



**NRM Education**  
climate change biodiversity water food air waste transport energy



**Government of South Australia**  
Adelaide and Mount Lofty Ranges  
Natural Resources Management Board

# Engaging with Nature

## Wetland Birds

### Teacher Information Pack



[www.nrmeducation.net.au](http://www.nrmeducation.net.au)



# Introduction

Wetland birds fulfil many important roles in the ecology of natural areas and can provide an interesting and valuable insight into the health of these ecosystems. Best of all, they are mostly present during the day, providing a magnificent opportunity for learners to observe their habits close up.

## What are wetland birds?

Wetland birds rely on wetlands and waterways for survival and have evolved numerous adaptations to these environments. Each bird species has its own requirements for food, shelter and breeding sites which influence its use of the wetland.



## Why monitor wetland birds?

Wetland bird monitoring is an engaging activity that provides students with an insight into the functioning and health of wetland ecosystems.

Wetlands are a biodiversity hotspot. They are among the most important and productive ecosystems on Earth providing habitat, water and an abundant food source for 40% of the world's species, including birds, frogs, invertebrates and fish. Wetlands become refuge areas for plants and animals in times of drought and are nurseries for fish and migratory bird populations.

Many wetlands are located near schools and have good numbers of readily identifiable species of birds that do not need to be observed through binoculars. If you are not near a wetland, you could also check out your local creeks, rivers, artificial dams and coastal and estuarine areas.

## Bird Identification

Good bird identification skills can be extremely useful for discovering which species are visiting our local areas. Birds are typically identified by their calls, by looking at their colours, markings and other physical features such as feet, beaks and necks or by their position in the landscape (e.g. on the water, in the reeds, in the air etc).

Bird colours and markings do not happen by accident, but actually serve the very important functions of:

- camouflage or advertisement
- allowing birds to recognise one another
- indicating whether male or female
- indicating age
- indicating readiness for breeding.

'Structure is related to function'; other physical features provide an insight into the birds feeding type, habitat preference and behaviour:

- beak size and shape
- neck length
- webbed/un-webbed feet
- length of legs
- size of bird
- posture.

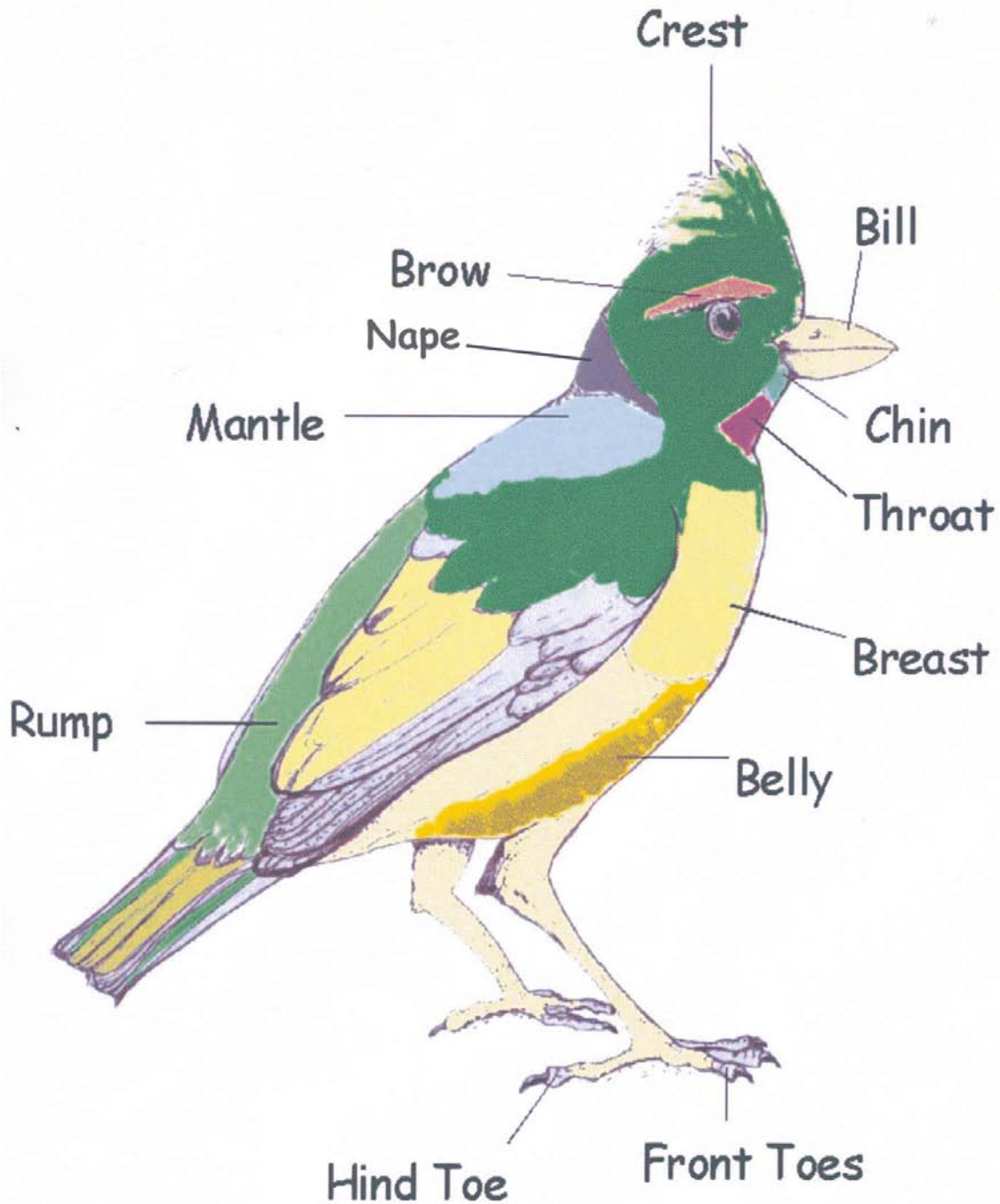
In addition, a bird's common (non-scientific) name may tell us more about the bird. Examples include the Banded Stilt, Blue-billed Duck, Yellow-billed Spoonbill and Freckled Duck.





Even if the bird's name does not tell us anything about its physical appearance, being able to visualise and describe the appearance of a bird is one of the most important techniques of identification.

Knowing the different parts of a bird can help us to make accurate descriptions when we are looking at them in the field. For example saying that the bird has a blue crest, white brow and red breast will make it a lot easier to look up in a book than if we say it had a 'blue Mohawk, white eyebrow wrinkle and red front bit'.



Wetland Birds of South Australia ID Charts are available on the NRM Education website.

You may also wish to consult a field guide for further information. Field guides are the most common means of discovering and learning more about Australian birds. They are generally simple to use and are an excellent first port-of-call for any research project.



# Instructions for Wetland Bird Survey

Schools are encouraged to undertake seasonal observations of species diversity and abundance to build a picture of wetland health. When you regularly survey a site the data sheet becomes a running record of wetland bird activity. You could undertake a wetland bird survey in conjunction with other Engaging with Nature aquatic activities.

## Before you start

### Select your site:

Choose a wetland or waterway of interest to you and easy to access. Make sure you get permission if you are surveying on privately owned land and always take a friend with you.

## What to take to the site

**Wetland Birds of South Australia Record Sheet and ID Charts:** Use these to identify and record the birds as you see them.

**Binoculars (not essential):** Useful for examining birds from a distance.

**Miscellaneous:** Sturdy shoes, sunscreen, hat, camera (optional).

**Field guides, ID Charts and class sets of binoculars can be borrowed from NRM Education.**

## What to do at your site

Remember to keep as quiet and still as possible so as not to disturb or scare away the birds.

**Look closely:** take special note of bird behaviour and any distinguishing features as many birds look similar from a distance. For example, many ducks have a similar body shape, but can be distinguished by their colour and other physical features.

## Fill in the Wetland Birds Records Sheet as you go

Note any birds you see and tally them on the record sheet as you see them.

You may wish to investigate what effect the time of day or season has on the presence of birds.

### Please submit your results each time you survey.

Send us a copy of your results after each monitoring event using the form on our website. This is done online at [www.nrmeducation.net.au](http://www.nrmeducation.net.au) under Engaging with Nature -> Send us your data.

## What happens to your results?

Each month we collate the results from all the monitoring groups and put them on a GoogleMap on our website.

Make sure you send in your results as soon as possible so that they can be included.

Your results are stored in our database and also posted online as an Excel spreadsheet so they can be used by anyone in the world.

Common Name	Scientific Name	Number of Birds	Conservation Status
<b>Ducks</b>			
Australian Shoveler	<i>Anas rhynchotis</i>		Rare
Australian Wood Duck	<i>Chenonetta jubata</i>		-
Blue-billed Duck	<i>Laysan duck</i>		Rare
Cherry-bill	<i>Anas platyrhynchos</i>		-
Freckled Duck	<i>Sturnella roseola</i>		Vulnerable
Grey-bill	<i>Anas platyrhynchos</i>		-
Hardhead	<i>Anas platyrhynchos</i>		-
Mallard Duck	<i>Anas platyrhynchos</i>		-
Pacific Black Duck	<i>Anas superciliosa</i>		Rare
Pink-billed Duck	<i>Mareca rosea</i>		-
<b>Other species</b>			
Black-billed Noddy	<i>Graculus nivalis</i>		-
White-bellied Noddy	<i>Graculus leucogaster</i>		-
Surf Scoter	<i>Scoter</i>		-
Surf Scoter	<i>Scoter</i>		-
Surf Scoter	<i>Scoter</i>		-
<b>Little birds</b>			
Australian Grebe	<i>Ardeola novaehollandiae</i>		-
Great Crested Grebe	<i>Podiceps cristatus</i>		Rare
Hour-billed Grebe	<i>Podiceps podiceps</i>		-
<b>Waterbirds and others</b>			
Australian Warbler	<i>Andropogon melanoleucus</i>		Rare
Black-bellied Cormorant	<i>Phalacrocorax carbo</i>		-
Great Cormorant	<i>Phalacrocorax carbo</i>		-
Little Black Cormorant	<i>Phalacrocorax melanoleucus</i>		-
Red-billed Cormorant	<i>Phalacrocorax carbo</i>		-





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## Wetland Bird Monitoring



School: \_\_\_\_\_ Date of monitoring: \_\_\_\_\_

Class conducting the survey: \_\_\_\_\_ Start time: \_\_\_\_\_ Finish time: \_\_\_\_\_

Site name: \_\_\_\_\_ Site code: \_\_\_\_\_

Weather conditions (please circle): sunny, partly cloudy, windy, overcast, raining.

Temperature (°C) (please circle): 0-9, 10-19, 20-29, 30-39.

Record your sightings in the table below along with the number of each species observed.

Common Name	Scientific Name	Number of Birds	Conservation Status
<b>Ducks</b>			
Australasian Shoveler	<i>Anas rhynchos</i>		Rare
Australian Shelduck	<i>Tadorna tadornoides</i>		-
Australian Wood Duck	<i>Chenonetta jubata</i>		-
Blue-billed Duck	<i>Oxyura australis</i>		Rare
Chestnut Teal	<i>Anas castanea</i>		-
Freckled Duck	<i>Stictonetta naevosa</i>		Vulnerable
Grey Teal	<i>Anas gibberifrons</i>		-
Hardhead	<i>Aythya australis</i>		-
Musk Duck	<i>Biziura lobata</i>		Rare
Pacific Black Duck	<i>Anas superciliosa</i>		-
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>		-
<b>Water Fowl</b>			
Black-tailed Native-hen	<i>Gallinula ventralis</i>		-
Dusky Moorhen	<i>Gallinula tenebrosa</i>		-
Eurasian Coot	<i>Fulica atra</i>		-
Purple Swamphen	<i>Porphyrio porphyrio</i>		-
<b>Little Birds</b>			
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>		-
Great Crested Grebe	<i>Podiceps cristatus</i>		Rare
Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>		-
<b>Cormorants and Darters</b>			
Australian Darter	<i>Anhinga melanogaster</i>		Rare
Black-faced Cormorant	<i>Leucocarbo fuscescens</i>		-
Great Cormorant	<i>Phalacrocorax carbo</i>		-
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>		-
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>		-
Pied Cormorant	<i>Phalacrocorax varius</i>		-



Common Name	Scientific Name	Number of Birds	Conservation Status
<b>Large Birds</b>			
Black Swan	<i>Cygnus atratus</i>		-
Brolga	<i>Grus rubicundus</i>		Vulnerable
Cape Barren Goose	<i>Cereopsis novaehollandiae</i>		Rare
Pelican	<i>Pelecanus conspicillatus</i>		-
<b>Egrets and Herons</b>			
Little Egret	<i>Ardea garzetta</i>		Rare
Intermediate Egret	<i>Ardea intermedia</i>		Rare
Great Egret	<i>Egretta alba</i>		-
White-faced Heron	<i>Ardea novaehollandiae</i>		-
Nankeen Night Heron	<i>Nycticorax caledonicus</i>		-
<b>Spoonbills and Ibis</b>			
Glossy Ibis	<i>Plegadis falcinellus</i>		Rare
Royal Spoonbill	<i>Platalea regia</i>		-
Sacred (White) Ibis	<i>Threskiornis aethiopica</i>		-
Straw-necked Ibis	<i>Threskiornis spinicollis</i>		-
Yellow-billed Spoonbill	<i>Platalea flavipes</i>		-
<b>Birds that Hide</b>			
Baillon's Crake	<i>Porzana pusilla</i>		-
Buff-banded Rail	<i>Rallus philippensis</i>		-
Little Bittern	<i>Ixobrychus minutus</i>		Endangered
Little Grass Bird	<i>Megalurus gramineus</i>		-
Reed Warbler (Australian)	<i>Acrocephalus australis</i>		-
Spotless Crake	<i>Porzana tabuensis</i>		Rare
Spotted Crake	<i>Porzana fluminea</i>		-

Threatened Species Schedules 7 (Endangered), 8 (Vulnerable) and 9 (Rare) gazetted February 2008, National Parks and Wildlife Act 1972.

**Comments/Observations/Other species:**

Please submit your results immediately at [www.nrmeducation.net.au](http://www.nrmeducation.net.au) → Engaging with Nature → Send Us Your Data.  
This allows us to upload your raw data onto the web site.

NRM Education proudly delivers the Australian Sustainable Schools Initiative - SA. We acknowledge the support of Local Government and, in particular, those Councils who are working in partnership with NRM Education and the AMLR NRM Board. KESAB environmental solutions is also a key partner and we recognise their ongoing support.





# Extension Activities

## 1. What Bird am I?

Have the students draw a picture of a local wetland bird and prepare an information card about its habitat by researching the answers to the following four questions:

- What type of animal am I?
- What do I like to eat?
- What likes to eat me?
- Where do I like to live?

To make this activity more challenging, laminate the information cards and use in a game of Celebrity Heads.

Alternatively build a lasting set of the biodiversity incorporating other plants and animals of the local area. Make more cards as more biodiversity is discovered. Information cards can be used for future games and quizzes e.g. Bird bingo.



## 2. Invent-a-bird

Design a wetland bird using characteristics of many different wetland birds. Use photographs or drawings to show what it looks like.

Give it a name and write a short story or poem that describes its behaviour, how it locates and captures food and any particular habitat preferences.



The Great Spur-winged Pelihen is often found walking around muddy swamps and grassed areas looking for flying fish which it grabs from the air with its giant beak!

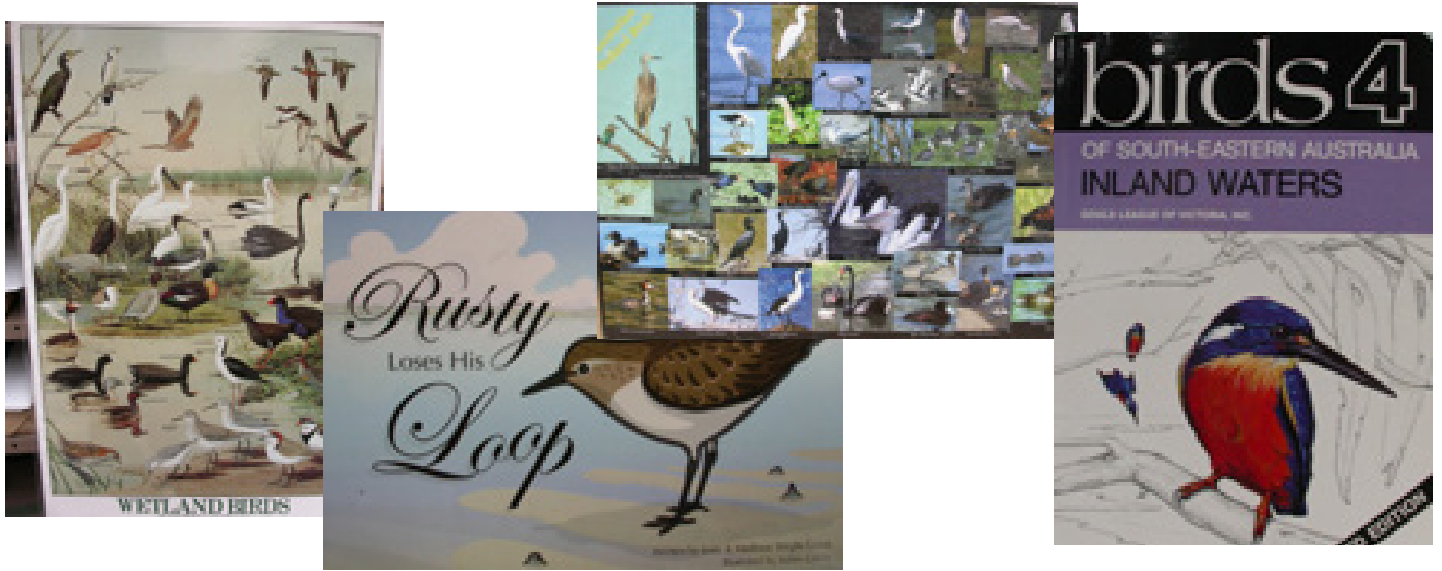


### 3. Field guide look-up

Hand out photographs or pictures of wetland birds and get the students to use field guides and charts to identify the birds.

Alternatively, give the students a list of features and have them use to guides to find a bird that has all of those features.

Our loan library has many resources to support an inquiry into wetland birds. See [www.nrmeducation.net.au/index.php?page=loan-library](http://www.nrmeducation.net.au/index.php?page=loan-library) for more information

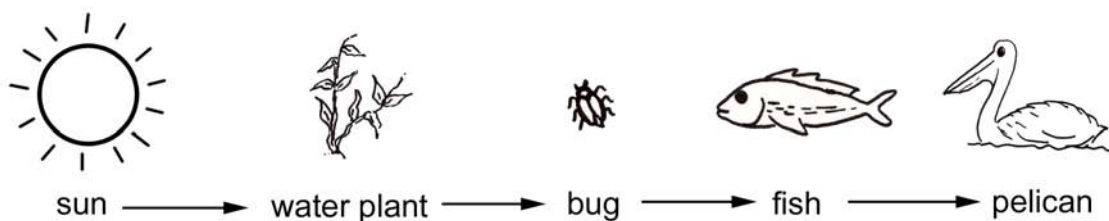


### 4. Construct a food chain

Food chains in nature can be very simple or very complicated. They provide a visual example of how the survival of plants and animals are interconnected.

A simple food chain may start with an insect eating a plant, a frog eating an insect, a lizard eating the frog. Another combination may be a macroinvertebrate eating an aquatic plant, tadpole eating the macroinvertebrate, small fish eats the tadpole, big fish eating the smaller fish, pelican or human eating the larger fish.

Most food chains start with sun, plants and insects and can potentially finish with humans or introduced predators, such as foxes and cats. In South Australia prior to European settlement, the top predators were dingoes, aborigines, birds of prey, snakes and the Eastern quoll, or native cat, as it was sometimes called. Of course food chains do not always end in a top predator because not all insects or fish are eaten. If this was to happen, all species other than top predators would be heading for extinction very quickly! Food chains can be as long or as short as two species.





Food chains are obviously a very simplified representation of what happens in nature. Many animals have extremely varied diets which may include plant matter, insects and small reptiles, not to mention clean water and all the mechanisms that keep the water clean. Furthermore, food is not the only material thing needed for an organism to survive. Many species have extensive habitat requirements which may include hollow logs, fallen leaf litter, clay soils for burrowing in, and stone and timber for building.

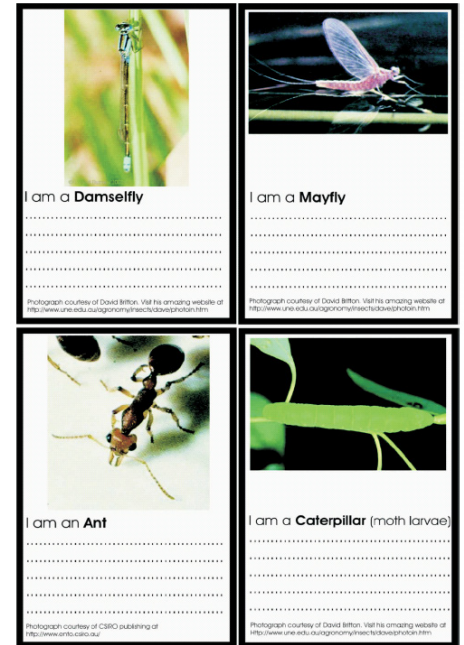
Plants also need insects, birds and mammals to pollinate them. This complexity and interdependency of organisms is best described and represented as a web of life.

## 5. What is an ecosystem?

Issue to the students names and/or pictures of plants, animals, insects and macroinvertebrates found locally, or use a set of biodiversity cards from Catchment Connections Folder 2 - Understanding Ecosystems (p12-15) available on the NRM Education website.

Ask students to think about what the animals eat, what eats them, and ask them to place them in order from the bottom of the food chain to the top. Pictures can be strung together and made into mobiles (food chains) of differing lengths.

For a more challenging activity, discuss the habitat requirements of each organism and how it links with other organisms. Simple food chains can be laid out on a large piece of paper and lines drawn between them to indicate the connection between them. The end result will show a web of connections. Taking items away from the food web such as plants and insects will show how many other organisms will go hungry or homeless without these important organisms at the bottom of the food chain.



# Wetland Food Web



sun  
+ water + nutrients

producers

algae

reeds

water plant

consumers

mosquito

water boatman

freshwater snail

turtle

fish

black swan

fish

frog

dragonfly

diving beetle

pelican

duck

heron

lizard

decomposers

bacteria

yabby

worm

transfer of energy



# Learning Ideas

## Early Years

- Find out if/how some wetland birds help people
- Create a diagram to illustrate a wetland bird's place in the food chain.
- Imagine a world without birds. What would be some of the problems and benefits?
- Compare the beaks of spoonbills with those of herons.
  
- Plan, draw or construct a healthy water environment for the future.
- You have discovered an unidentified wetland bird (new to Science). Name it, draw it and describe its features and habitat.
- How might water habitats change over time? Predict how wetland birds might adapt to survive in the future.
  
- Design a 'Bird viewer' to observe wetland birds in different aquatic environments.
- Design a 'Wetland Bird Dinner Party' invitation and menu. Who will be there and what will they eat?
- Design a board game that will teach other children about wetland birds.
  
- Write a letter to the children of the world to convince them to protect wetland birds.
- Interview a wetland bird. Write 5 questions that you would like answered.
- People often visit wetlands to feed the ducks and other birds. Is this a good thing? Why/why not?
  
- If you were an ornithologist, which wetland bird would you study and why?
- Choose a wetland bird that best symbolises your own character. Give explanations for your choice.
- Imagine you are wetland bird. Describe your waterway and a day in your life.

## Primary years

- Construct a visual concept map/mind map of bugs, wetland birds, plants and other animals that live in or near water.
- What can humans do to reduce water pollution and improve the environment?
- Select a wetland bird and describe its place in the food chain.
- Describe what could happen to a food chain if pelicans and herons became extinct.
  
- Interview older citizens or access council records and historic photographs to compare local waterways, past and present.
- Predict how water quality might change in your local river or creek over the next 50 years and explain why.
- If you were the Mayor, what laws would you make to help improve the quality of stormwater in your local area?
  
- Water pollution causes a chain reaction that impacts on the inhabitants of our waterways. Draw a diagram to illustrate.
- Investigate the features of wetland bird and construct a 3D model.
- Consider how changes in seasons influence water flow and impact upon the life of wetland birds. Describe what would happen if winter came too late.
  
- Share your knowledge of wetland birds with other students (e.g. PowerPoint presentations, video, audiotape, performance, flow charts and models).
- Write to the media, industries and businesses to inform them of the effects of water pollution on wetland birds.
  
- Imagine you are a wetland bird. Create a real estate advertisement to describe your ideal habitat.





- Describe how learning about wetland birds has changed your thinking about water pollution and water care.
- Research an occupation you are interested in that involves working with birds, water and/or the environment.

## Middle Years

- Investigate how wetland birds and other creatures co-exist. (Key words: Ecosystem, Biodiversity and Food Web)
- Explore how an aquatic habitat is affected by any of the following: the water cycle, tidal flows, stormwater collection, urbanisation, industry, agriculture etc.
- Explain possible reasons and implications of decreases in wetland bird populations.
- Access council records or historic photos and explore changes to a local water body. Discuss how human impacts would have affected local wildlife.
- Develop a food web which expands on your favourite wetland bird. Highlight threats to its life and ways they could be minimised.
- Research and develop an environmental repair program for a water body in your area which incorporates a monitoring plan.
- Investigate and compare the anatomical features of different wetland birds and construct representative models.
- Compare the structure and function of heron and pelican beaks.
- Compare the structure and function of duck, swamphen and coot feet.
- Develop an electronic resource to illustrate wetland bird adaptations for camouflage, swimming or eating.
- Conduct an interview with an ornithologist, Freshwater Ecologist, Marine or Environmental Biologist to learn more about their field of study.
- Develop an argument for and against the construction of urban wetlands. Discuss positives, negatives and personal opinions.
- Compare your survival needs with those of a wetland bird. How much do you have in common?
- Develop a table or key highlighting food preferences for students in your class. Can you develop a system to identify an individual student?
- Examine water use in your daily life and identify ways to minimise use and reduce the amount of pollution you create.

