

Remarkable Birds

provide an authentic learning experience
at Invercargill's Queens Park Aviary



This curriculum-based booklet of activities helps teachers to achieve the best educational outcomes from their visit to the Queens Park Aviary.

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Foreword by Howard Walsh, Advisory Services,
Dunedin College of Education

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Foreword

by Howard Walsh, School Adviser with responsibility for Science
Dunedin College of Education, Southland Campus.

The 'Remarkable Birds' unit is a well-written and researched science document for schools. It is based on the philosophy of 'Building Science Concepts' booklets and offers teachers the "big idea" picture. It provides background resource and information for teachers and the pre-visit activities may be chosen to check children's understanding and misperceptions. Once the teacher is aware of what it is the children need to learn, then there is a range of pre-visit activities that can lead to new learning.

The availability of the Aviary Keeper as an "expert" is a most valuable additional avenue to support children's (or teachers') understanding. Once teachers have established what it is the aviary visit is going to do, then the Queen's Park staff are very willing to help and guide groups.

Copies of the three interactive panels are incorporated into the resource to give teachers further understanding of what is available at the aviary.

Before their visit, children may need to be taught how to use interviewing skills, digital cameras, tape recorders, video cameras; how to frame questions, take notes and thank speakers. This leads to a wealth of new discoveries and new learning which can be developed in context.

On return to the classroom, the discussions, results and changes to children's learning could all be plotted and assessed using the information and data collected during the visit.

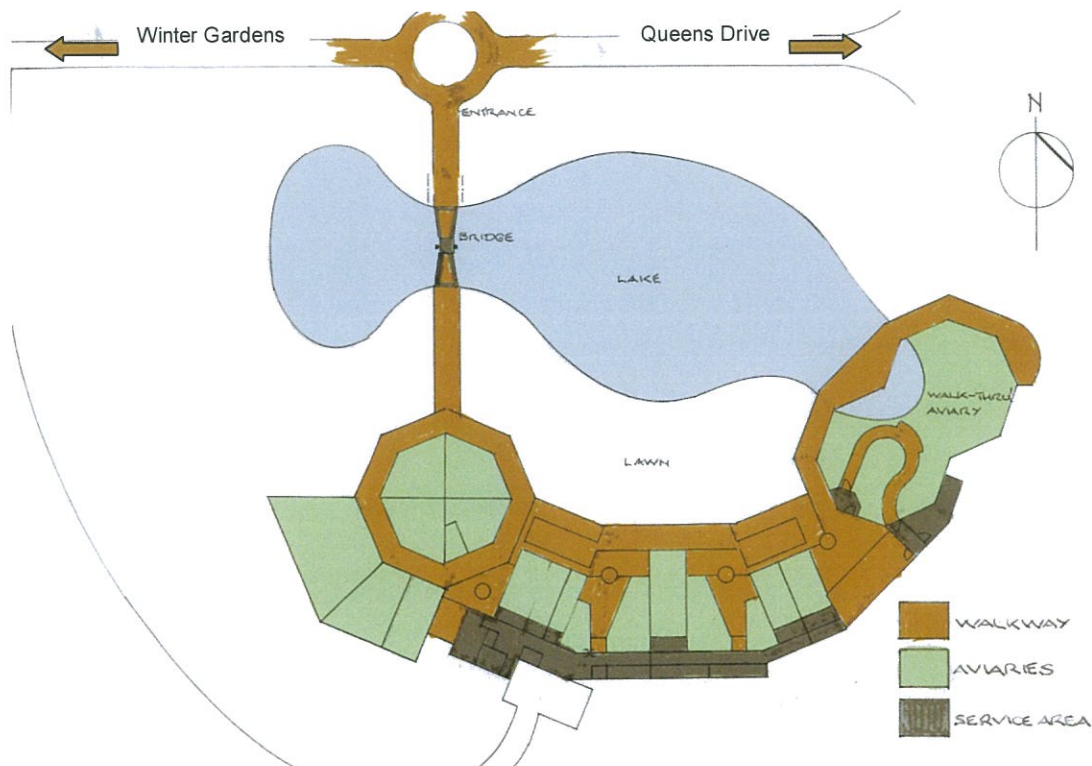
The 'Remarkable Birds' resource is a creative approach that assists children to learn new science concepts that are challenging and exciting.

About Queens Park Aviary



Aviary Complex

The Queens Park Aviary was opened in spring 1998 with generous funding from the Community Trust of Southland.



The complex has been designed to ensure that birds enjoy a warm and sheltered living environment. The site itself has an open, sunny position and each aviary unit includes an enclosed roosting area which provides both protection and privacy. A large walk-through aviary is an attractive and popular feature.

The Aviary is open throughout the year. A good time for school visits is early morning when birds are fed and are particularly active.

The educational opportunity

Queens Park Aviary has recognised the educational potential of close encounters with some of the world's most exotic and captivating birds.

Its educational resources feature:

- Native birds that developed a specialised shape and form in the absence of mammalian predators
- Examples of physical adaptations for a wide range of environments
- Numerous members of the parrot family whose entertaining behaviours help them to survive

Curriculum links

The Aviary offers first hand learning experiences across a range of curriculum areas. Three large interactive displays in a spacious gathering area have been designed specifically to promote links with the *Living World* strand of the Function of Birds in *Making Better Sense of the Living World* Levels 1 – 4. The *Building Science Concepts* booklets No. 3: 'Birds'; No. 5: 'Fur Feathers and Bark'; No. 39: 'Is this an Animal?' form the foundation of this unit.

On-site Educational Resources

Introductory talk

Whenever possible, a Queens Park staff member will meet and greet school groups and introduce them to the Aviary.

This service is available only on request by pre-booked groups.

Themed interpretation panels

Three large interactive panels encourage children to make connections between 'big idea' concepts and their own first-hand experience. They provide the basis of activities for an aviary visit.



Species interpretation panels

Each aviary bird species has its own interpretation panel. Panels that describe native birds can be identified by their blue background colour; exotic species by a peach background colour. Birds in the walk-through aviary are identified by smaller panels set into 'rotating drums'.

Explanatory panels have the following features:

- colourful illustration which also gives a sense of habitat
- brief text which describes the bird's identifying characteristics and way of life
- map to show geographic distribution and (where appropriate) the best local opportunity to see the bird in the wild.
- 'Eye-spy' observation activity.



THEME 1: NEW ZEALAND'S UNIQUE BIRDS

Big idea

Over 80 million years of isolation has made New Zealand a world centre for endemic birds (found only in New Zealand).

Linking concepts

- In the absence of snakes and predatory mammals, birds dominated every habitat on land, taking over ecological niches that were occupied elsewhere by mammals.
- As a result, many of New Zealand's native bird species are highly specialised.
- The absence of mammalian predators and plentiful food supply encouraged the evolution of large, flightless birds that were long-lived and slow-breeding.
- These adaptations have made native birds particularly vulnerable to introduced predators and land development.
- Predator free islands now offer the best hope for New Zealand's 'at risk' native birds.

New Zealand's Unique birds

World centre for endemic species

Over 80 million years of isolation

When New Zealand broke away from the giant continent of Gondwana some 80 million years ago, it became one of the largest, most isolated landmasses in the world without snakes or predatory mammals. As the Taramaki Sea grew wider, the natural spread of animals to New Zealand was limited to those that could swim, float or fly.

Looks like we missed the bus



North Island and southern island are some of most to find food, using invasive as the top of these habitats

Just call me a penguin on two legs



Birds ruled
New Zealand became an avian paradise. Birds dominated every habitat on land, taking over ecological niches that were occupied elsewhere by mammals.



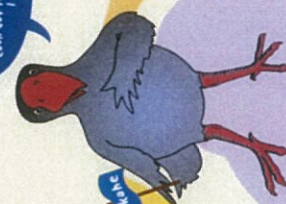
That means we're found only in New Zealand!

Island refuges

Some of New Zealand's offshore and outlying islands provide a predator-free sanctuary for endemic birds which would not otherwise have survived. They remain the best hope for many of our 'at-risk' species and are actively managed by the Department of Conservation.



Did you know that I'm the world's largest living tree frog? All of these species are the result of evolution on the island!



Giant vegetarians

Energy saved from loss of flight tended to grow larger birds. But there was an equally important link between vegetation diet and size. Because leaf material contains relatively little nourishment, herbivorous birds had to eat a lot to extract the energy and nutrients they needed. Large birds had the advantage of a longer, more efficient gut to digest plant tissue and discard the waste.

I'm the only flightless bird in the world - and the heaviest



We don't need a chance

These flightless birds were abundant in the 1800s. There's a year later they were extinct.

What's gone wrong?

Of some 40 flightless species that lived in New Zealand 1000 years ago, at least 20 have become extinct. The arrival of humans brought dramatic change for the kingdom of birds. For the first time, birds experienced predation from humans and their animals - and loss of habitat through fire and land development. Large, flightless birds that had thrived in a predator-free, food-rich environment were now vulnerable. The fact that they also had long lives and raised few young meant they could not replace their losses.



Who needs wings?

Without the need to escape from predators and a plentiful supply of food, birds had little reason to fly. Some ground-dwelling birds such as the kakapo, whose legs developed faster than their wings, became flightless quite quickly. Most were the only flightless birds with no wings at all.

New Zealand's flightless birds

Species extinct on the island
Courtesy New Zealand Ornithology

- North Island**
 - Light-winged rail
 - North Island kaka
 - North Island fantail
 - North Island noddy
 - North Island albatross
 - North Island gannet
 - North Island penguin
 - North Island noddy
 - North Island albatross
- South Island**
 - Light-winged rail
 - South Island kaka
 - South Island fantail
 - South Island noddy
 - South Island albatross
 - South Island gannet
 - South Island penguin
 - South Island noddy
 - South Island albatross
- Chatham Islands**
 - Chatham Island kaka
 - Chatham Island noddy
 - Chatham Island albatross
 - Chatham Island gannet
 - Chatham Island penguin
 - Chatham Island noddy
 - Chatham Island albatross
- Auckland Islands**
 - Auckland Island noddy
 - Auckland Island albatross
 - Auckland Island gannet
 - Auckland Island penguin
 - Auckland Island noddy
 - Auckland Island albatross
- Campbell Islands**
 - Campbell Island noddy
 - Campbell Island albatross
 - Campbell Island gannet
 - Campbell Island penguin
 - Campbell Island noddy
 - Campbell Island albatross



Checking understandings: pre-visit activities

These activities are designed to check the understanding that New Zealand native birds have special characteristics.

Kiwi and Kea

Objective:	Test knowledge and understanding (Can also be used to reinforce knowledge after the visit)
Level:	1-4 depending on questions asked
Location:	Large open space
Materials:	Chalk or tape to mark home boundaries

This is a high energy activity that can be used to make an enjoyable start to visit preparations.

- Divide students into two equal teams: Kiwi and Kea.
- The teams face each other in two straight lines, about 1 metre apart.
- Approximately 4 metres behind each team, draw a line. This represents the team's home base.
- Make a statement that tests (at an appropriate level) student knowledge of New Zealand's native birds.
- If the statement is TRUE, kiwi chase kea. If it is FALSE, kea chase kiwi. Anyone caught before reaching their home base joins the other team.

Sample statements:

- All birds can fly. (False – many New Zealand birds are flightless.)
- New Zealand's birds have always lived in fear of mammal predators. (False – the first mammal predators were introduced by humans, about 1,000 years ago.)
- There are no snakes living wild in New Zealand. (True)
- Wild kiwi live only in New Zealand. (True)
- A moa is a mammal. (False)
- Moa are extinct birds. (True)
- Flightless birds can often run quickly. (True – e.g., kiwi, ostrich, weka)
- Kakapo is the only flightless parrot in the world. (True)
- Kakapo raise several chicks each year. (False – some years they may not nest at all.)
- Kea are mountain parrots. (True)
- You can see wild kea in Australia. (False, they are endemic/found only in New Zealand)
- Blackbirds live only in New Zealand. (False, they have been introduced to New Zealand)
- Cats, ferrets and stoats kill many native birds. (True)
- An endemic bird has stomach ache. (False, it means it is found only in New Zealand.)

Identification Game

Objectives: identification of four endemic (found only in New Zealand) birds to increase awareness of their special characteristics

Level: 3-4

Location: anywhere

Materials: 40 Identification Game cards

*This is an adaptation of the game developed by Joseph Bharat Cornell in his book *Sharing The Joy of Nature*, Dawn Publications 1990*

Photocopy the master sheets of clues on to heavy paper (or laminate), then cut into individual cards.

- Deal out the cards among the group. It does not matter if some children have more than others. There are ten clues for each bird.
- The object of the game is to discover the identity of the four birds and to gather together the ten correct clues for each of them.
- Players call out the name of the bird that they think might be described on their clue card. Some cards will be more obvious than others and it may take some discussion before four groups emerge with the full set of clues.
- The teacher will need to mingle with each group and offer assistance where needed. If necessary, the four birds can be named.
- Each group then names its bird and reads out the 10 clues that describe it.

Kiwi

1. My name is often used to describe New Zealanders.
2. My picture appears on 20 cent and two dollar coins.
3. My nostrils are at the tip of my long beak to help me scent food.
4. I belong to the 'ratite' family of flightless birds. Moa, ostrich and emu are among my relatives.
5. I probe for earthworms on the forest floor although you can also find me searching beneath the seaweed for sand-hoppers on some Stewart Island beaches!
6. My legs are powerful and account for a third of my total weight.
7. My shaggy brown plumage was prized by Maori for traditional cloaks.
8. I am nocturnal and so my good hearing and sense of smell is more important to me than my eyesight.
9. You are more likely to hear me than see me, especially if you have stayed at Deep Cove where my shrill whistle sometimes haunts the night-time forest.
10. I usually lay my eggs in a burrow beneath the forest floor.

Yellow-eyed penguin

1. Southern Maori call me 'Hoiho', the noise-shouter.
2. I can fly – but only underwater.
3. I have a waterproof coat of feathers which are dark on the back and brilliant white in front. The bright yellow band of feathers that goes around the back of my head from eye to eye distinguishes me from other species of my kind.
4. I spend much of my time at sea where I use my webbed feet for steering and braking and my tail as a rudder.

5. I can dive up to 100 metres to catch a variety of fish and squid.
6. Unlike most of my extended family, I am a secretive bird and choose a private place to nest beneath the bush or seaside scrub.
7. Look for me on the back of a New Zealand five dollar note.
8. My home is at sea and in the coastal forests of south-east New Zealand, Stewart Island and the Subantarctic Islands.
9. There is a special 'hide' at Curio Bay where you can watch me come ashore at twilight.
10. My coastal forest habitat is disappearing; introduced predators are killing me and declining fish stocks starving me. Not surprising that I'm one of the rarest of my kind in the world!

Kea

1. I am one of the most intelligent birds in the world.
2. I am known as the "clown of the mountains".
3. Maori named me after my flight call "kay-a".
4. I live only in the mountains of South Island, particularly throughout the Southern Alps.
5. My diet is mostly vegetarian but I live in a harsh environment and, given the opportunity, I will eat almost anything.
6. I belong to a large family called *Psittacidae* with species throughout the southern hemisphere.
7. My plumage is mostly green but, when I fly, you will see the feathers beneath my wings are bright red.
8. I have learned to adapt to human activity and sometimes make a nuisance of myself around ski-fields and mountain car-parks.
9. Some species in my family are kept as pets and trained to talk.
10. I am able to hold, manipulate and explore objects (including tramping gear) using my flexible feet and powerful beak.

Tui

1. I am known for my calls, which range from bell-like chimes to rattles, wheezes, chuckles and squeaks!
2. From a distance, my plumage looks black and I have two distinctive tufts of curled white throat feathers.
3. You will find me in parks and gardens as well as native forests.
4. People can attract me to their gardens with sugar water.
5. In spring and summer you will see me using my long tongue to take nectar from kowhai and flax flowers.
6. Early Maori used to snare me for food and use my glossy feathers to decorate their cloaks.
7. Depending on the season, I have a diet of fruit, insects and nectar.
8. My beak is delicate and curves to a sharp point.
9. My black feet and legs are suited to perching and clinging to branches and plants.
10. I will defend my forest territory fiercely by noisy flight and almost vertical sky dives.

Kiwi

<p>My name is often used to describe New Zealanders</p>	<p>My picture appears on 20 cent and two dollar coins</p>
<p>My nostrils are at the tip of my long beak to help me scent food</p>	<p>I belong to the 'ratite' family of flightless birds. Moa, ostrich and emu are among my relatives</p>
<p>I probe for earthworms on the forest floor although you can also find me searching beneath the seaweed for sand-hoppers on some Stewart Island beaches!</p>	<p>My legs are powerful and account for a third of my total weight</p>
<p>My shaggy brown plumage was prized by Maori for traditional cloaks</p>	<p>I am nocturnal and so my good hearing and sense of smell is more important to me than my eyesight</p>
<p>You are more likely to hear me than see me, especially if you have stayed at Deep Cove where my shrill whistle sometimes haunts the night-time forest</p>	<p>I usually lay my eggs in a burrow beneath the forest floor</p>

Yellow-eyed Penguin

<p>Southern Maori call me 'Hoiho', the noise-shouter</p>	<p>I can fly – but only underwater</p>
<p>I have a waterproof coat of feathers which are dark on the back and brilliant white in front. The bright yellow band of feathers that goes around the back of my head from eye to eye distinguishes me from other species of my kind</p>	<p>I spend much of my time at sea where I use my webbed feet for steering and braking and my tail as a rudder</p>
<p>I can dive up to 100 metres to catch a variety of fish and squid</p>	<p>Unlike most of my extended family, I am a secretive bird and choose a private place to nest beneath the bush or seaside scrub</p>
<p>Look for me on the back of a New Zealand five dollar note</p>	<p>My home is at sea and in the coastal forests of south-east New Zealand, Stewart Island and the Subantarctic Islands</p>
<p>There is a special 'hide' at Curio Bay where you can watch me come ashore at twilight</p>	<p>My coastal forest habitat is disappearing; introduced predators are killing me and declining fish stocks starving me. Not surprising that I'm one of the rarest of my kind in the world!</p>

Kea

<p>I am one of the most intelligent birds in the world</p>	<p>I am known as the 'clown of the mountains'</p>
<p>Maori named me after my flight call 'kay-a'</p>	<p>I live only in the mountains of South Island, particularly throughout the Southern Alps</p>
<p>My diet is mostly vegetarian but I live in a harsh environment and, given the opportunity, I will eat almost anything</p>	<p>I belong to a large family called <i>Psittacidae</i> with species throughout the southern hemisphere</p>
<p>My plumage is mostly green but, when I fly, you will see the feathers beneath my wings are bright red</p>	<p>I have learned to adapt to human activity and sometimes make a nuisance of myself around ski-fields and mountain car-parks</p>
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You will find me in parks and gardens as well as native forests

People can attract me to their gardens with sugar water

In spring and summer you will see me using my long tongue to take nectar from kowhai and flax flowers

Early Maori used to snare me for food and use my glossy feathers to decorate their cloaks

Depending on the season, I have a diet of fruit, insects and nectar

My beak is delicate and curves to a sharp point

My black feet and legs are suited to perching and clinging to branches and plants

I will defend my forest territory fiercely by noisy flight and almost vertical sky dives

At the Aviary

New Zealand's unique birds: interactive panel

There are seven native bird species displayed at Queens Park Aviary and they are all **endemic**, which means they live only in New Zealand and its offshore islands.

They are:

- Kea
- Kaka
- Yellow-crowned parakeet
- Red-crowned parakeet
- Antipodes Island parakeet
- Stewart Island weka
- Campbell Island teal

This panel explores the special characteristics of New Zealand's endemic birds and makes the following links to aviary representatives:

- The magnifying glass/question mark symbol asks questions which invite children to explore the aviary and use observation skills.

"What native flightless birds live in the Aviary?"

To find the answers (Stewart Island weka and Campbell Island teal), children need to read the native bird explanatory panels (with a blue background) throughout the aviary.



- Campbell Island teal would undoubtedly have joined New Zealand's long list of New Zealand's extinct flightless birds if a few pairs had not survived in the predator-free safety of tiny, subantarctic Dent Island. Queens Park Aviary is one of a few New Zealand facilities that has been entrusted with the care and display of these precious survivors who are now breeding their way back from the brink of extinction. Additional interpretation panels at the Campbell Island teal enclosure explain the Department of Conservation's Recovery Plan.

CAMPBELL ISLAND TEAL - RECOVERY PLAN UPDATE

Since the interpretation panels were installed at the Campbell Island teal enclosure, there have been some exciting developments:

- Rats have been successfully removed from Campbell Island, making the island pest free.
- Fifty Campbell Island teal were reintroduced to the island in September-October 2004.

Note: The Campbell Island teal panel describes them as *"secretive birds, most active at night and during the winter months."* In fact, after three years, the Queens Park aviary birds have become quite relaxed and tame in captivity – what do children think might have caused this behaviour change?

Reinforcing the experience: follow-up activities

Aviary Quiz

1. An endemic bird is
 - a. found only in New Zealand
 - b. is sick
 - c. has been introduced to New Zealand

2. Ulva Island is a predator-free island refuge
 - a. in Fiordland
 - b. in the Subantarctic
 - c. in Stewart Island

3. Which of the following Aviary birds are flightless
 - a. Kaka
 - b. Red-crowned parakeet
 - c. Stewart Island weka

4. *Kakariki* is the Maori name for
 - a. Kea
 - b. Red- and Yellow-crowned parakeets
 - c. Campbell Island teal

5. The only flightless parrot in the world is
 - a. Kakapo
 - b. Antipodes Island parakeet
 - c. Kaka

Answers on page 17.

Older children can add to the quiz, based on what they learned from their visit.

“I am ...”

Write a list of words that describe New Zealand’s endemic birds. Then incorporate them into a story or poem.

Research project

Choose an endemic bird (it doesn’t have to be in the Aviary) and find out what you can about:

Where it lives

What it eats

Whether it has any special features – e.g., flightless

What threats it faces

What is being done (or might be done) to help it survive

Additional resources

GILL Brian and MOON Geoff, *New Zealand's Unique Birds*, Reed 1999

HOLDAWAY, Richard, *Grounded! Why do some birds walk?* New Zealand Geographic, No 37 January-March 1998

DEPARTMENT OF CONSERVATION has a range of educational resources relating to New Zealand's endemic and threatened birds. Contact Southland Conservancy, 7th floor, State Insurance Building, Don Street, Invercargill. Telephone 214 4589

SOUTHLAND MUSEUM AND ART GALLERY offers a range of programmes that complement a visit to the Queens Park aviary. Refer to the 'Learning Unlimited' information sheet for details. For information, contact the Education Officer, telephone 218 9753

Answers to Aviary Quiz

1a; 2c; 3c; 4b; 5a

THEME 2: BIRDS – DESIGN MARVELS

Big ideas

Colour, size, shape – every detail has a purpose, enabling birds to adapt and survive in many different environments.

Linking concepts:

- We can usually tell what sort of food a bird eats by looking at its beak and feet. Building Science Concepts – No.3 Birds
- Different bird species can occupy the same habitat without competing for food because of their different feeding structures. Building Science Concepts – No.3 Birds

Living things have coverings that are suited to their purposes.

Building Science Concepts – No. 5 Fur, Feathers and Bark

Linking concepts:

- The one thing that separates birds from all other animals is that they have a covering of feathers.
- Feathers keep birds warm and dry.
- The colour of feathers can be used to draw attention or for camouflage.
- Birds take good care of their feathers.

Birds – design marvels

Colour, size, shape – every detail has a purpose, enabling birds to adapt and survive in many different environments.

These feet were made for

The shape of its feet provides a clue to a bird's way of life

Compare the coloured lines to see which warty birds use these different feet and beaks.

Running

Birds that depend on speed have developed powerful legs and specialised toes that enable them to run like a sprinter on the 'balls' of their feet.

Perching

How do birds manage to perch on a twig without falling off? A specialised pointing toe helps around to make them forward-pointing toes. Tendons keep the toes clamped together as long as the bird stays in a sitting position.

Wading

Long, warty exposed toes allow wading birds like the warty-footed heron to walk over the surface of soft mud without sinking.

Climbing and Gripping

While most birds have three toes pointing forwards and one backwards, warty birds have toes pointing forwards and two backwards to give them extra grip for climbing or holding food.

Swimming

Webbed skin joining the three toes creates a paddle for above-water use and is folded to reduce friction on the forward stroke. Webbed feet are also used to take-off from the water and are used for tracking.

What are they used for?

Beaks are for feeding

A bird's beak is its tines, fork and spoon. Specialised beaks enable different birds to catch and eat a wide range of foods.

Poking beaks

Long, thin beaks are designed to poke soft soil or mud for worms and invertebrates.

Crack-cracker beaks

Members of the Finch family have short, cone-shaped beaks which are strong enough to crack hard seeds.

Specialist combination beaks

Parrots have evolved a highly specialised beak for a diet of fruit and seeds. The beak's delicate hooked tip is used to grip and eat fruit, while powerful jaws can crack open hard seeds. Unlike most birds, parrots also use their feet

Gripping beaks

Ducks use their flattened feet to swim or 'skate' the surface of the water, relying on their webbed feet and wings to stay afloat.

Tweezer beaks

Many medium-sized birds have multi-purpose 'tweezer' beaks that lend themselves to a varied, omnivorous diet from fruit and seeds to insects.

Feathers make the difference

The one thing that separates birds from all other animals is that they have feathers. A large bird such as a swan is shaped by over 20,000 feathers while small songbirds carry between 1,000 and 2,000. Where would birds be without them?

By fluffing up, they down feathers can create a blanket of warm air next to the skin.

As hot as a heater

Keeping warm and dry. Birds wear an 'undercoat' of down feathers beneath a waterproof coat of contour feathers.

Caring for feathers. Most feathers are replaced every year during moulting. In between times, a bird takes great care of its plumage – it's for display on it.

Head scratching

Preening

Fluffing – (to water or sun)

Wing and tail feathers may be light but they are also strong and create a streamlined surface.

How does a flight feather stay attached? Put one under the magnifying glass and see for yourself the intricate arrangements of interlocking hooks.

Conspicuous – or camouflaged?

Feathers are coloured both to show-off and to hide from danger.

Many songbirds have bright colours to attract mates. Others have duller colours to help them hide from predators.

Checking understandings: pre-visit activities

These activities are designed to check the understanding that different structures and colours enable birds to adapt and survive in a wide range of environments.

Feet n' beaks

Objective:	Test knowledge and understanding that feet and beaks tell us about a bird's way of life and diet. (Can also be used to reinforce knowledge after the visit)
Level:	1-4
Location:	Classroom with some group space
Materials:	Set of mix n' match cards (provided); bird identification book

The mix n' match cards comprise a set of 5 birds, each with different kinds of feet and beaks. Depending of the level of understanding, teachers may prefer to look first at feet and then beaks before putting all the cards together. For large groups, copy multiple sets of cards.

Step 1: What clues do these feet give about the bird's way of life?

Step 2: A bird's beak is its knife, fork and spoon. Specialised beaks enable different birds to catch and eat a wide range of foods. Ask the children to describe how each of the five different beaks might work and the food they would be most suited to eat.

Step 3 Try matching feet and beaks. What sort of bird might they belong to? Where would it live?

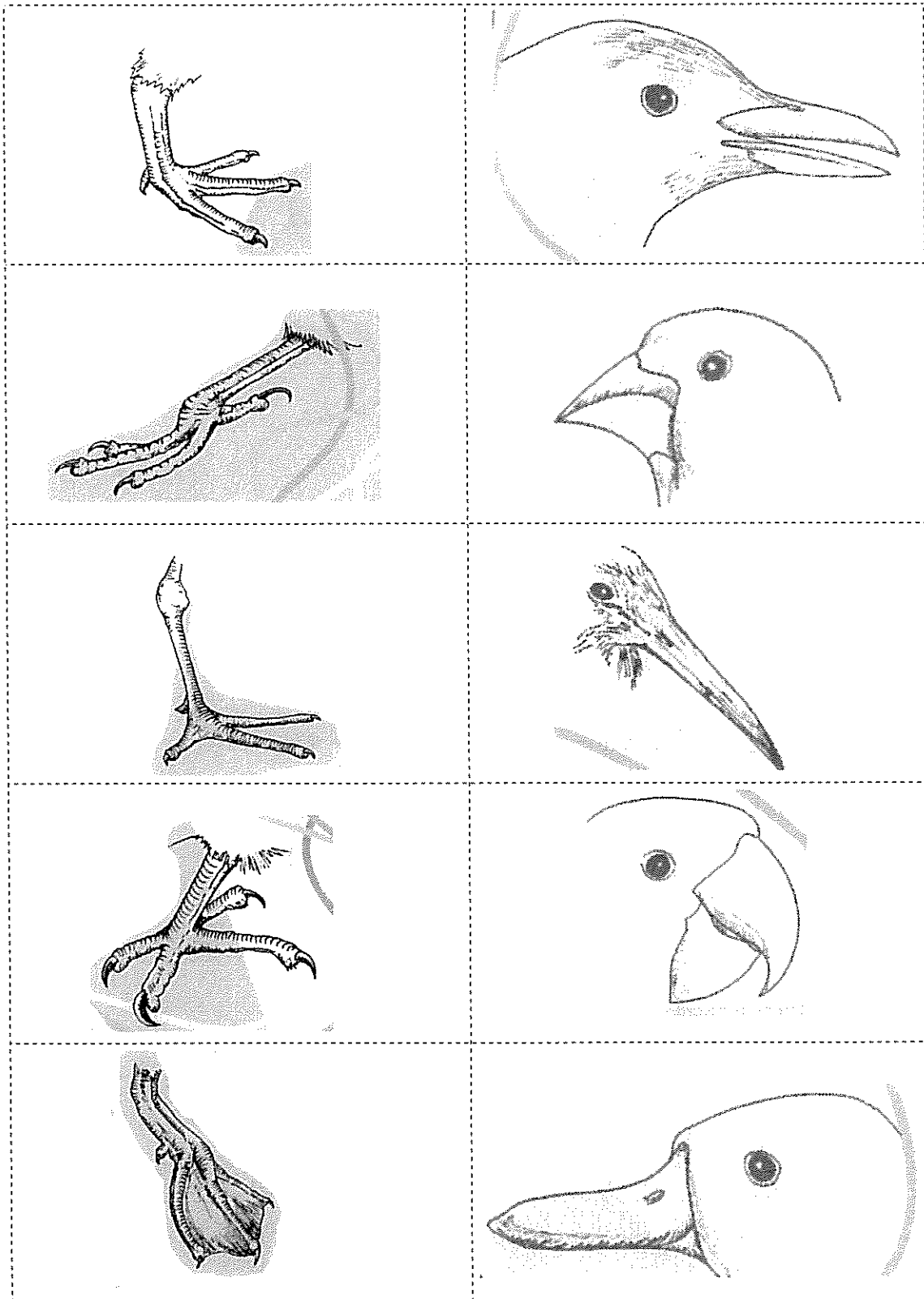
Note: Teacher prompts are in the A3 copy of 'Birds – design marvels'.

Camouflage game

Objective:	Test knowledge and understanding that feathers can be used both to attract attention and for camouflage
Level:	1-4
Materials:	100+ coloured and wooden toothpicks or clothes pegs (record how many of each colour); stop watch, whistle

Divide the class into two or more groups. Identify the boundaries of the area where coloured pegs will be planted (a tennis court size should be adequate for an average size class). Group A is sent out of sight while Group B lays the pegs/toothpicks on the ground. Group A is given 10 seconds (adjustable depending on group size) to pick up as many pegs as it can. Organise the pegs into colours and count how many of each colour were picked up. How did the numbers compare? Were some colours easier to spot than others? Swap groups and repeat the activity. Which team picked up the most wooden (usually the best camouflaged) pegs?

Feet n' Beaks



At the Aviary

Birds – design marvels: interactive panel

Use the b/w A3 copy as a guide.

This panel uses a number of activities to link specialist roles played by feet, beaks and feathers to birds in the aviary.

Feet and beak maze

Follow the coloured line that leads from each example of feet and beak types to a sliding window. Lift the slide to reveal the aviary bird to which they belong. Check out the real thing! (The Mix n' Match cards could be used for this.)

Feathers make the difference

Birds wear an undercoat of down feathers underneath a waterproof coat of contour feathers. The longer contour and flight feathers also give birds their shape and enable them to fly. Take one of these feathers from the perspex feather container and hold it under the magnifying glass. See for yourself the velcro-like arrangement of interlocking hooks that help to keep feathers smooth and streamlined.



Caring for feathers

The panel identifies a number of ways that birds take care of their plumage, including head scratching, preening and bathing (in water or dust). Children are challenged to find examples of feather-care activities at the Aviary. They should note the bird's name (from the interpretation panel) and describe what it was doing.



Conspicuous ... or camouflaged?

Ask children to record which aviary birds should win the prizes for "biggest show-off" and "cleverest camouflage". What were the reasons for their choices? (See also follow-up activities on next page.)

Reinforcing the experience: follow-up activities

Conspicuous ... or camouflaged?

Discuss the children's choices and choose an overall winner for each category. Ask children to design a 'Biggest Show-Off' or 'Cleverest Camouflage' certificate for the winners – each incorporating a picture of the bird, its name and the reasons for its success. Send the certificates to the Queens Park Aviary, Parks Division, Invercargill City Council, Private Bag 90104, Invercargill.

Design-a-Bird

Cut A4 sheets of paper lengthways, make three equal folds and open it again. Children work in groups of three. The first one draws a bird's head and beak on the top section, then folds the paper down so it cannot be seen. The second child draws the bird's body in the middle section and folds the paper over again, leaving the bottom third open for the final child to draw its legs. The group then opens the paper to reveal their wonderful creation. They then have to give the bird a name and decide where it should live and what it should eat (using the beak and legs as a guide). Each group can then present their "Design-a-Birds" to the rest of the class.

Additional resources

SOUTHLAND MUSEUM AND ART GALLERY offers a range of programmes that complement a visit to the Queens Park aviary. Refer to the 'Learning Unlimited' information sheet for details. For information, contact the Education Officer, telephone 218 9753

THEME 3: WONDERFUL WORLD OF PARROTS

Big idea

Parrots demonstrate the remarkable range of behaviours that help birds to adapt and survive.

Linking concepts

- Parrots are the most distinctive groups of birds in the world
- Like humans, birds communicate in a variety of ways but particularly by voice and body language
- A bird's ability to learn improves its chances of survival. Parrot intelligence may have been helped by highly developed beak-to-foot co-ordination

Wonderful world of parrots

Parrots demonstrate the remarkable range of behaviours that help birds to adapt and survive.

Most parrots live in lowland rainforests and open shrublands in tropical or sub-tropical regions of the southern hemisphere. But there are always exceptions! You'll find several here at the aviary.

Communication

Like humans, birds communicate in a variety of ways but particularly by vocal and body language. Parrot calls range from a harsh screech to sweet, soft-like calls and whistles. They are also interactive animals.



Learn and

The highly developed brain of the parrot's left hemisphere is known as the 'mirror' for imitation. It is capable of learning the sounds of other birds, repeating the words and phrases.



I'm smiling...

Parrots smile with their beaks when they are feeling happy.



Parrots are highly intelligent animals. They are able to learn to do many things, including opening doors and turning on lights.

Intelligence

A bird's ability to learn improves its chances of survival. Parrots' intelligence may have been helped by highly developed brains for food collection.



They have earned their place at the top of New Zealand's list of 'smartest' parrots. As many visitors to the Southern Alps know to their cost, the cunning curlews are not to be underestimated. Once learned, they remember how to manipulate locks, drop back ladders and open doors to reach food.



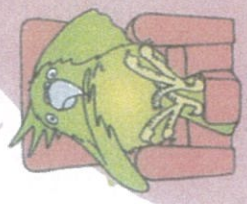
The ability to learn allows the parrot to solve problems and to adapt to its environment.



Parrots are highly intelligent animals. They are able to learn to do many things, including opening doors and turning on lights.

Breeding

With the main purpose of this aviary is for display, some birds are kept, mostly for their appeal, but for their eggs. Most parrots mate with one partner, sometimes for life, and both parents usually share responsibility in raising chicks.



Do you know that... Curlews parents have been known to spend a large amount of time building their nests and raising their young.



Most parrots do not get together and do not care for their young. The exception is the curlew... at 30 days old they are left to look after themselves.

In a previous life... The curlew is a member of the family of birds that are known for their intelligence. They are able to learn to do many things, including opening doors and turning on lights.

With its... The curlew is a member of the family of birds that are known for their intelligence. They are able to learn to do many things, including opening doors and turning on lights.

Do you know that... Curlews parents have been known to spend a large amount of time building their nests and raising their young.

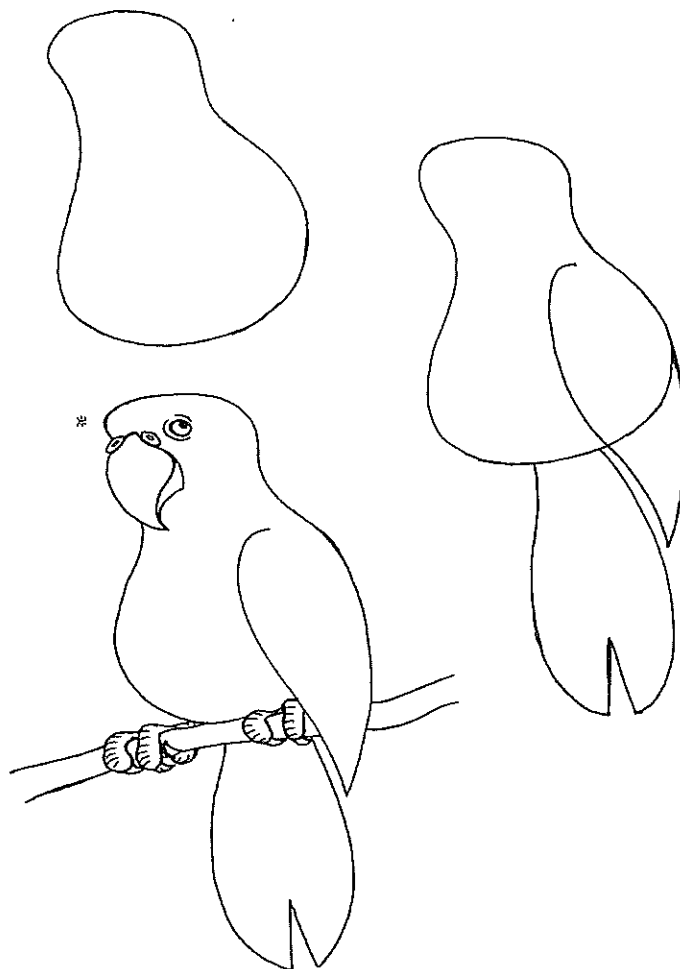
Checking understandings: pre-visit activities

These activities are designed to check the understanding that parrots demonstrate the remarkable range of behaviours that help birds to adapt and survive.

Draw me! (Then talk about me!)

Objective:	Instil confidence that drawing a recognisable bird is easy Test knowledge and understanding of a parrot's special characteristics
Level:	1-4
Location:	Classroom
Materials:	Drawing materials

Follow the simple steps to draw a parrot shape. The **Feet n' Beaks** activity will help to focus on two special parrot characteristics.



Discussion points:

- The scientific name for the parrot family is *Psittacidae*. There are approximately 330 members of the extended parrot family, which includes cockatoos and lories
- Notice how, in the drawing, the parrot has two toes pointing forward and two backward. These are *zygodactylous* feet and are used like hands to grip objects as well as climb
- Parrot beaks are also highly specialised. They have the strength to crush and tear, and (together with its tongue) the flexibility to delicately extract food from a nut or fruit
- It is their ability to use beak and feet together that really sets parrots apart from other birds. Parrots' beak-to-foot co-ordination is associated with their intelligence
- How intelligent are parrots? Children may have pet budgerigars or cockatiels; many will have met parrots and cockatoos at pet shops or garden centres – or Queens Park Aviary. Discussion should include mimicry and their ability to talk

Read this description of kea antics written by Tiro Tiro in a 1930 issue of the magazine 'Wanderlust':

"Put your boots on a ledge to dry, and the keas will deliberately throw or roll them off. Show them a bright thing and they will hop all over you to find out all about it. Place it at a little distance, and they will march round it in column ahead, gathering at intervals in close formation to talk about it... Even your dog is fair game to them if they catch him asleep; one will go softly up and tweak his tail; when his angry growl is over and he settles again, another kea will do the same, the others looking on; then another, and another, until by about 'second time round', the dog will drag himself into some nook where they cannot annoy him."

At the Aviary

Wonderful world of parrots: interactive panel

The panel introduces concepts and activities that encourage children to observe and listen to the aviary parrots.

Where parrots live

The world map which forms a background to the panel shows that almost all the aviary parrots originate from Australia and New Zealand. Only the Indian ring-necked parrot comes from the Northern Hemisphere. The Aviary also has the southernmost parrots in the world – inhabitants of New Zealand's subantarctic islands. (*Check the panel for question and answer*)

Which aviary parrots mimic human language?

Follow the lines and lift the slide windows to discover which two aviary parrots talk.

Body language

The panel identifies a range of behaviours to look for that will tell children whether a bird is feeling nervous, dominant, playful or affectionate.

Raising the alarm

The sulphur-crested cockatoo is the aviary's self-appointed watchdog. It warns the aviary birds of danger if, for instance, a hawk or seagull flies overhead, by raising its crest, opening its wings and screeching. What do the other aviary birds do when the alarm is raised? Children can find out by pressing an audio button on the panel.

Observe a bird!

Objective:	Develop observation and listening skills Develop awareness of different bird behaviours
Level:	1-4
Location:	Queens Park Aviary
Materials:	Writing materials

Ask each child to choose a bird to study. They should settle beside the enclosure and watch quietly (without moving around or chattering) for approximately 10 minutes (more or less depending on concentration spans). Ask them to note the following information:

From the explanatory panel

- where the bird lives in the wild
- what it eats
- whether it has any special characteristics (check the Eye-Spy activity)

From personal observation and listening

- how the bird was feeling (from observation of its body language and voice)
- how the bird used its enclosure (did it move around or stay in one area? did it fly?)
- how it used its feet and beak (did you see it feeding, or climbing or running?)
- how it used its voice (did you hear it call? what was it like?)
- how it used colour (was it hard to spot or conspicuous?)

On return to school, children can use their notes to develop a profile of their chosen bird. See **Reinforcing the experience: follow-up activities**

Reinforcing the experience: follow-up activities

Bird profile poster

Objective:	Follow up from Observe a Bird Reinforce understanding of different bird behaviours
Level:	1-4
Location:	Classroom
Materials:	Poster making materials, reference materials

Incorporate personal observations, information and drawings into a poster that can be displayed in the classroom (or presented to Queens Park Aviary staff).

Parrot Quiz

Objective:	Reinforce knowledge about parrot characteristics
Level:	1-4
Location:	Classroom
Materials:	Reference materials

The following are some sample questions. Answers on page 31. Older children can be encouraged to make their own quiz game.

1. The world's southernmost parrots live in
 - a. Stewart Island
 - b. Chile, South America
 - c. Subantarctic Islands, New Zealand
2. If you saw two parrots preening each other, would they be
 - a. playful
 - b. affectionate
 - c. nervous
3. Which of these three aviary parrots do not mimic human language?
 - a. Galah
 - b. Sulphur-crested cockatoo
 - c. Rainbow lorikeet
4. King parrots come from
 - a. India
 - b. New Zealand
 - c. Australia
5. The first bird to raise the alarm at Queens Park Aviary is
 - a. Sulphur-crested cockatoo
 - b. Kea
 - c. Budgerigar

Additional resources

BARNETT Shaun and EDWARDS Fiona, *Kaka the talkative Bird NZ*, Geographic No. 34 April-June 1997

GRZELEWSKI Derek, *Kakapo – Bird on the Brink*, NZ Geographic No. 56 March-April 2002

TEMPLE Philip, *The Book of the Kea*, Hodder Moa Beckett 1996

TEMPLE Philip and GASKIN Chris, *The Legend of the Kea*, Hodder & Stoughton 1991

TEMPLE Philip and GASKIN Chris, *The Story of the Kakapo*, Hodder & Stoughton 1988

DEPARTMENT OF CONSERVATION has a range of educational resources relating to New Zealand's endemic and threatened birds. Contact Southland Conservancy, 7th floor, State Insurance Building, Don Street, Invercargill. Telephone 214 4589

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Answers to Parrot Quiz

1c; 2b; 3a; 4c; 5a