



Saving New Zealand's Native Birds

educational unit



PUFFIN

by Maria Gill

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YEARS	LEVELS	DURATION
3-7	2-5	4-8 weeks

'Caring for our Natives' Achievement Objectives

Science - Living World - Life Processes	
•	Recognise that all living things have certain requirements so they can stay alive. L2
Social Sciences	
•	Understand that events have causes and effects. L4
•	Understand how people's management of resources affects environmental and social sustainability. L5

Science - Living World - Ecology	
•	Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced. L3-4
•	Investigate the interdependence of living things including humans in an ecosystem. L5

Education for Sustainability	
•	Students practice environmental project-based learning involving students in local projects that are meaningful and make real contributions to their communities
•	Aim to improve the environment
•	Change students behaviour, attitudes and values towards the environment

Key Competencies	
Students will utilize the key competency skills in a range of activities:	
•	Managing self
•	Relating to others
•	Participating and contributing
•	Thinking skills
•	Using language, symbols and texts

Teaching & Learning Activities

#	Learning Activities	Learning Intentions
1	What is a native bird?	Prior Knowledge, Defining
2	Why are some birds endangered?	Thinking skills, investigating, summarizing
3	How have birds adapted?	Comprehension, Knowledge
4	What endangers New Zealand birds?	Thinking Skills, matching, problem solving
5	What is human's impact on NZ birds?	Role Playing, understanding the main idea, Synthesizing
6	What is being done to save our birds?	Comprehension, investigation, matching
7-8	Inquiry Investigation	Notetaking, researching, reporting
9+	So What, What Now	Application, meaningful contributions
	Learning Centre	Thinking skills, constructing, investigating, synthesizing

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Science – Living World Life Processes

Recognising that all living things have certain requirements so they can stay alive.

Lesson # 1

Learning Intention

- Students know the difference between an introduced and native bird.
- Can define 'endemic'

Introduction

- What I know Now: What I know After

Instruct students to fold their A3 paper in half so it makes an A4 booklet. Students write their name, title of project 'Caring for our Birds' and today's date. Students draw a box that fills half the page, and a circle that fills the other half of page. In the box, tell the students to draw a native bird and label its parts. In the circle, students brainstorm all they know about New Zealand birds. At the end of unit, students will do exercise again (on back page) so you can see prior knowledge and what they know after doing unit. (This booklet also acts as a folder for all their work.)

- Students share what they have written in brainstorm and teacher writes it up as classroom brainstorm for 'New Zealand birds'.

Learning Activities

- As a class, discuss the difference between introduced and native birds.
- In pairs, students write a Venn diagram or double bubble map showing similarities and differences between introduced and native birds. Teacher can encourage students with these prompts: where do they come from, what are their survival strategies, name some birds. Prompts for the converged space: what do all birds have in common?
- Students share their answers.

Conclusion

- Students write a vocabulary word map on 'endemic' birds.

Success Criteria

- Prior knowledge responses (before & after)
- Show the differences and similarities in Venn diagram
- Can define 'endemic' and give examples

Website Links

Venn diagram master: www.readingquest.org/pdf/venn2.pdf

See 'bird feeder' project in www.wildeducation.org site, page 8 in 'Give Backyard birds something to sing about'.

Get a 'Word Map' version 2 master on www.readingquest.org

What is a Native bird?

Vocabulary

- Native
- Introduced
- Indigenous
- Conservation

Resources

A3 paper for every class member
Felt pens
Pen
Venn diagram drawn on blackboard and students copy or photocopied.

Curriculum Links

English

Students write an acrostic poem on 'native birds' or bird of their choosing.

Art

Students learn to draw a native bird. See 'Drawing New Zealand Birds' by Heather Arnold.

Science

Place mixed wild birdseed, nuts, fruit on a bird feeder outside classroom and students identify bird type (native, introduced) in a log.



Social Sciences

Understand how people’s management of resources affects environmental and social sustainability

Learning Intention

- Students define ‘endangered’ and list some examples.
- Students will be able to infer information and summarise article.

Introduction

- Students write a Definition map on ‘endangered birds’ - see Appendix 1 for master.
- Class discussion on why we have endangered birds in New Zealand.

Learning Activities

- Read article ‘Cast Adrift with its own ark of unusual animals’ - see Appendix 2
- Think-pair-share these questions one at a time:
Why did New Zealand have no land mammals?
Why did humans bring animals to New Zealand?
Why did it endanger so many of our birds?
- In pairs, students write a 3-2-1 chart.
3 Things they found out
2 Interesting things
1 Question they still have.

Conclusion

- Students search on the internet, the answer to the question from the 3-2-1 chart.

Success Criteria

- Observe students working co-operatively in pairs.
- Use the students’ definitions, sharing, and questions to ascertain whether they understand why New Zealand’s birds are endangered.

Website Links

Instructions for ‘Think-pair-share’ on
<http://olc.spsd.sk.ca/DE/PD/instr/strats/think/>

Instructions for ‘3-2-1’ chart
<http://www.readingquest.org/strat/321.html>

‘Biodiversity in New Zealand wildlife’ on
http://www.tki.org.nz/r/environ_ed/primary_units/endangered_e.php

Article on why so many birds are flightless in New Zealand:
www.teara.govt.nz/TheBush/NativeBirdsAndBats/LandBirdsOverview/3/en

Lesson # 2

Why are some birds endangered?

Vocabulary

- Endangered
- Endemic
- Gondwana

Resources

Article printed on OHP or photocopied.
Use of computer

Curriculum Links

English

Play the ‘Biodiversity Guess the Word’ game from Biodiversity in New Zealand wildlife education unit.

Art

Students draw a picture of an imaginary bird that could have existed in New Zealand, which has animal characteristics.

Science

Defining endangered and extinct using a post-box activity from “Biodiversity in New Zealand Wildlife”



Science – Living World Living Processes

Recognise that all living things have certain requirements so they can stay alive.

Learning Intention

- Students will identify the senses of predators and prey.
- Students will understand that birds have adaptations to help them survive but New Zealand birds haven’t had time to adapt to mammals therefore are vulnerable to these predators.

Introduction

- Brainstorm what senses and survival tactics birds use to survive.

Learning Activities

- Introduce the book ‘Bird’s-eye View: Through the eyes of New Zealand Birds’. Read one of the pages to the students. For example, if you read the ‘kiwi’ page, ask the students, ‘what senses does kiwi use to survive’. Tick a ‘Senses’ grid (on whiteboard). Show how the kiwi has its eyes on the side of its head so it has a wide vision, while a predator like the owl has its eyes on the front of its face. Predators have eyes in the front of their face so they can judge distance accurately when catching prey.
- In pairs, students to do a ‘Senses’ grid on another bird.
- Talk to class, about how the senses and survival tactics of some birds do not help them when faced with animal predators. Discuss why this would be. For example, a bird like the New Zealand snipe stays very still and hopes its predator will not see where it is. However, animals that hunt using their sense of smell like stoats will smell where they are and find them. This is a bird that has not yet adapted to animal predation in New Zealand and because of that is now not on mainland.

Conclusion

- Students read ‘Fitting In’ and fill out questionnaire in ‘print and copy’ activities

Success Criteria

- Sense grid, discussion and questionnaire responses.
- Students participation in class discussions.

Website Links

‘Fitting In’ article and quiz on:

http://www.tuitime.org.nz/activities/tests/t6_fitting_in.htm

Fitting In print and copy activities on: www.tuitime.org.nz/activities/index.htm#Tiaki's%20Quiz%20List

Observation sheets: www.wildeducation.org see Backyard birds, page 6

EXAMPLE OF ‘SENSES’ GRID

Bird	Sense of Hearing	Sense of Sight	Sense of Touch	Sense of Smell	Other survival tactics	Chance of survival
Kiwi	Excellent	Poor	Excellent	Excellent	Camouflage Feels vibrations Runs	Only survives if it can outrun predator

Lesson # 3

How have Native birds adapted?

Vocabulary

- Adaptations
- Predators
- Prey
- Survival tactics
- Binocular vision

Resources

‘Bird’s-eye View’ book,
Senses grid on whiteboard.
Teaching resource: ‘Birds Structure, Function, Adaptation Building Science Concepts’ MOE
Photocopy ‘Fitting In’ article from web

Curriculum Links

English

Read other Tui Time articles and activities.

Technology

Students make card glasses with blue or red cellophane in them. Look outside - how does the blue change the view? Change to red cellophane - how does the red change the view. Birds that fly over the sea/desert/high need the filter to cut out glare of sun. Birds that fly in green environments need red filters to find food.

Field Trip

Go to a bird sanctuary or reserve and observe birds

Social Sciences

Understand that events have causes and effects

Learning Intention

- Can identify pests and predators in New Zealand
- Understands human's impact on the environment

Introduction

- Brainstorm the problems birds have to face in New Zealand: pests, predators and human impact.

Learning Activities

- In groups, students 'Power Think' this issue:
 1. What endangers New Zealand's birds? (Example follows)
 - A. Pests
 1. rodents 2. deer 3. pigs
 - B. Predators
 1. mustelids 2. possums 3. cats and dogs
 - C. Human impact
 1. clearance of forests 2. by-catch of commercial fishing 3. introduced pests and predators into NZ
 - Matching Activity - see **Appendix 3** for master. Students draw line to match picture with text or cut up the squares and hand a picture or text to students. Students walk around trying to find their match. Alternatively, play it in pairs, or as a memory game.

Conclusion

- In pairs, students fill in a problem solution chart (**Appendix 4**). See below for websites and above for books they can use.

Success Criteria

- Participation in class brainstorm
- Contributes to group power thinking of issue
- Able to match their card with picture
- Can find solutions to the problems

Website Links

Power Thinking instructions:

<http://www.readingquest.org/strat/pto.html>

Pests and Predators interactive activity:

http://www.tki.org.nz/r/environ_ed/interactive/index_e.php

Biodiversity Unit

www.tki.org.nz/r/environ_ed/primary_units/endangered_e.php

www.teara.govt.nz/TheBush/Conservation/IntroducedAnimalPests/en

<http://www.kcc.org.nz/plants/nativeforests.asp>

<http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=40095>

<http://www.doc.govt.nz/templates/summary.aspx?id=33388>

<http://www.doc.govt.nz/templates/summary.aspx?id=33376>

Lesson # 4

What endangers New Zealand's birds?

Vocabulary

- Pests
- Predators
- Mustelids
- Introduced pests

Resources

'Operation Nest Egg: Saving New Zealand's kiwi'

'Predators in New Zealand' **Appendix 3, 4**

Curriculum Links

English

Invite a speaker from the Department of Conservation. Students prepare questions and/or write a recount of the visit.

Art

Students draw a 'wanted' poster for a predator. On the poster, students need to show what senses they use to hunt. Name some of its prey. For example, a dog uses its sense of smell, hearing and sight to find prey. It is a known killer of kiwi.

Science

Students use an interactive computer lesson and follow-up activity by filling in a 'pest grid' see Biodiversity Unit page 17.

Technology

Students design a trap to capture pests.

Social Sciences

Understand how people's management of resources affects environmental and social sustainability

Learning Intention

- Students will understand that throughout history, humans have made decisions that have had an impact on New Zealand birds.

Introduction

- Brainstorm the changes that humans have brought to New Zealand that have affected our bird's survival. Recap the article 'Cast Adrift with its own ark of unusual animals'.

Learning Activities

Class Role play.

1. Students divided into 6 groups. Each are given cards that give them a role in a role play. Before they can role-play their part, students must research their role. Give students 30 minutes for this.
2. When students are ready, set the scene - birds in forests, first human migrants (Maori) hunt with their dogs and release kiore (rat). Bring in one group at a time - let them mime their actions - each group interacting with the others. After a while, say FREEZE. Ask the 2 groups, what is happening. What impact is their group making on the other group?
3. Set the scene again, second human migrants arrive, bringing with them more mammals, hunting birds, clearing forests. Go through above instructions again (this time 5 groups interacting) miming their actions, freezing, talking about their actions and impacts.
4. Third time, set the scene - modern day with not many birds, lots of predators and pests; our human impacts like pollution, fishing methods (effecting sea birds), and clearing of forests have brought wildlife to endangered status. Bring in the conservationist groups and get them to solve the problems. Go through instructions again.
5. As a class, students discuss what it felt like in their role

Conclusion

- In the 21st century we have begun to right our wrongs. Students write a T chart with 'before, during and after' - showing human's impact and how we have tried to fix the problems.

Success Criteria

- Observing students interaction in brainstorm and role-play.
- T Chart responses.

Website Links

<http://www.kakaporecovery.org.nz/then/decline.html>

<http://www.nzbirds.com/birds/maorimyths.html>

http://www.mtbruce.org.nz/forest_kiwi_legend.htm

T-Chart template: www.everythingsl.net/downloads/tchart.pdf

Lesson # 5

What has been human's impact on New Zealand birds?

Vocabulary

- Human impact
- Migrants
- conservationists

Resources

Role Play Cards

Birds - represent the range of birds in NZ

Maori - represent the first settlers then later modern day Maori

European - represent the second settlers then later modern day European

Pests - represent the range of pests (animals that compete for the same foods)

Predators - represent the range of animals that hunt native birds and eat their eggs and chicks.

Conservationists - represent the rangers, DOC, politicians, volunteers, organisations that save NZ's birds.

Photocopy T Chart templates

Curriculum Links

English

Students read Maori legends/myths and record them on a tape recorder.

Art

Draw a class mural depicting 'before, during, after'.

Science

Students write a timeline of key dates about human's impact on the kakapo.

Science – Living World Ecology

Understand how people’s management of resources affects environmental and social sustainability

Lesson # 6

Learning Intention

- Students can creatively think of solutions to bird conservation.
- Students can sequence events in the Operation Nest Egg programme.
- Students can research the different methods of bird conservation.

Introduction

- Tell the students this scenario: Imagine the pests and predators suddenly got a liking for Tui birds and their population was decreased to only 100 birds in New Zealand. What could we do to increase their populations? Think, Pair, Share.

Learning Activities

- Read parts of the ‘Operation Nest Egg: Saving New Zealand’s Kiwi’ book on how they have solved the problem of shrinking populations of kiwi. Students write a flow chart on the Operation Nest Egg method.
- Talk about the different methods used: captive breeding of kiwi in zoos, translocations - moving kiwi to predator free places, creating pest and predator free areas, caring for birds when most vulnerable.
- Students fill in a four square squid on four methods of bird conservation. See Appendix 5 for master copy and instructions.

Conclusion

- Play the Trigger game with students. See Appendix 6 for instructions.

Success Criteria

- Participation and co-operating in group activities
- Uses thinking skills in activities
- Able to use resources to find answers to topic

Website Links

<http://www.kcc.org.nz/species/threatened/resources.asp>

www.savethekiwi.org.nz/KiwiClassroom/TeachersLog/

<http://arb.nzcer.org.nz/nzcer3/science/living/2000-499/lw2025.html>

Invite an author: <http://www.kiwiwrite4kidz.co.nz/authorvisits.html>

What is being done to save our birds?

Vocabulary

- Captive breeding
- Translocations
- Predator fences
- vulnerable

Resources

Operation Nest Egg book
Appendix 5, 6 photocopied or on OHP

Curriculum Links

E-Learning

Go to the Bank of New Zealand Save the Kiwi Trust website, to ‘classroom’, read a story and choose an activity.

English

Invite an author of a conservation book to talk about bird conservation. Students write a book review on book.

Science

See Assessment Resource Bank Lw1053 and Lw2025 for activities and assessments.

Science – Living World Ecology

Explain how living things are suited to their particular habitat and how they respond to environmental changes...

Learning Intention

- Students carry out an investigation on their topic and answer their questions.
- Students summarise the information they have researched and present it in a report/presentation.

Introduction

- Students recap on what they’ve learnt so far by doing an ABC brainstorm. For instructions go to: <http://www.readingquest.org/strat/abc.html>
- Introduce inquiry investigation. Students need to find out who is trying to save that bird, what they are doing to save it, when the conservation method began, why the bird was endangered.

Learning Activities

- Students pick an endangered bird (see websites below for names of birds) and pose the question: What is being done to save their chosen bird?
- Students write up an Action Research Plan (see Appendix 7).
- Research in library and on the internet using skimming and scanning skills, sifting and organising their information.
- Students summarise the information and present in a report, presenting it as a speech, poster, pamphlet, diorama or Powerpoint.

Conclusion

- Students present their inquiry investigation in a report verbally (as a speech, interview, video) or visually (on a poster, pamphlet, diorama) or electronically (in a Powerpoint presentation).

Success Criteria

- Students self-evaluation of project see www.tki.org.nz/r/socialscience/curriculum/SSOL/fortune/evaluation_e.php
- Teacher’s evaluation of project: answered questions, able to summarise information, presentation skills.
- Teacher’s observation of students managing self and using thinking skills.

Website Links

<http://library.christchurch.org.nz/Kids/NZBirdsAnimals/>
<http://www.terranature.org/criticallyEndangeredBirds.htm>
www.doc.govt.nz
www.kakaporecovery.org.nz
www.kcc.org.nz
http://en.wikipedia.org/wiki/List_of_New_Zealand_birds

Lesson # 7 & 8

Inquiry Investigation

Vocabulary

- Inquiry investigation

Resources

Selection of books - see Resources page.
Use of computers.
Appendix 7

Curriculum Links

English

Teacher reads non fiction and fiction books about bird conservation. Students write a PMI chart afterwards.

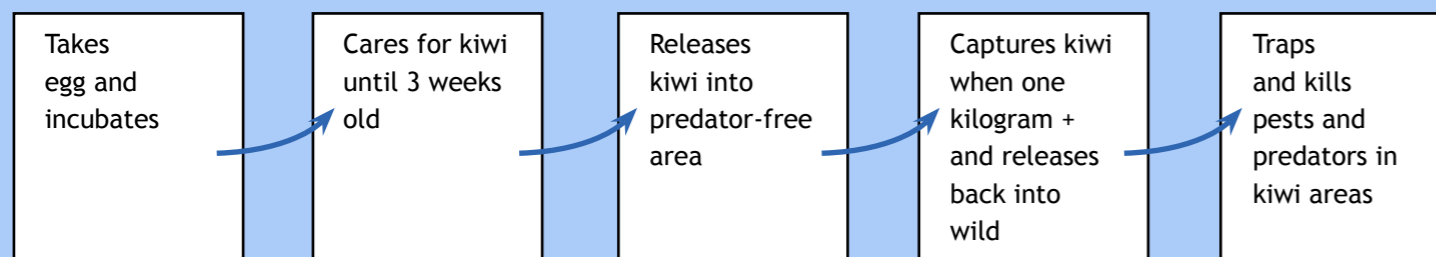
Art

Students design a car sticker with logo promoting bird conservation.

Technology

Students design an ‘eco park’ with local plants, trees, lizards, insects and birds. Students will need to use the web to find out what naturally lives in their area (past and present). Take students to the nearest reserve to see how they’ve done it.

FLOW CHART ON OPERATION NEST EGG



Science – Living World

Explore how groups of living things have changed over long periods of time

Learning Intention

- Students will learn how zoos are helping endangered animals
- Students will co-operatively participate in the jigsaw activity to find and share information

Introduction

- Class discusses the role of zoos today: In the 1960s zoos were seen as a place of entertainment (chimp tea parties, elephant rides) and have gradually changed to centres where they help endangered native and exotic animals; help with the breeding and conservation of those species; a place of scientific research, education, training and advocacy, recreation; practice environmental sustainability; and partner with other organisations to preserve species.

Learning Activities

 Using the Jigsaw method:

- Divide students into 5 or 6 people jigsaw groups (ensure you have a mix of ability, gender, cultures) and give each person a number. Number 1 person should be their leader (pick the more mature student in group)
- Put 5-6 Fact boxes (see Appendix 8) around room.
- Ask all the #1s to go to the first Fact box, #2s to second Fact box, #3s to third Fact box etc.
- Give students time to read their Fact box at least twice.
- Then all the #1s group together (and #2s together, #3s together etc.) to discuss the main points of their Fact box and to rehearse their presentations.
- Students go back to their original jigsaw groups.
- Each student presents his/her facts to their group. Encourage students to ask questions for clarification.
- Leaders make sure that no one member is dominating or being disruptive.

Conclusion

- At the end of all the presentations, give the class a quiz on the material. Each time a group gets an answer right they win a point for their group.

Success Criteria

- Students have absorbed information by using jigsaw method and can transfer this knowledge to the quiz

Links

<http://www.aucklandzoo.co.nz/Downloads/Zoo%20contributions.pdf>
http://www.hamiltonzoo.co.nz/page/pageid/2145833775/Education_extra
http://www.wellingtonzoo.com/uploadGallery/ZOO_08012-conservation_strat4.pdf
http://en.wikipedia.org/wiki/Conservation_medicine
<http://en.wikipedia.org/wiki/Zoo>
http://www.aucklandzoo.co.nz/Downloads/NZCCM_Summer_Newsletter_2009.pdf

The Role of Zoos

The Role of Zoos

Vocabulary

- Breeding programmes
- Captive breeding
- Conservation medicine
- Scientific research

Resources

Text boxes photocopied, cut up and placed around room
Book: The Zoo: Meet the Locals

Curriculum Links

English

Students pick a zoo or bird sanctuary in New Zealand and read on their website what conservation projects they are focussing on, then summarise.

Field Trips

Go to closest zoo or bird sanctuary and listen to a talk by education staff about what they are doing to conserve New Zealand's native birds. Prepare some questions to ask zoo curators. Visit the conservation medicine centre and explore what they do.

Technology

With a partner do a power point presentation on the role of zoos today. Include the six headings: partnerships, conservation medicine, breed and release programmes, captive breeding, educating the public, scientific research.

Role of Zoos – Fact Boxes

Partnerships

- Zoos share breeding stock (animals that they can breed from) with other zoos. Recently Auckland Zoo sent two young giraffes to Taronga Western Plains Zoo in New South Wales, Australia, because they needed more giraffes to breed with their herd, and three Bornean orang utans to Florida, USA, to help with the international captive breeding programme.
- Zoos support conservation projects around New Zealand and overseas. As well as financial help, zoos give practical help. This way zoo staff gain valuable experience and skills, and can also share their own expertise to help these projects. Two Auckland zoo keepers spent a month in Sumatra's Bukit Tigapuluh National Park helping care for rescued orang utans. They also helped implement training programmes and behavioural enrichment programmes for the rescued orang utans, and helped monitor some orang utans already living in the wild. Financially, the zoo funds 'Wildlife Protection Units' and a rehabilitation station when the orang utans stay before being released.
- Zoos partner with Recovery Teams (groups of people who are trying to save a certain species), government departments i.e. DOC, universities and private organisations such as the BNZ Save the Kiwi Trust.

Breed and Release Programmes

- Eggs from native birds from around the country are sent to zoos. Staff incubate the eggs and when the chicks hatch they feed them high protein foods to fatten them up. When the chicks are old enough, they release them back to the area they came from or a sanctuary where they can grow to adulthood without being attacked by predators.
- The most famous breed and release programme is the BNZ Save the Kiwi's Operation Nest Egg programme: the zoos incubate the eggs, rear them to three weeks old then release them onto a predator free island. Eventually the chicks get sent back to the area the eggs were taken from.

Educating the public and staff

- Whenever you walk around a zoo you'll see signs (and sometimes audio, video and interactive displays) that educate you about the animal you are looking at. From these you can find out if an animal is endangered and what is being done to help it. At most zoos, keepers also give presentations to the public, where you can learn even more, and also ask questions.
- Schools can also go to zoos and learn all sorts of information about the animals in the zoo. Many zoos have education departments and run classes.
- Zoo websites share what they are doing to preserve species in the zoo and around the country, and overseas.
- Zoo staff are offered training and experiences that help their understanding of the animals they care for.

Conservation Medicine

- Zoos often practice conservation medicine when treating sick animals. Conservation medicine is a growing science that focuses on the connections between human, animal and environmental health. It involves teams of experts coming together (such as doctors, vets, scientists, ecologists, marine biologists, etc) to share their expertise to solve disease-related problems. This is needed because more animal diseases are beginning to infect humans (avian flu, monkey pox, HIV/AIDS) and vice versa (measles and polio in gorillas). It is thought, diseases are being transferred more commonly between humans and animals because humans are now living closer to wildlife than they used to. Many species of animals are endangered around the world because of human impact. For example, deforestation, pollution and illegal hunting.
- In 2007, Auckland Zoo built the first national centre for conservation medicine in the world. Some of the centre's veterinary staff travel to places in New Zealand and abroad to help. They have helped catch gannets at Murawai Beach, Cape Kidnappers and in Kaikoura, to test these birds for diseases they might have caught before they migrated to New Zealand. They are working with other experts to help ensure the kakapo (world's rarest parrot) is protected from diseases, and doing research to find out more about New Zealand's endangered native frogs, and how we can ensure their future.

Captive Breeding

- Zoos will often breed endangered species and keep them captive in the zoo. Once they reach a certain population they transfer some of these animals to other centres or release them into the wild.
- For example, over 2000 brown teal birds, one of the world's rarest ducks has been reared in captivity since 1964. This population came from just 76 wild birds. The captive breeding programme has been 300 percent more efficient at breeding brown teal than wild populations. The brown teal is being reared in 17 different places around New Zealand including zoos.

Scientific Research

- Veterinarians and zoo staff are always learning new information about the native and exotic animals they care for and treat. Nowadays, they share this information with other zoos, organisations, and educational facilities, and everyone advances their knowledge. They also publish their research in journals.
- As part of their research and as national resources, some zoos keep frozen tissue and genome banks (bits and pieces containing DNA from animals).
- Working with other organisations, zoos research many sides of animal science including small population biology, animal welfare, wildlife medicine, nutrition (what they eat), behaviour, and habitat.

SO WHAT, WHAT NOW?

Giving back to the community

Now you and your students know about the plight of birds in our country SO WHAT, WHAT NOW? Listed below are some of the activities your students could do to make a difference to endangered birds in New Zealand:

As individuals:

- Join an organisation like KCC and learn all you can about conservation in New Zealand.
- Do some chores around home and then donate money to an endangered bird.
- Once a month/year volunteer at a local regional park planting trees, weeding, and pricking out seedlings
- In spring, keep your cat inside at night. Also, put two bells on your cat's collar so that birds can get away from him/her.
- Keep your dog on a leash when you go for a walk in bush areas. Keep your dog fenced in.

As a class:

- Organise a beach clean-up see http://www.sirpeterblaketrust.org/environment/care_for_our_coast/
- Become involved with a local regional park and plant trees en masse
- Fundraise by putting on a class disco, sausage sizzle etc. and sponsor an endangered bird.
- Educate your local community about the plight of birds in your area. Design pamphlets and posters and put them up at community notice boards.
- Contact the local District Council or Regional Council (for a list of councils go to www.kcc.org.nz/educators/resources.asp) and ask them what they are doing to help improve birds' environment and safekeeping. Ask what you can do to help.
- Write a letter to local government and ministry of conservation asking them to support environmental group initiatives. For help writing a letter to a politician go to: www.kcc.org.nz/howcanihelp/politicians.asp
- Plant trees that birds like in your school grounds. Choose your birds, then investigate trees that would provide them with food.

As a school:

Do the above but as a whole school!

- Fundraise and sponsor an endangered bird every year.
- Adopt a beach, and every year clean it up.
- Adopt a regional park, and every year help with planting.
- Start a green group at your school. For tips on how to start one go to: <http://www.kcc.org.nz/howcanihelp/greengroup.asp>
- Encourage your school to become an Enviro school: www.nzaee.org.nz

During the project students:

- Set a goal of what they want to achieve.
- As a class, discuss and agree which project to do.
- Throughout the project, keep a journal and record progress, problems and successes.
- Afterwards, reflect in the journal how it went and how they felt about being part of it.
- As a class, decide whether further action is needed.

BIRD CONSERVATION LEARNING CENTRE

Set up a learning centre, with books and a display.

Students choose an activity and when finished self evaluate then have a conference with teacher. Students track their work with a contract sheet.

Reading Maori Legends

Read Maori legends about New Zealand birds then make up a legend about a native bird of your choice. For example, How the tui got its white bib, How the kokako lost the ability to fly the sky, How the weka lost its wings, How the Kakapo became so big and flightless.

Construct

Make a papier-mâché of your bird. Sketch it first, then collect the resources you will need to make a papier-mâché. Use a soft drink plastic bottle as the mould. Once it has dried, paint it. For papier-mâché instructions go to: www.dltk-kids.com/type/how_to_paper_mache.htm

Board Game

Make a board game, using information about what is being done to conserve New Zealand's birds from books and the internet. Use ideas for game layout from games such as Snakes & Ladders and Monopoly.

Write a Picture Book

Read a selection of picture books on endangered birds (see Resource Page). Pick a bird, research what is being done to save it, and then write a story about it. Get someone else to read it. Proofread it. Write a good copy and illustrate it.

Sketch a bird

Go to the zoo, bird sanctuary or your backyard and sketch a bird. You could photograph it so you have a still image to work from. After the sketch, either use that drawing to draw a cartoon skit or paint your sketch.

Puzzle Maker

Make a crossword and word find using words from one of the non fiction books on display.

Choose a puzzle from this site: www.puzzlemaker.com

Log Entries

Imagine you are a Ranger saving the endangered Black Robin (or another endangered bird). Write a week's worth of emails home, saying what you are doing to save that bird. For inspiration, see how the Rangers saved the Black Robin in 'Old Blue. The Rarest Bird in the World' by Mary Taylor.

Symbols

Investigate the symbols used in Bird Conservation. For example, look at these websites: www.forestandbird.co.nz, www.savethekiwi.org.nz and www.kakaporecovery.org.nz. Pick an endangered bird and design your own logo, promoting the protection of it.

Poem

Write a haiku poem about your endangered bird.

For instructions on how to write a haiku go to: <http://www.gigglepoetry.com/poetryclass/Haiku.html>

Thinking Skills

1. The Ridiculous: Everyone should get rid of their cats and dogs to help save our birds. Justify this statement.
2. The Prediction: Suggest changes you could make in your life to help bird conservation in New Zealand.
3. The What If? What if no mammals were ever brought to New Zealand.

Definition Map

What is it?
Endangered New Zealand bird

Why is it endangered?

[Empty box for why it is endangered]

[Empty box for why it is endangered]

[Empty box for why it is endangered]

[Empty box for why it is endangered]

[Empty box for why it is endangered]

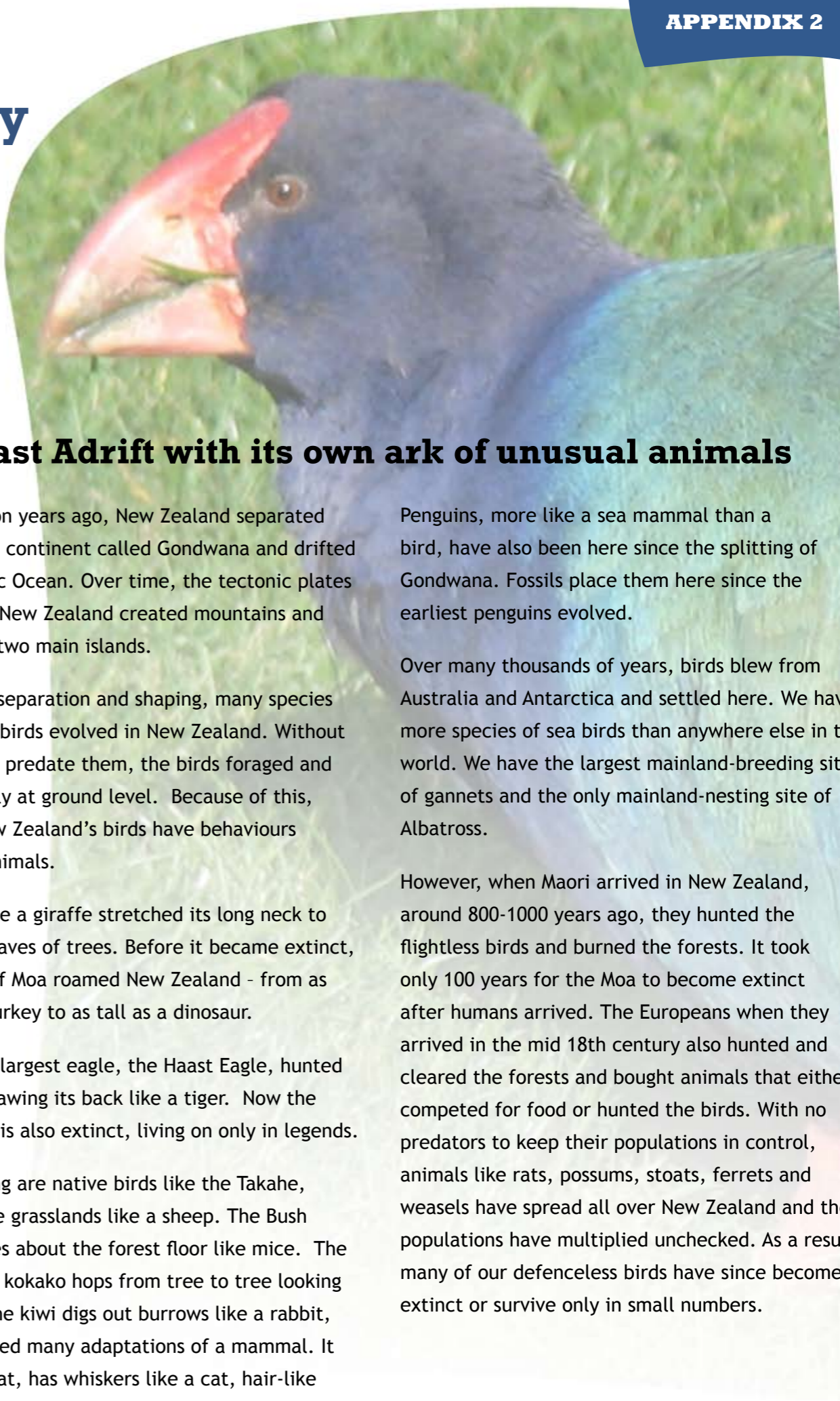
Term for 'endangered'

[Large empty box for term for 'endangered']

What are some examples of endangered birds?

[Three empty boxes for examples of endangered birds]

Story



Cast Adrift with its own ark of unusual animals

Eighty million years ago, New Zealand separated from a large continent called Gondwana and drifted in the Pacific Ocean. Over time, the tectonic plates underneath New Zealand created mountains and formed the two main islands.

During that separation and shaping, many species of flightless birds evolved in New Zealand. Without mammals to predate them, the birds foraged and hunted safely at ground level. Because of this, many of New Zealand's birds have behaviours similar to animals.

The Moa, like a giraffe stretched its long neck to graze the leaves of trees. Before it became extinct, 24 species of Moa roamed New Zealand - from as small as a turkey to as tall as a dinosaur.

The world's largest eagle, the Haast Eagle, hunted the Moa - clawing its back like a tiger. Now the Haast eagle is also extinct, living on only in legends.

Just surviving are native birds like the Takahe, browsing the grasslands like a sheep. The Bush wren scurries about the forest floor like mice. The squirrel-like kokako hops from tree to tree looking for fruit. The kiwi digs out burrows like a rabbit, and developed many adaptations of a mammal. It sees like a rat, has whiskers like a cat, hair-like feathers and has muscled legs of an animal.

Penguins, more like a sea mammal than a bird, have also been here since the splitting of Gondwana. Fossils place them here since the earliest penguins evolved.

Over many thousands of years, birds blew from Australia and Antarctica and settled here. We have more species of sea birds than anywhere else in the world. We have the largest mainland-breeding site of gannets and the only mainland-nesting site of Albatross.

However, when Maori arrived in New Zealand, around 800-1000 years ago, they hunted the flightless birds and burned the forests. It took only 100 years for the Moa to become extinct after humans arrived. The Europeans when they arrived in the mid 18th century also hunted and cleared the forests and brought animals that either competed for food or hunted the birds. With no predators to keep their populations in control, animals like rats, possums, stoats, ferrets and weasels have spread all over New Zealand and their populations have multiplied unchecked. As a result, many of our defenceless birds have since become extinct or survive only in small numbers.

Matching Game

Instructions

Draw a line from the picture of the animal (top) to the description (below) that best describes that animal.

Then answer the question:
What am I - pest or predator?



What am I?

Pest or Predator?

I am the biggest in the mustelid family. I was introduced in New Zealand to control rabbits. I eat rats, mice, rabbits, lizards, eels, hedgehogs and other small mammals. I will also kill blue penguins, black stilts and adult kiwi. Some people keep me as a pet, and I'm sought after for my fur. New Zealand has the largest population of wild ones of me, of any country in the world.

Sometimes I'm a pet and sometimes I work. Some say I am man's best friend. I kill kiwi adults and other flightless birds. Once I killed 500 birds in one day. I like to eat pet food and biscuits. You may have one of me in your own home.

We were the first land mammal to come to New Zealand. We are omnivores, because we eat meat and plants. In the past, we hunted most birds but now only hunt ducks and mutton birds. We destroy habitat and have caused the extinction of a few species of birds in New Zealand.

I have bristly hair. I was introduced into New Zealand in the early 1700s. I plough up large areas of forest floor. I feed on forest berries, fruit, new stems, weta, earthworms and centipedes. I compete for food native birds and insects eat. Humans like to hunt me.

I'm furry with big brown eyes. I like to nibble on native trees and rather fond of birds' eggs and chicks - to eat. I was brought over from Australia because of my fur. I now cover 95 percent of New Zealand.

I was the first animal to be introduced into New Zealand. There are three types of my species here. We eat lizards, frogs, birds' eggs, insects and small animals. In summer, we eat fruit, berries and fallen seeds. We can even swim!

I am the second biggest in the mustelid family. I was introduced into New Zealand to control rabbits. I also prey on black stilts, kereru, kaka, kiwi and other birds. I am a ferocious hunter. I hunt at night and can climb trees, and travel long distances. I'm the number one killer of kiwi.

Some of my family are strays, some wild but most are pets. You might have one of me at home! I hunt at night, have special night vision and I'm pretty good in the smelling department too. I catch small birds, chicks, lizards, rats and mice. I also eat tin food and biscuits. I'm furry and like to talk to you in my special language.

Problem Solving Chart

Problem	Solution
Humans catch sea birds as by-catch on fishing vessels.	
Humans introduced animals like stoats that predate native birds.	
Stoats, weasels and ferrets kill kiwi eggs, chicks and adults.	
Dogs kill hundreds of birds in Northland and Coromandel areas..	
Cats hunt at night and kill bird chicks.	
Pests like mice, rats, rabbits, goats, pigs and hedgehogs compete for food.	
Possoms destroy habitats, compete for food and kill birds and their eggs.	

Four Square Grid Champions

Instructions

1. Divide students into groups of four. Each student is given a title e.g. Captive Breeding in zoos for one student, translocation to another etc.
2. Students search the internet and books for information on their topic.
3. When grid is finished, students turn their page over and raise hand - two points for the winner.
4. Groups share their answers. Groups with answers that no one else has, get one point.
5. Tally the points - whichever group gets the most points, wins.

Resources

Computer station, books on bird conservation, website addresses, four paper grids.

Find out more information about the four methods of bird conservation.

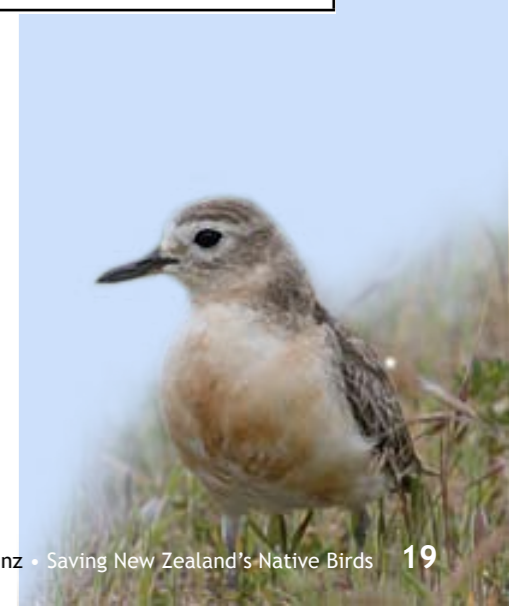
Captive Breeding in zoos	Translocation
Eradicating and controlling animal pests and predators	Caring for eggs and chicks

Books

'A Bird in the Hand' by Janet Frame
 'Back from the Brink' by Gerard Hutching
 'Endangered Birds' by Lynette Moon
 'Operation Nest Egg: Saving New Zealand's Kiwi' by Maria Gill
 Wild South: Saving New Zealand's Endangered Birds. 2nd ed. Morris, R. and Smith, H. 1995

Website Links

<http://www.forestandbird.org.nz/dawnchorus/index.asp>
<http://www.doc.govt.nz/templates/page.aspx?id=33093>



Triggers

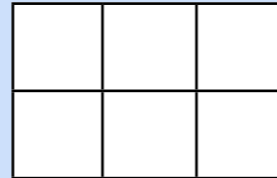
Preparation

Create a set of Clue Cards. Each card has a Trigger Term on one side and the clue on the other side. Print out copies of the Trigger Terms or write them on an OHP.

In Class

Students rule up Trigger Cards - six squares for short games, nine or twelve squares for longer games. The number of grids they draw will depend on how many rounds you want to play.

1. Students write in each square of their Trigger Cards one of the Trigger Terms. The list of Trigger Terms can be on the board or an OHP for the students to copy from.
2. Shuffle the Clue Cards and place the cards in a pile, clue side up.
3. Read out a clue, one at a time. Keep the used cards in a pile so you can check answers.
4. Students cross a square out when they have an answer (or put a counter on it) to the clue on their Trigger Card. The first student to cross out all their clues (or get counters in every square) is the winner. (You can also have first to complete a line, a row, a diagonal.)
5. Extension: Students design more Clue Cards and add them to the pile.



	Cue Card	Answer Card
1.	five species of kiwi	North Island Brown, Little Spotted, Great Spotted, Tokoeka, Rowi
2.	mammal characteristics of kiwi	leather skin, whiskers, digs burrows, lower body temp
3.	kiwi calls	marking territory, calling to mate
4.	problems facing kiwi	predators
5.	six predators	stoat, weasel, ferret, possum, cat, dog
6.	difference between pest and predator	pests compete for food, predators hunt them
7.	biggest killer of kiwi	stoat
8.	number of chicks that make it to adulthood	1/20
9.	looks after egg in nest	male kiwi
10.	amount of ovaries a female kiwi has	two
11.	where ranger takes the egg	kiwi centre
12.	where the ranger puts the egg	incubator
13.	age of egg when it hatches	between 74 and 85 days old
14.	four kiwi centres	Auckland Zoo, Kiwi Encounter, Willowbank, Westshore
15.	food they feed kiwi chick	ox heart, fruit, vegetables, porridge and live insects
16.	where kiwi chick goes after kiwi centre	kiwi crèche
17.	kiwi crèche places	Rainbow Springs, predator-free islands and mainland islands
18.	time kiwi stay in kiwi crèche	from 800 g onwards (or 1 kg)
19.	Why kiwi crèche are safe	predator and pest free
20.	What they use to recapture kiwi on kiwi crèches	kiwi sniffer dogs and radio receiver aerial

From: Cubitt, S., Irvine, R., Dow, A. (1999) *Top Tools for Social Sciences Teachers*. Auckland; Longman

Action Research Plan

Essential Question:

What is being done to save New Zealand's birds?

My Main Question:

My Subsidiary Questions:

Who
What
When
Why

Use three different resources to help you with your research: Internet, library, books, expert

Resource:	Keywords:	Notes:
1.		
2.		
3.		
List 3 ways of presenting my information:		List Materials I will need:
1.		
2.		
3.		

Resources

Books - Non-Fiction

A bird in the Hand by Janet Hunt (Random)
Back from the Brink by Gerard Hutching
Bird's-eye View: Through the eyes of NZ birds by Maria Gill (Penguin)
Birds of Aotearoa by Margaret Orbell
Draw New Zealand Birds by Heather Arnold (Reed/Puffin)
Endangered Birds by Lynette Moon
Know Your NZ Birds by Lynette Moon
Nature Kid Series, Raupo/Reed Publishing
NZ Bird Series, Raupo/Reed Publishing
NZ Wild Series, Raupo/Reed Publishing
Operation Nest Egg: Saving NZ's Kiwi by Maria Gill, (Reed/Raupo)
Plight of the Penguin by Lloyd S Davis
Predators in NZ by Marc Mason (Reed/Raupo)
Rare Birds of NZ by Geoff Moon (Reed/Raupo)
Real Size Guide to NZ Birds by Rod Morris (Random)
Takahe Lost & Found by Andrew Crowe
The Story of the Kakapo by Philip Temple
Toroa: Royal Albatross by Awi Riddell
Wild South: Saving New Zealand's Endangered Birds. 2nd ed. Morris, R. and Smith, H.

Links

www.doc.govt.nz Information on conservation methods
www.kakaporecovery.org.nz Information on saving kakapo
www.kcc.org.nz Forest & Bird site for children
<http://library.christchurch.org.nz> Library with fact sheets
www.readingquest.org Site with teaching methods
www.savethekiwi.org.nz Information on saving kiwi
www.teara.govt.nz Information about NZ's environment
www.terrature.org - Information about NZ's environment

Speakers

For an author or illustrator visit go to:
<http://www.kiwiwrite4kidz.co.nz/authorvisits.html>
Authors with books listed in this resource include:

- Erin Devlin - Junior/Middle school
- Maria Gill - Middle/Senior/Intermediate
- Vivienne Lingard on behalf of Heather Arnold - Draw a native bird workshop

Other authors you will find on:
www.bookcouncil.org.nz/writers/index.html
For a Department of Conservation officers go to:
<http://www.doc.govt.nz/upload/documents/getting-involved/nz-conservation-authority-and-boards/nz-conservation-authority/008-doc-offices.pdf>

Books - Fiction

As Kuku Slept by Erin Devlin (Reed/Raupo)
Booming in the Night by Ben Brown
Kiwi Beware by John Lockyer
Kiwi Moon by Gavin Bishop
Kiwi of the Great Forest by Dave Gunson
Moho the Ugly Pukeko by Tatiana Aslund
My Kiwi by Gunson & Lockyer
Little Penguin who wouldn't eat his dinner J. Buxton
Lucky Pateke by M. E. Topzand
New Legend of Aotearoa: NZ Birds
Old Blue by Don Merton
Pip the Penguin by Joy Cowley
Pi's Problem by Lee Ann Orams
Te Haeta by Mike Davey
See Bob Darroch for picture books about kiwi
See Janet Martin for picture books about native birds
See Ben Brown for picture books about native birds
See Michelle Osment for picture books about pukeko

Educational Resources

www.tki.org.nz/r/environ_ed/primary_units/endangered_e.php
www.wildeducation.org
www.sirpeterblaketrust.org
www.tki.org.nz/r/environ_ed/primary_units/biodiversity_e.php
www.tuitime.org.nz
www.doc.govt.nz/upload/documents/conservation/native-animals/birds/sea-and-shore/lesson-plans.pdf
<http://www.savethekiwi.org.nz/KiwiClassroom/KiwiForever/>

Field Trips

Bird Sanctuaries

Kaitaia - www.millennium1st.com
Whangarei - <http://www.whangareimuseum.co.nz/>
Auckland - <http://www.aucklandzoo.co.nz/>
Rotorua - <http://www.kiwihouse.org.nz/>
Mount Bruce - www.mtbruce.org.nz

Waikanae - www.ngamanu.co.nz
Wellington - <http://www.sanctuary.org.nz/>
Christchurch - www.oranawildlifepark.co.nz
Christchurch - www.willowbank.co.nz
Queenstown - www.kiwibird.co.nz
Regional Parks (look up local councils)
<http://www.localgovt.co.nz/>

Maria Gill

author of



Bird's-Eye View

by Maria Gill, reveals what 13 New Zealand birds see in their natural habitats. Bird's-eye View provides an entirely new perspective on the way birds live.

Shortlisted for the 2007 Elsie Locke Awards.

ISBN 978 0143 318439

RRP \$19.95



Operation Nest Egg

by Maria Gill, whether you want to know more about kiwi, are interested in efforts to conserve them, or just want to enjoy a book with NZ content, this title is worth a look. The attractive layout and informative text will also appeal to older, reluctant readers.

ISBN 978 1869 780098

RRP \$17.00

www.mariagill.co.nz



PUFFIN

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Author: Maria Gill

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