

Beaks, Feet and Feathers

Written by Mark Edwards and Damien Feneley



*A teaching resource for
Early Stage 1, Stage 2 and Stage 3*

About this Resource

The resource *Beaks, Feet and Feathers* was developed with the support of the Forging Partnerships Program administered by the Natural Resource Advisory Council on behalf of the government of New South Wales.

The resource was part of a grant funded program called *Birds as Indicators of Sustainability*. The program was delivered during 2008 in partnership with Baulkham Hills Shire Council, Birds Australia, Cumberland Bird Observers Club, Brewongle Environmental Education Centre (NSW DET) and the Australian Museum.

The material in this resource has been collated from teachers who participated in the program and expanded and written by the Brewongle Environmental Education Centre partners, Mark Edwards and Damien Feneley.

About the Original Project

Birds provide an excellent medium for engaging the school community. The species composition, behaviour and movement of birds provide a superb learning vehicle for exploring and understanding biodiversity, the school landscape and the students' context within it. During 2008 nine schools conducted 66 surveys and recorded 29 bird species in their school grounds.

As a result of interpreting their observations the students at all nine schools: installed nest boxes and bird baths; implemented no mow zones to encourage native grasses; planted 3000 native plants; and reformed the schools' waste management practices. Two schools went on to present their findings at the 'Kids Teaching Kids' conferences.

The success of this pilot program has resulted in Birds Australia establishing a new program "Listening To Our Birds...and Answering the Call". **Answering the Call** is a whole school approach to sustainability and includes a K – 6 curriculum resource. For more information about participating in this program or for information about Australian birds and educational activities and resources please contact the Birds Australia Education Coordinator (02) 9647 1033 or a.freimanis@birdsaustralia.com.au

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Cover Photo courtesy David Cook – Superb Fairy Wren

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We hope this provides valuable support to your school community in making a real difference to improve bird habitat and education for sustainability.

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- Uncle Wes Marne – Bigambul Elder
- Holly Parsons – Birds Australia
- Kate Ravich – Birds Australia
- Brad Walker



*Photographer: David Cook
Gang-gang Cockatoo*

Rationale

Why this resource?

Beaks, Feet and Feathers has been developed as a result of the 'Birds as Indicators' program which is a partnership between Australian Museum, Birds Australia, Brewongle Environmental Education Centre, Cumberland Bird Observers Club and The Hills Shire Council. Funding for this program was made available from the Natural Resource Advisory Council Forging Partnerships Grant.

The 'Birds as Indicators' program aims to address the loss of Australian bird species in NSW, particularly the loss of small birds in urban areas. In the Hills Shire alone there are 24 species of birds listed under the Threatened Species Conservation ACT 1995. The decline of Australian bird numbers is one of the more visible aspects of biodiversity loss.

What is this resource?

Beaks, Feet and Feathers has been developed to support schools who wish to undertake teaching and learning programs in conjunction with Birds Australia. The resource is a curriculum based teaching and learning program for Primary schools. Students who participate in this program will develop an appreciation and understanding of birds and the important role they play as indicators to the health of an environment.

This resource supports Australian Museum's Birds in Backyards website and provides students with an opportunity to participate in effective environmental citizenship by making a significant contribution to the School Environmental Management Plan (SEMP).

Beaks, Feet and Feathers links learning to action and demonstrates that when Education for Sustainability is incorporated into curriculum a school community can build capacity in schools' grounds management planning.

Aims and Objectives

What do we hope to achieve?

- Engage students in relevant and enjoyable science – observing, classifying, recording, analysing and drawing conclusions
- Develop student investigative and thinking skills
- Increase student knowledge of local bird species
- Implementation of the SEMP through improvement of school grounds as habitats for birds
- Develop and extend student Information, Communication and Technology skills. It is suggested that when using the Australian Museum Birds in Backyards website teachers utilise connected classroom technology if available
- Increase schools awareness and use of the Discovery Centre at Birds Australia
- Further develop data on birds from across Australia available to the Australian Museum

Using the Birds in Backyards Website



This resource encourages you to utilise the quality and breadth of resources available on the Birds in Backyards website.

Bird Observation

The Australian Museum encourages schools to record the types of birds found within your school grounds.

Register your school.....it's free.....

Completed surveys will assist the Australian Museum to monitor changes over time and monitor improvements in habitats over time.

You do not need to be an expert bird watcher.

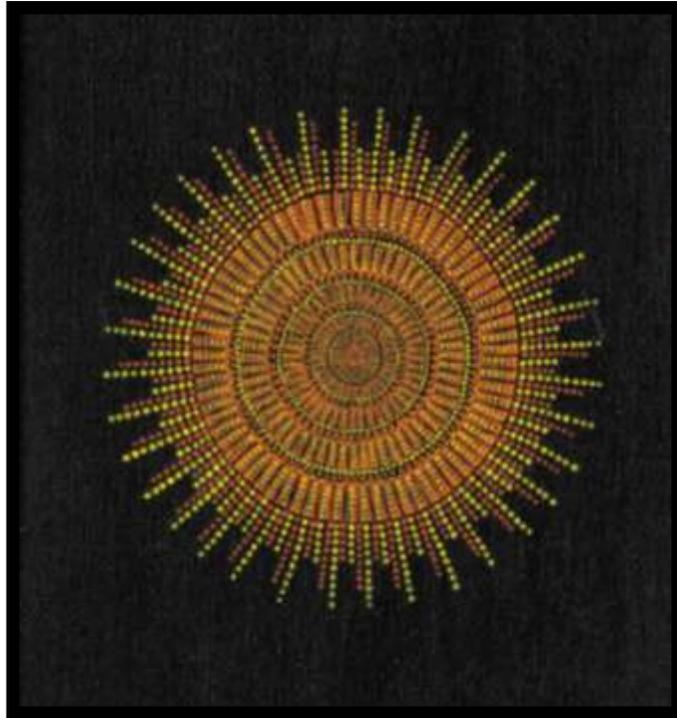
The Bird Observation Recording Sheet (Worksheet A – page 6) can assist students and teachers when observing birds in the school grounds or even at home.

Complete this worksheet and then upload your results to the Australian Museum.

To achieve great results and reliable data for the Australian Museum bird observing needs to be incorporated into the program on a regular basis. This could be once or twice a week or even more frequently.

All Stages

Aboriginal Focus



Artwork by Bundeluk

Aboriginal Dreamtime / Creation Stories

Aboriginal dreamtime stories are a learning pathway to build our cultural competencies by increasing our knowledge and understanding of Aboriginal Australia. Creation or dreamtime stories often explain how the country, animals and people came to be as they are. They tell us when things were made, why they were made and how they were made. Creation stories are children's stories with moral tones that reinforce correct behaviour.

The following stories are those as told by Uncle Wes Marne, Bigambul Elder of NSW and remain his intellectual property.

The Lyrebird and how it got its Voice.

This land is the oldest land.

The first bit of dirt to come out of the ocean millions of years ago.

When Biami, the great Aboriginal creator, the great spirit came down onto this land he brought with him the Rainbow Serpent.

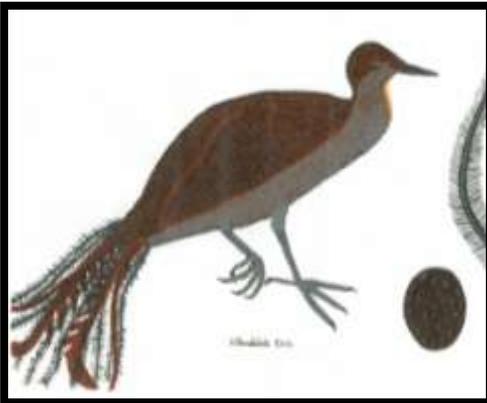
The Rainbow Serpent was given the first work ever to be done on this earth – to create what we see around us today.

He was big, heavy and powerful.

He ploughed through the earth like a giant bulldozer, throwing all the earth and rocks to the side, forming the hills and mountains as he went, and leaving a great trail behind him.

Biami made it rain and the trail filled up with water.

So where the Rainbow Serpent went the water followed and these were the first rivers.



As the Rainbow Serpent curled up to sleep on the plains, he was so big and so heavy that when he got up in the morning he left great hollows.

As the water was always following him, these hollows filled up with water, giving us the first surface lakes.

When it was cold the Rainbow Serpent buried down into the ground because serpents don't like the cold.

This is how we got our underground rivers and basins.

This went on for millions of years, Biami said to the Rainbow Serpent,

“You can rest now”.

So he went to rest in the Macintyre River.

Biami decided now was the time to put everything on the land that it needed.

So he called in the four winds and gave them seed, and from the seeds everything grew - shrubs, grasses, trees and flowers.

Biami loved flowers. When he sat down to think he thought,

“Now what creatures do I put on this land first? Whatever I put here first has to be very, very special”.

So he lay down so he could think better, and when he lay down he went to sleep and when he went to sleep a bad spirit came – the Mimi spirit.

The Mimi spirit is the rock spirit and lives in the cracks of the rocks.

All the time she has been on this land she has never done one good thing.

Never had a good thought, always thinking bad things, always doing bad things.

When she saw Biame asleep she made all the grasshoppers, locusts and ants.

And as we all know these insects eat everything.

And they did. They ate and they ate.

When Biame woke up, everything was gone. There were no grasses, shrubs or flowers.

He was very upset and said,

“I’ll have to start again”.

As he stood up he could see this mountain and he could see something move ever so slightly.

He went up there and he found a little brown plant.

So he took this plant into his hands, took a handful of Mother Earth, placed them together and he breathed life into it.

He placed on the ground a little brown bird.

He said,

“Little brown bird, I’m sorry that you’re brown. I don’t have any colours to give you because all the colours went when the flowers were eaten. But you’re special and because you’re special I’m going to give you a gift, the gift of dance. You’ll be the best dancer ever seen in the bush, I’m also going to give you the gift to copy any sound you hear, there’ll be no sound you can’t copy.”
You know that little bird is still in the bush today.....and it’s the lyrebird.

After the lyrebird was made Biame decided to make all the birds.

He decided to make all the small birds first.

He made all the small birds and they were brown just like the lyrebird.

He said to all the small birds,

“I want you to go out into the bush for everything has grown back, the grass, shrubs and the beautiful flowers with all their wonderful colours. The colours are new and still wet. I want you all to go out there and touch them, take the colours and paint yourselves in all the colours that you want. In this way there will be no jealousy among the birds, none will have the best colour because each will go out and pick their own”.

So all the birds went out, touched the flowers and painted themselves in all the beautiful colours that we know our birds to have today.

When they came back, Biame told them how beautiful they all looked.

As we all know the male birds came back looking best with their bright and gay colours. When the females came back they were dull and drab. That’s for protection.

Why does the Kookaburra Laugh?

On a special day Biami decided to give birds their special sound.

But each bird could only have one sound.

One bird can't have two sounds, 2 birds can't have the same sound.

"I want you to go back into the bush and think of what sound you would like and in the morning you come back to me and that is the sound I will give you".

All the birds went away and they came back in the morning, they all got their special sounds.

Biami told them, "Now you can go back into the bush and live the life that you were made for, you don't need me any more".

Eventually all the birds turned and they went.

When they were out of sight Biami turned to go himself, when he heard a sound.

Looking around he saw sitting up on a branch was

Goodeena, the kookaburra.

Kookaburra was sitting there with his head on his chest and

Biami said to him,

"What's wrong with you kookaburra"?

Kookaburra just shook his head.

Biami said, "You don't have a special sound do you"?

Kookaburra just shook his head again.

"Do you want me to give you a special sound?"

Kookaburra shook his head again.

You know what was wrong with him, he was jealous, he was jealous of the magpie.

He wanted to whistle like the magpie.

Remember what we said, one bird, one sound.

The magpie had been first and got the sound the kookaburra wanted.

The night before when kookaburra went home he said to himself,

"In the morning I'm going to have the best sound in the bush and to have the best sound in the bush I'm going to be first in line when all the sounds are given out, and to be first in line I'm going to sit up all night, I'm not going to sleep".

He did, he sat up, he sat up and when his eyes got heavy he said I'll close my eyes for just a second and I'll be alright.

When he closed his eyes he went to sleep, and when he went to sleep, he slept in.

Instead of being first in line in the morning, he was last. He never got the sound that he wanted.



*Photographer: David Cook
Laughing Kookaburra*

Right through the Dreamtime kookaburra always wanted to whistle like the magpie.

So Biami said to the kookaburra,

“Every bird will have a sound and you are no different. You are going to have a sound too, but the sound you are going to have will be the first sound that comes out of your mouth. So you be careful what comes out of your mouth because there are some terrible sounds around.”

Kookaburra just looked him up and down.

Biami said, “I’m going away now to make all the other creatures and animals. You remember what I said”.

The kookaburra said nothing.

Just sitting up on a limb and time went on and on and all he would do was fly down in the morning, get something to eat and then sit back up on the limb.

Time went on and on, until one day he heard a sound in the grass and he saw Magami, the brown snake.

Magami moved across the grass clearing like snakes do because on the other side of the clearing was a small log.

On one end of the log was a little frog, and snakes love frogs, love to eat them.

So the snake went up to the log, curled up, lifted his head and grabbed.

With one little frog in his mouth he turned his head and saw the other frog.

He thought, “I’m a big snake and one frog won’t fill me up”.

So when he opened up his mouth to grab the second frog, the one in his mouth jumped out.

So he grabbed for the second one and got it.

He went back to the first frog but when he opened his mouth the frog jumped out.

The kookaburra was watching how every time the snake went to grab the second frog the one in his mouth kept jumping out.

The kookaburra was there just shaking his head.

The snake kept grabbing for the frogs.

In the end the snake got tired and the two little frogs jumped away.

The snake put his head down, tears ran down his face and he started to cry.

Kookaburra couldn’t help himself, he opened his mouth and started to laugh.

Now the moral behind this story is that the kookaburra laughed because the snake was greedy.

The snake wasn’t satisfied with one little frog, he wanted two.

So when the kookaburra laughs, stop and think is he laughing at me because I’ve been greedy.

How the Blue Wren got his Colours

Back in the Dreamtime before we had the sun and the moon, this earth was in half darkness, it never got any darker, never got any lighter. Then one day Biambi said “this has got to stop.” So he called in Gara the eagle hawk. He said “Gara the eagle hawk I want you to take all the blue ochre you can find and take it up into the sky and paint the sky blue.” So the eagle hawk being such a powerful bird, could reach amazing heights and every day he painted a section of the sky blue. All the birds down on earth below watched as they left in the morning and at night marvelled at how powerful they were and what a wonderful job they were doing, especially flying so high up there.

Then we had the little wren, now the wren himself was a little black and grey bird. The wren looked up at the eagle hawk and said “I can do that.” They said “no you can’t.” The rest of the birds said “you can’t do that.” The wren said “I can do exactly what they’re doing” and every day he came out with ‘I can do that’.

So the rest of the birds challenged him, you have to show us. Now the little black and grey bird knew he couldn’t do that, he couldn’t fly so high and he was panicking.



*Photographer: David Cook
Superb Fairy Wren*

So he went up into the mountains where Gara the eagle hawk slept and tried to talk to the eagle hawk. Eagle hawk said “no you can’t come with us, we can’t help you.”

He got cunning and crawled in under the eagle hawk’s tail feathers and when the eagle hawk flew up into the air next morning here was a little wren riding on his back. When eagle hawk took his blue ochre out to paint the sky the blue ochre flowed down onto the wren and there were blue spots all over him.

That night when he came back to earth all the birds asked the little blue wren “where have you been all day?” “I’ve been up there helping the eagle hawk paint the sky.” “No you haven’t.” He said “yes I have.” We know you can’t. I’ll prove it, he said “see that blue, that blue is from the ochre. It fell from the sky as I was painting the sky, the blue flowed down onto my feathers.

That’s how we got the blue wren.

Bundeluk: Totems and the Crimson Rosella

“A totem is a natural object or species with which a person or group has a special relationship. Totems are our way of protecting the environment.

Totems were given to everyone by our Elders. The Elders would survey the area they were in at that moment and decide what features of the environment that needed protection. This may be a tree, shrub, grass, flower insects animals, birds or marine life.

A person may be given more than one totem, especially if an area was experiencing a drought.

Totems were very important as a person was never allowed to harm, kill or eat the totem given to them, usually at birth but also at other times through their life.



Totems may also be changed or taken away in accordance with environmental conditions.

I was given my totem, the crimson rosella, which for the Darug nation means Bundeluk. This is my name and was given to me by my Uncle Kenny who said that as an artist and in person I am colourful.

I have a special relationship with the crimson rosella. When I conduct bush resource and heritage tours, it always seems to present itself to the group, sometimes flying as low as one metre over my head.

At home the crimson rosella keeps me company by perching and talking to me just outside my window. When there is danger present, it will shriek at me. For example, once on a tour on a forest track a red bellied black snake was on the track and just 5 metres before I came upon it, Bundeluk warned me and the group repeatedly until I realised something was wrong.

It is my protector.

Wherever I go Bundeluk says hello. I walk up the street I know he is there because I hear him. When I get close I may see him in a shrub or tree, and when I pass him he is quiet again.

My relatives got it right with my totem.

I'm colourful AND very cheeky like him”.

Bundeluk
Darug artist and educator



*Photography: David Cook
Southern Boobook*

Early Stage 1 / Stage 1

Beaks, Feet or Feathers



*Photography: David Cook
Eastern Yellow Robin*

In this unit students will:

- Conduct bird surveys and upload the information to the Australian Museum
- Learn about the physical features of birds and discover what makes birds unique
- Record and create visual displays of their knowledge and understanding of birds and their habitats
- Investigate birds within the school environment

OUTLINE:

Creating a *Bird Bank* provides students with an opportunity to share and record their knowledge and understanding of birds. Students are encouraged to deposit information about birds into the Bird Bank as they learn more. The Bird Bank should remain active throughout the entire unit of work.

LESSON IDEAS:

- Create a large display area (or individual recording sheet if more appropriate) for students to deposit their knowledge.
- The Bird Bank should contain *Information Accounts* to deposit the students' knowledge into. The information accounts could include; bird types, birds in the school, nest types, food types and physical features.
- Open the accounts with a brainstorm session in which students share their existing knowledge of birds.
- Make a time each week to deposit any new information about birds.
- Have a reward for the students if they fill the bank.

TEACHER NOTES:

Students should be guided in the types of information that they can deposit in the Bird Bank. By creating *Information Accounts*, for example, nest types, students must be particular in what they choose to deposit. Discourage students from including stories or anecdotes.

RESOURCES:

- www.birdsinbackyards.net
- Large display area to record (deposit) information
- Read a variety of picture books for stimulus (see Book Resources)

LITERACY LINK:

Have students record the stories and anecdotes that cannot be deposited in the bank in a personal journal.



Photography: David Cook
Wedge-tailed Eagle

DID YOU KNOW?

Birds come in all shapes and sizes. The largest bird is the ostrich at 2.7m tall and the smallest bird is the hummingbird at 5cm tall



OUTLINE:

A *Bird Paradise* is a creative visual display of the students' knowledge and understanding of birds and their habitats. As new knowledge and understanding is achieved, students should be encouraged to create an item to add to the Bird Paradise. The Bird Paradise should remain active throughout the entire unit of work.

LESSON IDEAS:

- Use a Bird Bank or brainstorm session to identify a range of bird habitats. Create a visual representation of each habitat and place it on your Bird Paradise wall. For example; a tree, a lake, a rock, etc. (See photo below)
- Take leaf and flower cuttings (or ask students to bring in a flower) and press to preserve them. Attach these to the wall.
- Investigate and display the different food sources of birds.
- Examine and display safety issues for birds, for example, feral animals, domestic pets, loss of habitat, pollution and vehicles.

TEACHER NOTES:

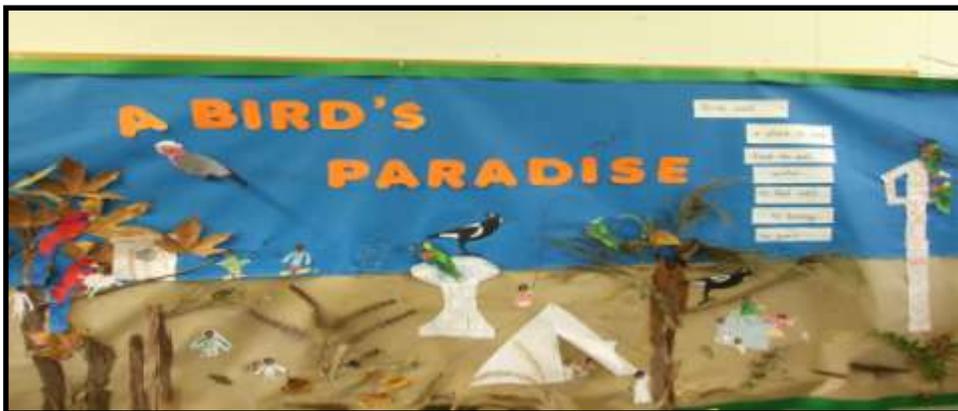
Consider the variety of habitats that birds frequent and the different features of each before you begin. Habitat requirements might include: nests (ground, tree, hollow, mud etc), plant types (tall trees, dense shrubs, grasses), water (puddle, pond, lake, ocean, etc) food (seed, nectar, lizard, fish, etc) and safety (feral animals, roads, pollution).

RESOURCES:

- Large wall or display area
- Paint, crepe paper, pressed leaves and flowers, bark, feathers etc.
- Variety of picture books (see Book Resources)

LITERACY LINK:

Write a joint or independently constructed description of a bird paradise for a particular type of bird. Focus on the use of adjectives to describe the different habitats. Extension activity could include explaining how to care for and maintain an environment for birds.



*Photo courtesy of
Jasper Rd Public School*

OUTLINE:

In this activity, students investigate the features of birds and discover what it is that makes birds unique.

LESSON IDEAS:

- Make a list of animals that:
 - have wings and can fly (eg: bees)
 - have nests (eg: possum dreys)
 - have beaks (eg: squid)
 - can sing (eg: whales)
 - lay eggs (eg: snakes)
- Can you find an animal apart from birds that has feathers?

TEACHER NOTES:

Birds share a number of qualities with other animals, including; flight, wings, beaks, song, nests, eggs etc. The unique feature of birds is their feathers.

RESOURCES:

- Big Book - *What Makes a Bird a Bird?* (see Book Resources)
- www.birdsinbackyards.net
- www.australianmuseum.net.au

LITERACY LINK:

Create a joint or independently written explanation about a bird's physical features and how they relate to its habitat.



Photography: David Cook
Pelican

DID YOU KNOW?

The pelican has the longest beak at 47cm. Its beak can hold more than its belly can!

OUTLINE:

This activity explores the amazing diversity of colour and sound that exists within the world of birds. Students will discover how birds use colour and sound for such things as camouflage, communication, mating and much more.

LESSON IDEAS:

- Examine the Backyard Birds of NSW poster (**see Resource 1**) and list all of the colours you can see. It makes a great poster too!
- Visit Birds in Backyards Top 40 bird songs and listen to the different sounds. Complete the Bird Sounds worksheet (**see Worksheet B**)
- Investigate bird colours in action, from camouflage to mating (**see Worksheet C**)

TEACHER NOTES:

The Birds in Backyards website has a Top 40 bird song list. Each bird song is categorised according to its type of song. This is a great tool for introducing bird songs or as a means of identifying birds.

RESOURCES:

- <http://www.birdsinbackyards.net/feature/top-40-bird-songs.cfm> (**Worksheet C**)
- <http://www.birdsinbackyards.net/feature/survey-species.cfm> (**Worksheet D**)
- Books - *Parrot Fashion* and *Waddle Giggle Gargle!* (see Book Resources)

LITERACY LINK:

Students listen to the sound of their favourite bird and imagine they can interpret what it is saying. Each student prepares a short presentation to the class of what their bird is saying.

DID YOU KNOW?

The male satin bowerbird does not get his satin coloured feathers until 7 years of age

What a fascinating fact!
I didn't know that.



Photography: Brad Walker
Magpie

backyard birds
OF NEW SOUTH WALES

Grey Butcherbird length 30cm
Red Wattlebird length 35cm
Noisy Friarbird length 30cm
Little Wattlebird length 30cm
Australian Raven length 50cm
Laughing Kookaburra length 45cm
Sulphur-crested Cockatoo length 50cm
Pied Currawong length 45cm
Eastern Yellow Robin length 15cm
Crimson Rosella length 35cm
Red-browed Finch length 12cm
Australian King-Parrot length 40cm (female and male)
Noisy Miner length 25cm
Rainbow Lorikeet length 30cm
Willie Wagtail length 20cm
Grey Fantail length 15cm
Eastern Spinebill length 15cm
Spotted Pardalote length 10cm
Superb Fairy-wren length 14cm (female and male)
New Holland Honeyeater length 20cm
Silvereye length 12cm
Common (Indian) Myna length 25cm (INTRODUCED SPECIES)
Magpie-lark length 25cm
Galah length 35cm
Australian Magpie length 40cm

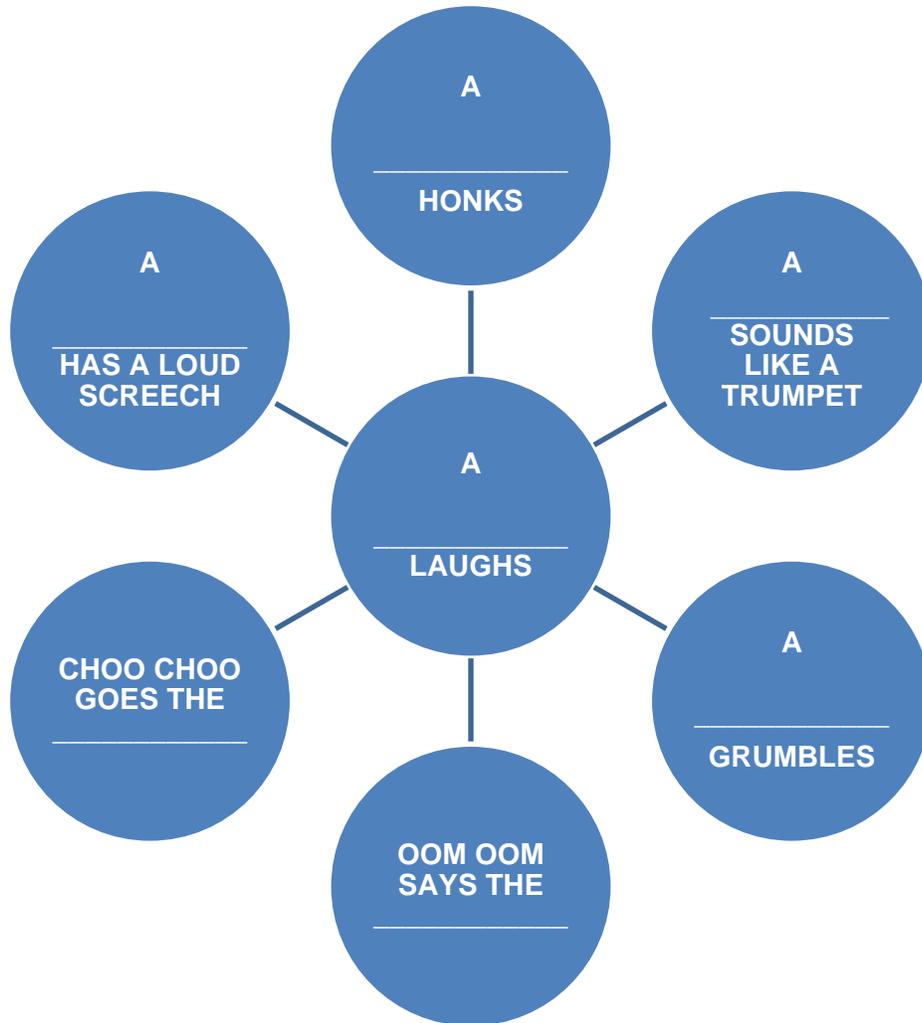
For inquiries about birds and the urban environment, contact:
AUSTRALIAN MUSEUM www.amonline.net.au/sand PH: (02) 9320 6202
BIRDS AUSTRALIA <http://basna.birdsaustralia.com.au> PH: (02) 9435 0388
BACKYARD BUDDIES www.backyardbuddies.net.au

Birds in Backyards
Birds Australia
backyard buddies
AUSTRALIAN MUSEUM

Investigating Bird Sounds

Birds can laugh, crack a whip, whistle, mimic, grumble, chirp, drum, honk and screech. These are just some of the wonderful sounds birds can make.

Match the bird to the sound



- | | | | |
|-----------------|------------------------|-------------------|-------------|
| GOOSE | BARN OWL | KOOKABURRA | SWAN |
| MALE EMU | TAWNY FROGMOUTH | LYRE BIRD | |

Investigating Bird Colours

Birds come in an amazing variety of colours. Try to complete the table by matching a colour of the rainbow to a bird that shares the same colour.

7 Rainbow Colours	7 Birds to Match
Red	
Orange	
yellow	
Green	
Blue	
Indigo	
Violet	

Some birds use their colour for camouflage while others use their colour to attract attention. Look carefully at the birds below. Which birds do you think are trying to hide and which do you think are trying to attract attention?

















OUTLINE:

This activity introduces students to using binoculars and develops their skills of searching, finding, observing and identifying birds in the school.

LESSON IDEAS:

- Introduce students to the features and functions of binoculars (tip: keep your eyes focused on the object and bring the binoculars to your eyes).
- Use an open area to observe a student standing, walking and running.
- Place laminated pictures of animals around the school. Students must identify the animals they see (tip: test the students by placing a ground dwelling animal in a tree).

TEACHER NOTES:

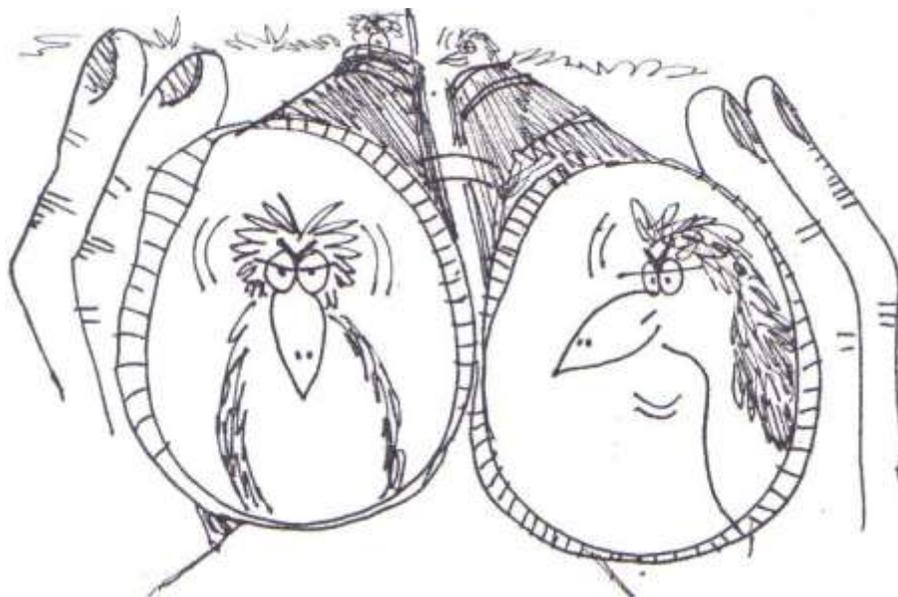
It is worth contacting local bird observing groups or an Environmental Education Centre for use of binoculars if the school or community cannot assist.

RESOURCES:

- A class set of binoculars (see wiki page)
- A variety of A4 animal pictures (laminated)

LITERACY LINK:

Create a joint or independently written procedure on how to search for birds using a pair of binoculars.





*Photography: David Cook
Yellow-faced Honeyeater*

Stage 2

Birds in their Environment



*Photography: David Cook
Tawny Frogmouth*

In this unit students will:

- Conduct bird surveys and upload the information to the Australian Museum
- Examine the physical features of birds
- Investigate a variety of avian habitats
- Learn about food webs and understand the role of birds in a food web
- Apply their knowledge and understanding to birds within the school environment

OUTLINE:

In this activity students will investigate the physical features of birds to learn more about where they live, what they eat and how they fly.

LESSON IDEAS:

- Examine the beaks and feet of a variety of birds and determine what they might eat and where they might live (**see worksheet D**).
- Use a mix of beaks, feet and feathers to create an imaginary bird. Describe the type of environment this bird would need to live in.
- Collect as many feathers as you can and using magnifying glasses, investigate the structure and features of feathers (**see worksheet E**).

TEACHER NOTES:

The shape and size of a bird's beak tells us a lot about what and how it eats. A bird's feet can also provide an insight into its habitat requirements.

RESOURCES:

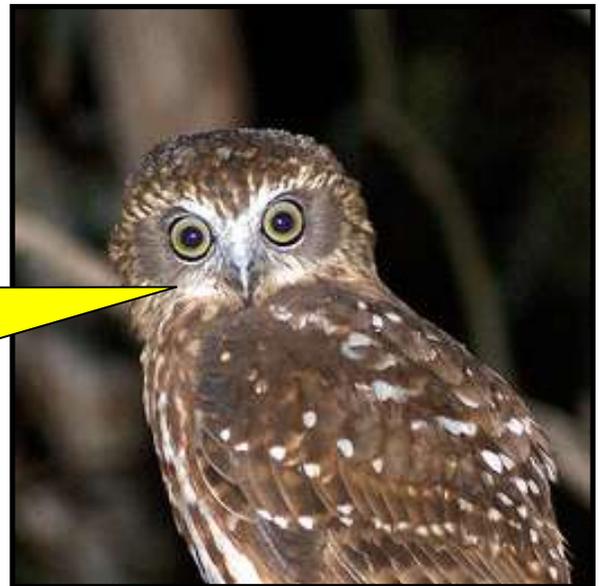
- www.birdsinbackyards.net
- Australian Museum bird box
- Book – *Best Beak in Boonaro Bay* (see Book Resources)

LITERACY LINK:

Write an explanation text about the feature of a particular bird. Students should try to explain the features and functions of the feathers, beaks and feet.

DID YOU KNOW?

Owl feathers (webs) are more open at the 'margins' than other birds so they can fly silently to catch their prey



Investigating Beaks and Feet

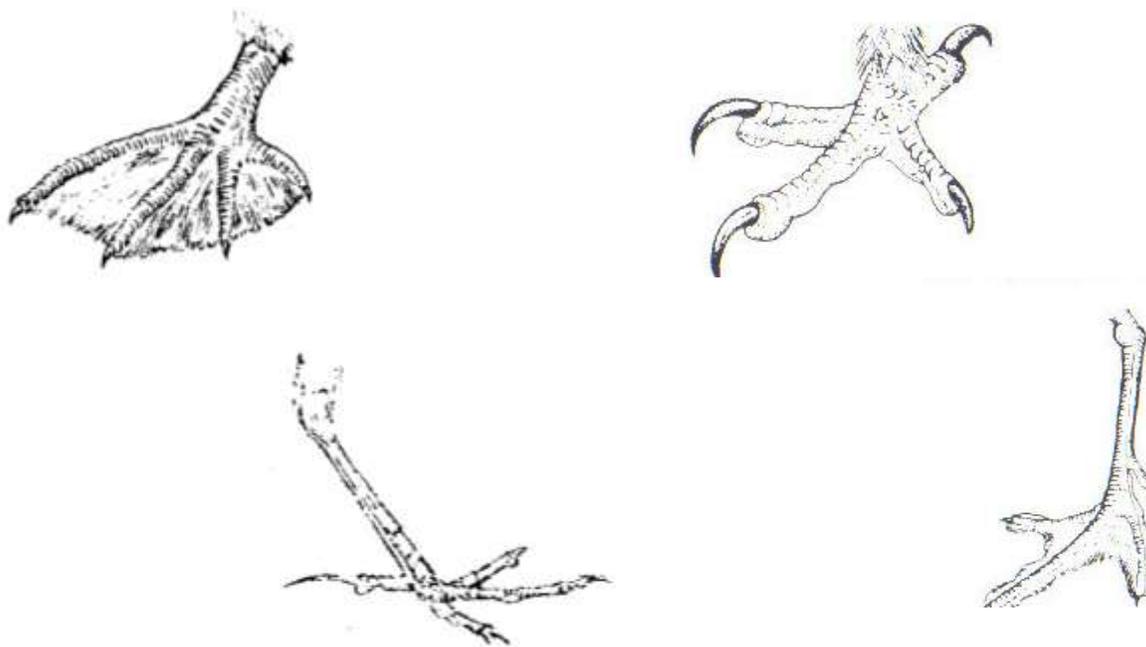
Investigating Beaks

Sifting, sucking, cracking, crushing, spearing, tearing, picking and probing. These are just a few of the things birds can do with their beaks.



Investigating Feet

Walking, wading, running, ripping, hunting, perching, climbing and catching. These are just a few of the things birds can do with their feet.



Investigating Feathers

- Collect a variety of feathers and try to determine the difference between a wing feather and a tail feather.
- Hold the tail feather loosely by the rachis and move it slowly up and down. Observe what happens.
- Hold the wing feather by the shaft and move it slowly up and down. Observe what happens.



RACHIS



SHAFT



to
a wing

shaft

and

VANE
OR
WEB



OUTLINE:

In this activity students will examine a variety of avian habitats and investigate the features of each. They will consider issues of sustainability and understand the need for food, water and shelter.

LESSON IDEAS:

- Research a variety of avian habitats that can be found in Australia (**see worksheet F**)
- Investigate which birds are found in a particular habitat and examine their physical features in relation to their habitat.
- What factors may affect the sustainability of avian habitats?

TEACHER NOTES:

Birds can be found in almost every environment around the world and this is why birds are a good indicator of environmental health. Many introduced bird species are flourishing in disturbed or urban environments.

RESOURCES:

- www.birdsinbackyards.net
- Books – *Lucy's Cat, Home and Window* (see Book Resources)

LITERACY LINK:

Conduct a debate about a proposed necessary development within an avian habitat. What factors will need to be considered to ensure the long term sustainability of this particular avian habitat? Consider migratory birds that may only visit an area intermittently.

DID YOU KNOW?

Birds living close to the ocean have large glands near their nose which extract the salt from the salt water. They also obtain fresh water from rain.



Investigating Avian Habitats in Australia

Each species of bird has a very special place where it lives, finds its food, shelters and raises its young. This is called its **habitat**. Australia has a diverse range of environments. Within these environments are many different bird habitats.

Choose one of the following Australian avian habitats and gather information on the following:

- Natural and artificial features of the habitat
- Bird species that live in or visit the habitat
- Potential food sources (natural or artificial)
- Varieties of shelter
- Availability and types of water sources
- Other animals or people that live in that environment
- Discuss issues of sustainability

The Ocean and Shore

Heath and Open Country

Urban and Industrial

Lakes, Streams and Swamps

**Grasslands
(Arid and desert regions)**

Forests & Woodlands



Food Webs

Activity 2.3

OUTLINE:

In this activity students will develop a deeper understanding of the inherent relationships that exists between living things and their environment. They will examine the food web of a tawny frogmouth and use this knowledge to conduct their own investigation into a bird of their choosing.

LESSON IDEAS:

- Illustrate a variety of simple food webs. Discuss what might happen if one part of the food web is removed?
- Examine the food web of a tawny frogmouth (**see Resource 2**)
- Create a food web for a small bird of your choosing (**see worksheet G**)
- Discuss and list the factors threatening the sustainability of these food webs?

TEACHER NOTES:

A food web shows the connections an animal has with its local environment (habitat). It is a great way to develop the concepts of ecology and explore issues of sustainability. The arrows on a food web always show the movement of energy or nutrients.

RESOURCES:

- www.birdsinbackyards.net
- Books – *Lucy's Cat* and *Where the Forest Meets the Sea* (see Book Resources)

LITERACY LINK:

Create a PowerPoint presentation that demonstrates how a variety of different plants and animals are linked through food webs. Consider implications such as pollution, land clearing and loss of fresh water.

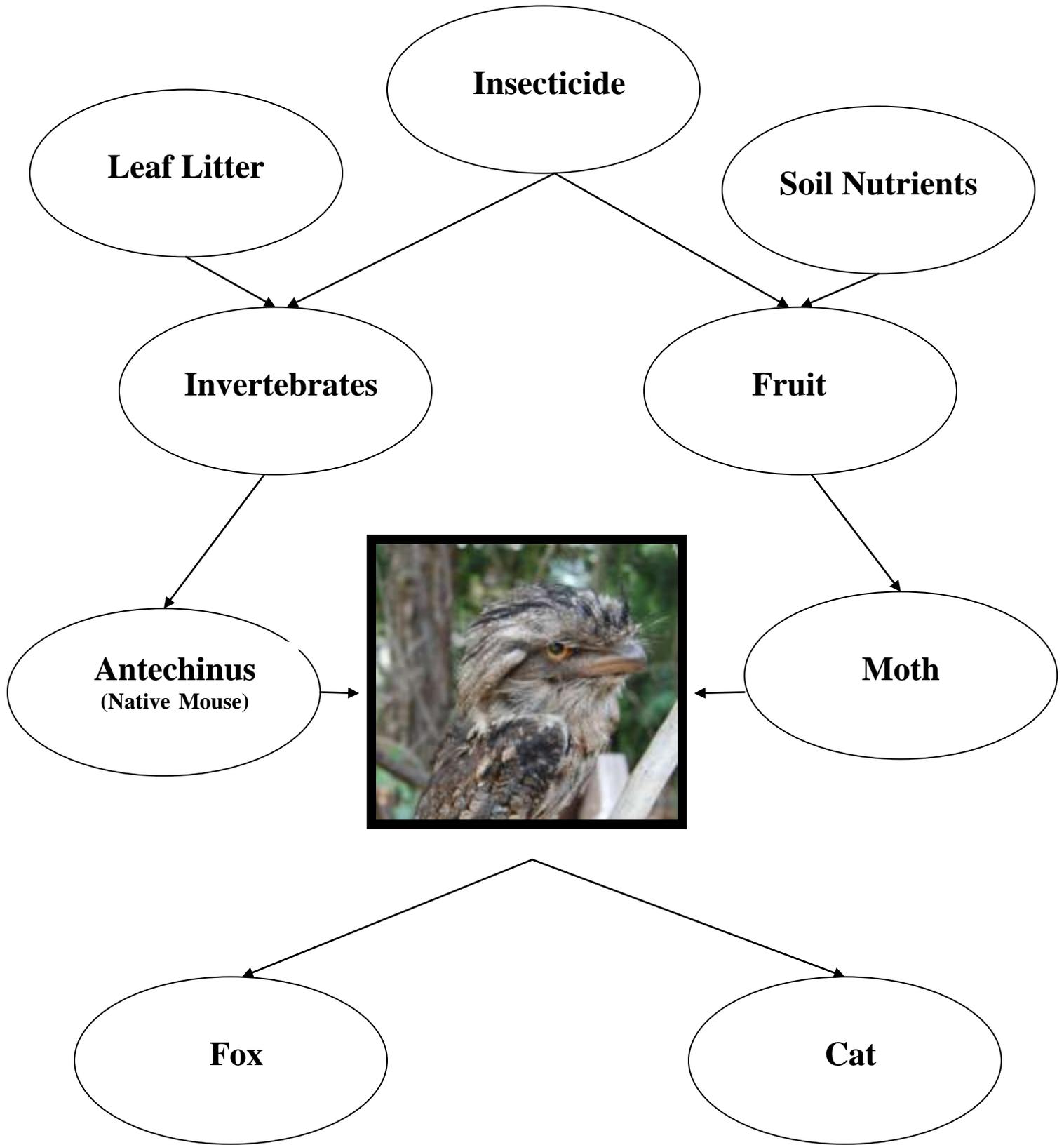
Photography: Aimee Freimanis
Honeyeater

DID YOU KNOW?

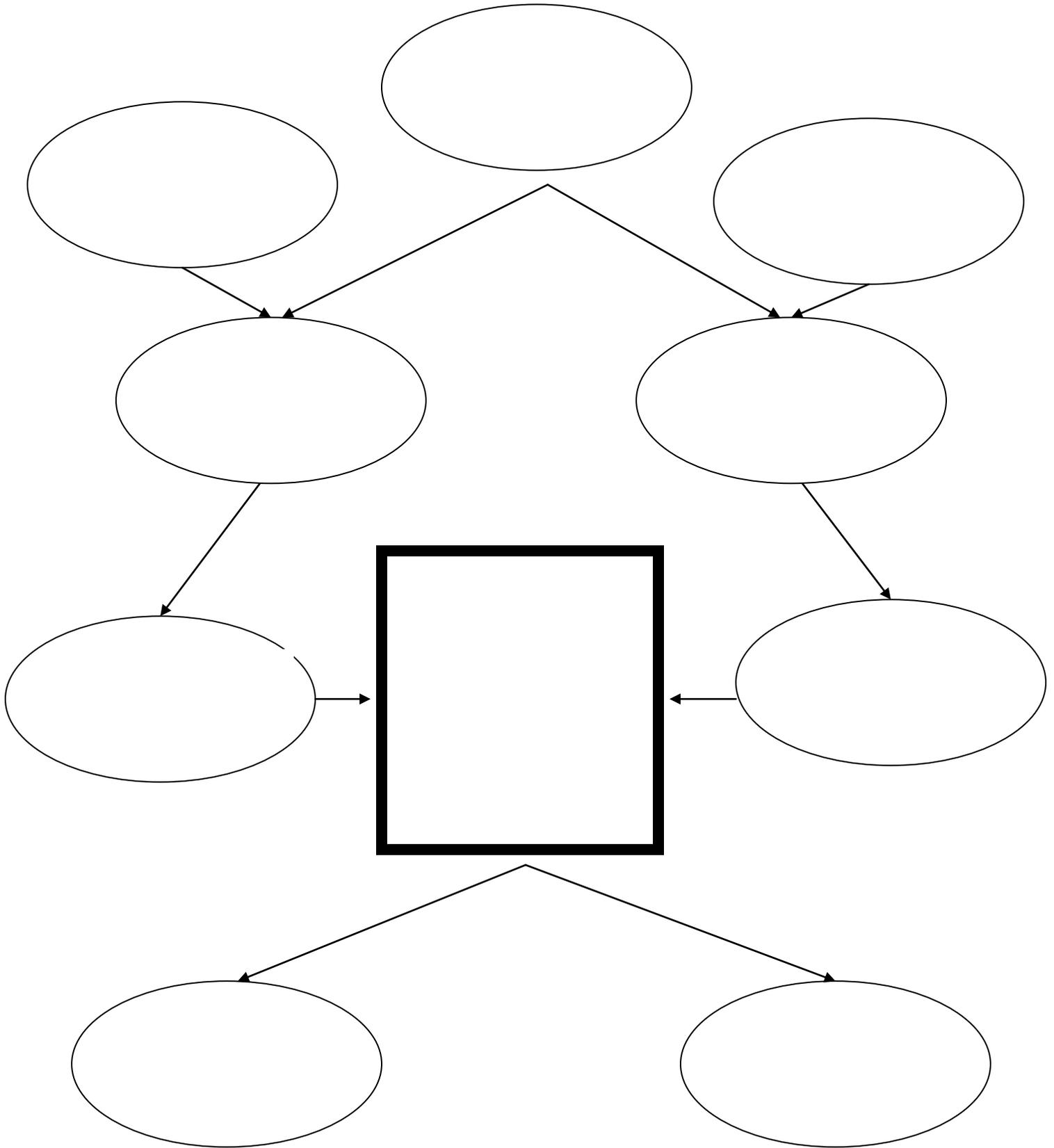
Birds have relatively few taste buds and a relatively poor sense of taste. Is that how they can eat insects, bugs and worms?



Food Web of a Tawny Frogmouth



Food Web of a _____



OUTLINE:

In this activity students are to apply their previous knowledge, skills and experience to a bird that is found within their own school grounds. It is an opportunity to consolidate the learning that has taken place.

LESSON IDEAS:

- Identify the birds that regularly frequent the school grounds and choose one bird to monitor closely.
- Determine and map the location within the school that the bird is most often found.
- Create a food web for that bird by observing what it eats within the school grounds.
- Describe the bird's habitat within the school.
- Examine the bird's physical features and relate this to its habitat and food web.

TEACHER NOTES:

There are a decreasing number of small birds found within school yards due to factors such as habitat loss (fewer dense shrubs and more open ground) and waste (attracts scavenging larger birds like ravens).

RESOURCES:

- www.birdsinbackyards.net
- www.blogger.com
- www.wikispace.com

LITERACY LINK:

Create a Podcast / Blog or Wiki page to present a documentary style information report on the birds that call your school grounds home.



Photography: Brad Walker

DID YOU KNOW?

Small birds are disappearing at an alarming rate

Well that's no good for us!

Stage 3

Bringing back the Birds



*Photography: Libby Feneley
Crimson Rosella*

In this unit students will:

- Conduct bird surveys and upload the information to the Australian Museum
- Read current children's literature involving birds
- Investigate migratory birds and global connectedness
- Explore current issues that face birds and the environments they live in
- Undertake a meaningful school based project to support bird habitats

OUTLINE:

In this activity students will read and discuss a series of short novels that explore the relationships between people and birds. The novels draw attention to the intrinsic value of birds to people and emphasize the importance of maintaining these bonds.

LESSON IDEAS:

- In small groups, read and discuss one of the short novels and then present an outline of the story to the class, discuss the major issues and themes.
- Examine the narrative features of each story. Identify the setting and atmosphere, important characters, the complication, significant events and the resolution.
- Jointly construct a class narrative about a bird and its relationship to a person. This narrative could form the basis of a drama, dance or music activity.
- Create a wiki page, blog or podcast for class members to post their thoughts and ideas about the novels. Students might like to have a suggested reading page where they can review and recommend books they have read in their own time.

TEACHER NOTES:

There are many more wonderful books that deal with people and birds that could be used within this unit. The books listed in **Resource 3** are a short selection to get you started.

RESOURCES:

- Book blurbs (see **Resource 3**)
- www.wikispace.com
- www.blogger.com



DID YOU KNOW?

The earliest bird was the Archaeopteryx, it lived 150 million years ago

Book Blurbs

Mudlark – Michael Stephens

This is the story of a young boy who lives in the world of his imagination. He is given the opportunity to take the class pet home for the weekend, a mudlark. The boy allows the bird some free time from its cage in his room. Unfortunately, the window opens enough for the bird to escape and he flies away. The story follows the boy's quest to retrieve the bird and the discoveries he makes about himself and the people around him. Students can consider the issue of keeping birds in cages and the social lives of different bird communities. Use the trouble Mudlark had with the other birds pecking him as an example of bird social behaviour.

Danny's Egg – Colin Thiele

This narrative begins with a young boy encountering a large goanna that is in the process of eating a nest of emu eggs. The boy is able to save one egg and returns home, intent on nurturing the egg and hatching the chick. The egg creates dramas at home and interest in the school playground. Danny learns as much as he can about emus and secretly cares for the egg using a variety of ingenious methods. The story lends itself to an investigation into the need for shelter, especially when raising young.

Brahiminy – Colin Thiele

This is the story of a family who move to Arnhem Land to take up residence at a remote ranger station. The family take in a baby brahiminy kite that has fallen, or has been pushed from its nest and is close to death. The young boy, Luke, is determined to care for the chick and gradually develops a close bond as the bird recovers and matures into an adult. Luke is encouraged to give the bird the opportunity to fly away and be free. He is most reluctant, but agrees. The book continues to explore the ongoing relationship between the boy and the bird as it visits on regular occasions. Throughout the story the issues of poachers, tourists and development threatening the natural environment are explored. Students could investigate the importance of pristine natural environments and the threats and possibilities of people entering them.

Storm Boy – Colin Thiele

A classic, moving story about a boy and a pelican that form a close bond after the boy saves the life of the pelican. The story explores a number of issues relating to people, society and the environment. It culminates in a dramatic ending that leaves the reader reeling. A great literary piece, that could be used as encouragement for students who wish to pursue and appreciate reading and writing.

Magpie Island – Colin Thiele

The story of a white backed magpie that inadvertently finds itself stuck on an island, too far from shore to return. The bird experiences a great sadness and loneliness, but manages to survive the harsh environment. A passing fishing boat sees the magpie and is amazed that a land bird has ended up on a sea island. After several visits to the island, a young boy decides to bring a mate to the island for the magpie. The birds bond, loving each others company and begin to nest. The story takes a sad turn, leaving the magpie in isolation, a symbol of endurance and solitude. The island becomes known as Magpie Island.

OUTLINE:

In this activity students will investigate migratory birds and expand their knowledge of bird habitats to include global environments. They will track migration routes and draw links between places, resources and the habitats that support these birds.

LESSON IDEAS:

- Watch the ABC project “*A Year on the Wing*”. It follows an Eastern Curlew from its birth in the tundra, down the flyway and back.
- Contact *The Wetlands Environmental Education Centre* near Newcastle and participate in the Wet and Wild competition.
- Investigate *Greenshank – The Migration Story*. A project involving the Chichester Harbour Conservatory to raise awareness of the nationally and internationally important shorebird populations using Chichester Harbour.
- Use a world map and illustrate the flyways of several birds that globetrot around the world.
- Research and compare two habitats used by migratory birds. What are the similarities, differences, threats and issues of sustainability that face these habitats and the birds that frequent them?
- **Postcards from a Bird** - Use a series of photos to create an imaginary journey for a migratory bird. Explain each place that the bird visited and the adventure it encountered (see Resource 4).

TEACHER NOTES:

Migration paths of birds are called ‘bird flyways’. Migratory birds are a great link to issues of sustainability at a global level.

RESOURCES:

- www.abc.net.au/wing/ayowflash.htm
- www.schoolwebsites.com.au/web/default.aspx?PageID=2436&SiteID=94
- www.shorebirds.wetlands.org.au/
- www.birdsinbackyards.net

LITERACY LINK:

Arrange a video conference with another school (preferably a long distance away) that you know has migratory birds that visit. Share project ideas, emails, wiki pages, blogs etc that can be used to share information about birds in your areas.

Postcards from a Bird



OUTLINE:

In this activity students will apply their knowledge and understanding to range of current environmental issues that are directly affecting birds. They will conduct a series of investigations to collect data that will inform their decision making for school action projects in the future.

LESSON IDEAS:

- **Where have all the small birds gone?** As part of your school bird surveys, determine the ratio of small birds to larger birds found within the school grounds. Choose a small bird that inhabits, or used to inhabit the area and complete the small bird fact sheet (**see worksheet H**). Does your school offer an appropriate habitat for small birds?
- **Conduct a Biodiversity Audit and Habitat Assessment.** Examine the green spaces within your school or nearby park and determine whether or not they contain the ingredients for rich biodiversity and healthy habitats (**see worksheet I**)
- **Active Citizenship** - develop strategies to address any issues identified. Use the findings and strategies presented by the students and incorporate these in to your School Environmental Management Plan (SEMP).
- **Conduct a Waste Audit and Rubbish Assessment.** Observe waste management practices at your school and determine whether or not it is contributing to pollution issues, biodiversity and small bird numbers (**see worksheets J, K & L**).

TEACHER NOTES:

Most current environmental issues are inherently linked to one another through complex interactions and relationships. It is difficult to understand and conceptualise the entirety of an issue in isolation from all of the events that continually surround it and influence it, both locally and globally. The following lesson ideas have focused on three topics, students should be encouraged to try to draw links and see the relationships that exist between the topics.

- The declining numbers of small birds in many environments is proving a real concern for the health of local ecosystems. Small birds play a vital role in maintaining a healthy balance within an ecosystem, especially when it comes to controlling insect populations.
- Biodiversity is the web of life and a key indicator to the quality of habitats and the health of local ecosystems. Small birds can play a vital role in improving the biodiversity of an area.
- Waste is a source of pollution and it creates food sources for opportunistic plants and animals that would not otherwise be there.

RESOURCES:

- <http://www.brewongle-e.schools.nsw.edu.au/>
- <http://www.birdsaustralia.com.au/about-birds/climate-change.html>
- www.birdsinbackyards.net

LITERACY LINK:

Make a class presentation at the school assembly outlining the investigations into small bird numbers, biodiversity and waste. Explain the reasons for conducting the investigations, the results that were found and the recommendations for the school.

Small Bird Fact Sheet

<u>Common Name</u>	<u>Picture</u>
<u>Scientific Name</u>	
<u>Size</u>	
<u>Colour</u>	<u>Distribution</u> 
<u>Sound</u>	
<u>Diet</u>	
<u>Habitat</u>	
<u>Special Features</u>	

Biodiversity Audit & Habitat Assessment



Tick if present / applicable and then add up your score

	0 Points	1 Point	2 Points	3 points	Total
School Grounds	Concrete	Grass	Gardens	Bush	/6
Trees	None	Exotics	Small Natives	Large Natives	/6
Shrubs	None	Exotics	Small Natives	Large Natives	/6
Grasses & Ferns	None	Exotics	Some Natives	Many Natives	/6
Ground Cover	None	Rocks / Logs	Mulch / Leaf Litter	All	/6
Water	None	Occasional	Bird Bath / Pond	Creek / Wetland	/6
Shelter	None	Nests	Logs / Hollows	All	/6
Mammals	None	< 5 Species	< 10 Species	> 10 Species	/6
Invertebrates	None	< 5 Species	< 10 Species	> 10 Species	/6
Threats	Feral Animals	Pollution	Weeds	None	/6
Total					/60

Score: 0 – 20 (Poor)

21 – 40 (Average)

41 – 60 (Good)

Waste Audit

Equipment

At least 6 buckets or bins
 Large sheet of plastic / tarp
 Waste category labels
 Set of tongs

Waste Recording Sheet – (**Worksheet L**)
 Clipboards
 Pencils
 Weighing equipment

Sample Waste Audit

After recess or lunch, collect one or two bins of waste from the playground, an office area and a classroom. Label each bag of waste with its origin.

Or

Whole School Waste Audit

The day before your audit collect, bag and label all the rubbish generated by your school in a single day.

Each bag of waste is tipped onto a large sheet of plastic (eg: tarpaulin) spread out on an asphalt area outdoors. Using gloves and tongs, the students sort the waste into 5 labelled buckets or bins. Each bin or bucket has one of the following labels:

1. **Recycle** - products which can be recycled such as PET bottles, aluminium cans, milk cartons, clean paper and cardboard. Some of these products can also be put into the Reuse category.
2. **Compost** - essentially fruit and vegetable scraps. In the school setting it is recommended that citrus peelings are not composted.
3. **Reuse** - products that can be used again before they are put into the waste stream. Products can often be refilled or used in art and craft. For example, egg cartons, plastic teaspoons, PET “pop-tops”, yogurt cartons.
4. **Avoid** - products for which there is an environmentally friendly alternative. For example, reusable drink bottles can be used instead of “poppers”, chips and biscuits can be brought to school in reusable boxes or bags instead of as a small packet. Most of these items go into the waste stream. Chip packets and thin foil-like plastics cannot be recycled.
5. **Waste** - non-recyclable plastics, contaminated paper and cardboard products, sandwich scraps, meat scraps, polystyrene foam, etc.

These categories can be reduced to four by removing either *avoid* or *waste*. A sixth bucket labelled with a question mark can be used for items the students are unsure of.

As each is filled it should be weighed and the weights recorded on the “Waste Record Sheet”. Volume can also be recorded as the number of part or full buckets.



Waste Recording Sheet

	Playground		Offices		Classrooms	
Recycle	Volume	Weight	Volume	Weight	Volume	Weight
Compost	Volume	Weight	Volume	Weight	Volume	Weight
Reuse	Volume	Weight	Volume	Weight	Volume	Weight
Avoid	Volume	Weight	Volume	Weight	Volume	Weight
Waste	Volume	Weight	Volume	Weight	Volume	Weight
?	Volume	Weight	Volume	Weight	Volume	Weight

Rubbish Assessment

WHAT RUBBISH DO YOU BRING TO SCHOOL EACH DAY?

Name _____ **Class** _____

Item	Quantity	Reuse	Recycle	Compost	Landfill
Lunchbox					
Plastic Bag					
Plastic Wrap					
Paper Bag					
Drink Bottle					
Aluminium Can					
Popper					
Fruit					
Chip Packet					
Lolly Packet					
Cardboard					
Total					

OUTLINE:

In this activity students will apply all of the knowledge, skills and experience they have acquired to undertake a project within their school to improve habitat requirements for local bird species. Students are encouraged to utilise the research they have conducted and the data they have collected to inform their decision making.

LESSON IDEAS:

- Examine, discuss and reflect upon the data that has been collected from the bird surveys.
- List and discuss the major issues that have been identified within the school through biodiversity and waste audits.
- Plan, design and make a series of projects that the school can implement as part of a bird habitat strategy.
- Projects may include; biodiversity rich gardens, worm farms, compost, litter patrol, nest boxes for small birds, community education program or adopt a bird.

TEACHER NOTES:

Teachers should encourage students, where most applicable, to focus on projects that endeavour to improve habitat requirements for small birds. Ensure that any projects undertaken by the students receive mention in the School Environmental Management Plan (SEMP).

RESOURCES:

- www.sustainableschools.com
- www.brewongle

LITERACY LINK:

Enter an article in the school news letter detailing the findings of your investigations into bird habitats within the school. Seek community support for a range of projects that are to be undertaken by the Stage 3 students.



*Photography: David Cook
Lewins Honeyeater*

Book Resources

- Title: Baby Bird's Blankie
Author/Illustrator: Margaret Wild, Gwyn Perkins
Published: Kingswood, S. Aust: Working Title, 2008
- Title: The Best Beak in Boonaroo Bay
Author/Illustrator: Narelle Oliver
Published: Port Melbourne: Lothian, 1995
- Title: What Makes a Bird a Bird?
Author/Illustrator: May Garelick, Trish Hill
Published: Sydney: Martin Educational, 1988
- Title: Mr McGee and the Perfect Nest
Author/Illustrator: Pamela Allen
Published: Ringwood, Vic.: Puffin, 2000
- Title: The Owl who was Afraid of the Dark
Author/Illustrator: Joanne Cole, Jill Tomlinson
Published: Houndmills, Eng.: Macmillan Education, 1988
- Title: Birds, Birds and More Birds
Author/Illustrator: Matt Cosgrove
Published: Sydney: Weldon Kids, 1999
- Title: The Hunt
Author/Illustrator: Narelle Oliver
Published: Port Melbourne: Lothian, 1995
- Title: Little Tawny
Author/Illustrator: Kim Dale
Published: South Melbourne: Lothian, 2005
- Title: Good Night Owl!
Author/Illustrator: Pat Hutchins
Published: London: Bodley Head, 1973
- Title: Fox
Author/Illustrator: Margaret Wild and Ron Brooks
- Title: Hairy Charlie and the Pumpkin
Author/Illustrator: Jackie French, Dee Huxley
Published: Carlton, Vic.: CIS, 1994
- Title: Magpie Island
Author/Illustrator: Colin Thiele, Roger Haldane
Published: Sydney: Weldon, 1990
- Title: Waddle Giggle Gargle!
Author/Illustrator: Pamela Allen
Published: Ringwood, Vic.: Puffin, 1996

