grip on trickier surfaces.



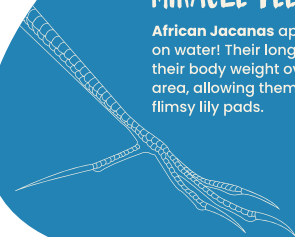
PADDLE POWER

Many swimming birds, like the **Radjah Shelduck**, have webbed feet which act like paddles in the water.



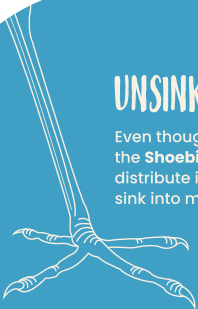
MIRACLE FEET

African Jacanas appear to walk on water! Their long toes spread their body weight over a larger area, allowing them to walk on flimsy lily pads.



UNSINKABLE

Even though it is a large bird, the **Shoebill** has long toes to distribute its weight so it does not sink into muddy or swampy areas.



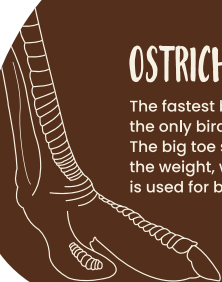
LIFT THE FLAPS

Birds like **Common Coots** and **Little Grebes** have flaps on their toes called lobes. Lobes prevent the birds from getting mired in mud.



OSTRICH RACE

The fastest bird on land is the only bird that has two toes. The big toe supports most of the weight, while the small toe is used for balance.



KUNGFU MASTER

The cassowary has a dagger-like claw on each inner toe to deliver deadly kicks. No wonder it is considered one of the world's most dangerous birds!



GRAB FOOD

Raptors like hawks and eagles use their powerful, sharp talons to snatch prey and hold them down as they feed.

