

# Native Birds

A science resource  
for use at school and Hamilton Zoo



## What we can offer

Hamilton Zoo has a large number of exotic and native bird species. We have the largest free flight aviary in New Zealand, which houses native birds and plants and an extensive stream and pond system. On your visit to Hamilton Zoo you can:

- Explore the aviary and wetland area with your students.
- Attend a 'Meet the keeper' talk on kea or native birds.
- Arrange a visit to the Waiwhakareke Natural Heritage Park restoration project that is across the road from the zoo.
- **Book a session with our education team.**

## Environmental education – Why?

We take a multi-disciplinary approach to learning in environmental education that develops the knowledge, awareness, attitudes, values, and skills that enables individuals and the community to contribute towards maintaining and improving the quality of the environment.

The aims of our environmental education programmes are for students to develop:

- Awareness and sensitivity to the environment and related issues.
- Knowledge and understanding of the correlation between the environment and people.
- Attitudes and values that reflect feelings of concern for the environment.
- Skills involved in identifying, investigating, and problem solving associated with environmental issues.
- Sense of responsibility through participation and action as individuals, or members of groups, whānau, or iwi, in addressing environmental issues.

## Curriculum links

This resource aims to support learning about native birds in conjunction with a visit to Hamilton Zoo. It provides curriculum links, suggestions for your visit and useful resources for the following topics:

- [Adaptation](#)
- [Classification and identification](#)
- [Food webs and bush ecosystems](#)
- [Habitat](#)
- [Pollination and seed dispersal](#)
- [Flight and migration](#)
- [Endangered species](#)

The '[Conservation in action](#)' section provides ideas for individuals, schools, whānau and communities to get involved in the conservation of native birds.

## Contact us

### Education Team at Hamilton Zoo

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Email: [zoo.education@hcc.govt.nz](mailto:zoo.education@hcc.govt.nz)

Website: <http://hamiltonzoo.co.nz/>

Send an email to [zoo.education@hcc.govt.nz](mailto:zoo.education@hcc.govt.nz) to join our education database and be first to know about what is happening at Hamilton Zoo and receive our termly newsletter.

## Adaptation

<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L1/2 – Living world – Ecology – Recognise that living things are suited to their particular habitat</p> <p>L3/4 – Living world – Ecology – Explain how living things are suited to their environment</p> <p>L5/6 – Living world – Life processes – Identify/relate key structural features and functions to the life processes of animals</p> <p>L5/6 – Living world – Evolution – Genetics and the importance of variation</p> <p>L7/8 – Living world – Ecology and evolution – Natural selection and evolutionary processes</p>
<b>During your visit to Hamilton Zoo</b>	<ul style="list-style-type: none"> <li>• Look closely at the different shapes of beak and feet of the birds at the zoo. For example, compare the feet of the keas, wekas and ducks in the aviary.</li> <li>• Compare the colouring of the exotic birds with the native birds. Can you think of any reasons for the difference?</li> <li>• Read the signs for more details about adaptations of the birds at the zoo. For example, blue duck ducklings hatch with large flippers ready to paddle in the turbulent rivers where they live (structural adaptation), male and female kererū can both produce ‘crop milk’ or ‘pigeon milk’ (physiological adaptation) and banded rail make their nests on the ground (behavioural adaptation).</li> </ul>	
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>Native bird adaptations <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Native-bird-adaptations">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Native-bird-adaptations</a></p> <p>Adaptations of the NZ falcon <a href="http://www.wingspan.co.nz/birds_of_pre_y_new_zealand_falcon.html">www.wingspan.co.nz/birds_of_pre_y_new_zealand_falcon.html</a></p> <p>Adaptations of NZ’s large forest birds <a href="http://www.teara.govt.nz/en/large-forest-birds/page-1">http://www.teara.govt.nz/en/large-forest-birds/page-1</a></p> <p>Detailed information about individual birds <a href="http://nzbirdsonline.org.nz/">nzbirdsonline.org.nz/</a></p>
	<b>Student activities</b>	<p>Classifying native bird adaptations <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Classifying-bird-adaptations">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Classifying-bird-adaptations</a></p> <p>Designing animals suited to their environment <a href="http://www.visitzealandia.com/wp-content/uploads/2012/03/edu-adaptation-design.pdf">www.visitzealandia.com/wp-content/uploads/2012/03/edu-adaptation-design.pdf</a></p> <p>Birds and their beaks <a href="http://www.visitzealandia.com/wp-content/uploads/2012/03/edu-birds-beaks.pdf">www.visitzealandia.com/wp-content/uploads/2012/03/edu-birds-beaks.pdf</a></p>
	<b>Multimedia</b>	<p>Video clip: Bird pollination in NZ <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/Bird-pollination-in-New-Zealand">www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/Bird-pollination-in-New-Zealand</a> (from 1.30 the scientist is talking about adaptations of native birds)</p> <p>Ghosts of Gondwana <a href="http://www.nzonscreen.com/title/ghosts-of-gondwana-2001">www.nzonscreen.com/title/ghosts-of-gondwana-2001</a></p>

Classification and identification		
<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L1/2 – Living world – Evolution – Recognise that there are lots of different living things in the world and that they can be grouped in different ways</p> <p>L3/4 – Living world – Evolution – Begin to group animals into science-based classifications and explore how birds in NZ are quite different to other areas of the world</p>
<b>During your visit to Hamilton Zoo</b>		<ul style="list-style-type: none"> <li>• Look at the scientific or Latin names on the signs around the zoo. Can you spot any birds that are related to each other / from the same 'genus' for example, the kea (<i>Nestor notabilis</i>) and the kaka (<i>Nestor meridionalis</i>)?</li> <li>• Use the ID signs in the aviary to help you identify the birds that you see.</li> <li>• As you walk around can you identify any other native birds that are flying freely around the zoo?</li> <li>• Make notes, sketch and/or take a photo of a bird that you see at the zoo and then use the NZ Birds online or zoo website to help you identify it.</li> </ul>
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>Hamilton Zoo information sheets <a href="http://hamiltonzoo.co.nz/our-animals/birds/natives/">hamiltonzoo.co.nz/our-animals/birds/natives/</a></p> <p>Further information about birds at Hamilton Zoo <a href="http://www.stgry.com/v/Hamilton-Zoo/o_8b4d44c77d8211ebb6fdc89d81917066">http://www.stgry.com/v/Hamilton-Zoo/o_8b4d44c77d8211ebb6fdc89d81917066</a></p> <p>NZ Birds online <a href="http://nzbirdsonline.org.nz/">nzbirdsonline.org.nz/</a> (Click on the 'Identify that bird' tab)</p> <p>Native birds: Endemic, native or introduced (downloadable Power Point) <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Endemic-native-or-introduced">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Endemic-native-or-introduced</a></p> <p>Classification system info sheet <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Science-Ideas-and-Concepts/Classification-system">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Science-Ideas-and-Concepts/Classification-system</a></p> <p>How to identify birds (at the bottom of the page is a free downloadable poster) <a href="http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/garden-bird-surveys/how-to-identify-birds">www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/garden-bird-surveys/how-to-identify-birds</a></p>
	<b>Student activities</b>	<p>Who am I? <a href="http://www.visitzealandia.com/wp-content/uploads/2012/03/edu-who-am-i.pdf">www.visitzealandia.com/wp-content/uploads/2012/03/edu-who-am-i.pdf</a></p> <p>Recording bird information activity <a href="http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/recording-bird-information/">www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/recording-bird-information/</a></p> <p>Develop a classification system <a href="http://www.sciencelearn.org.nz/Contexts/Life-in-the-Sea/Teaching-and-Learning-Approaches/Develop-a-classification-system">www.sciencelearn.org.nz/Contexts/Life-in-the-Sea/Teaching-and-Learning-Approaches/Develop-a-classification-system</a> (This activity is for marine organisms but could be adapted for native birds)</p>
	<b>Multimedia</b>	<p>Video clip: Ecology of NZ <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Ecology-of-New-Zealand">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Ecology-of-New-Zealand</a></p> <p>Video clip: Naming organisms <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Naming-organisms">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Naming-organisms</a></p>

## Food webs and bush ecosystems

<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L5– Living world – Ecology - Investigate the interdependence of living things in an ecosystem</p> <p>L6 – Living world – Ecology – Investigate the impact of natural events and human actions on a NZ ecosystem</p> <p>L8 – Living world – Ecology - Understand the relationship between organisms and their environment</p>
<b>During your visit to Hamilton Zoo</b>		<ul style="list-style-type: none"> <li>Choose a bird to look for in the aviary. Can you find out from the signs what other organisms they are connected to? For example, what do they like to eat, where do they nest or shelter?</li> <li>The aviary represents a NZ bush ecosystem. Can you make a list of as many parts of the ecosystem as you can, living and non-living?</li> </ul>
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>Birds’ role in ecosystems <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Birds-role-in-ecosystems">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Birds-role-in-ecosystems</a></p> <p>NZ’s unique ecology <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Looking-Closer/New-Zealand-s-unique-ecology">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Looking-Closer/New-Zealand-s-unique-ecology</a></p> <p>Types of forests in NZ <a href="http://www.kcc.org.nz/forest">www.kcc.org.nz/forest</a></p> <p>Pest animals <a href="http://www.kcc.org.nz/pest-animals">www.kcc.org.nz/pest-animals</a></p>
	<b>Student activities</b>	<p>NZ bush ecosystems <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/New-Zealand-bush-ecosystems">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/New-Zealand-bush-ecosystems</a></p> <p>Forest ecosystems activity <a href="http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/forest-ecosystems/">www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/forest-ecosystems/</a></p> <p>Constructing food webs <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Teaching-and-Learning-Approaches/Constructing-food-webs">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Teaching-and-Learning-Approaches/Constructing-food-webs</a></p>
	<b>Multimedia</b>	<p>Video clip: Ecology of NZ <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Ecology-of-New-Zealand">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Ecology-of-New-Zealand</a></p> <p>Video clip: Honey dew in beech forests <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Honeydew">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Sci-Media/Video/Honeydew</a> (honeydew is a food source for native birds)</p>

<b>Habitat</b>		
<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L1/2 – Living world – Ecology – Recognise that living things are suited to their particular habitat</p> <p>L3/4 – Living world – Ecology – Explain how living things are suited to their environment and how they respond to changes, both natural and human-induced</p> <p>L5– Living world – Ecology - Investigate the interdependence of living things in an ecosystem</p> <p>L6 – Living world – Ecology – Investigate the impact of natural events and human actions on a NZ ecosystem</p> <p>L7 – Living World – Ecology – Explore ecological distribution patterns and explain possible causes for these patterns</p> <p>L8 – Living world – Ecology - Understand the relationship between organisms and their environment</p>
<b>During your visit to Hamilton Zoo</b>		<ul style="list-style-type: none"> <li>• Native birds occupy many different habitats including alpine areas (kea), fast moving rivers (blue duck) and wet gullies (banded rail). Look at the different enclosures, the aviary and the wetland area and see who lives where. How many different bird habitats can you find at the zoo?</li> <li>• Compare the enclosures of birds with other types of animals at the zoo. What are the similarities and differences? How closely do you think these enclosures represent their habitat in the wild?</li> </ul>
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>NZ Birds online <a href="http://nzbirdsonline.org.nz/">nzbirdsonline.org.nz/</a> (Click on the 'Location' tab)</p> <p>Ecological restoration of offshore islands <a href="http://www.doc.govt.nz/conservation/land-and-freshwater/offshore-islands/ecological-restoration-of-offshore-islands/">www.doc.govt.nz/conservation/land-and-freshwater/offshore-islands/ecological-restoration-of-offshore-islands/</a></p> <p>Threats (The first two parts of this article apply to native birds) <a href="http://www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Threats-to-native-reptiles-and-amphibians">www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Threats-to-native-reptiles-and-amphibians</a></p> <p>Rena bird recovery <a href="http://www.sciencelearn.org.nz/Science-Stories/Where-Land-Meets-Sea/Rena-bird-recovery">www.sciencelearn.org.nz/Science-Stories/Where-Land-Meets-Sea/Rena-bird-recovery</a></p>
	<b>Student activities</b>	<p>Create a wetland <a href="http://www.forestandbird.org.nz/get-involved/backyard-projects-/create-wetland">www.forestandbird.org.nz/get-involved/backyard-projects-/create-wetland</a></p> <p>Possum picnic <a href="http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/possum-picnic/">www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/possum-picnic/</a></p> <p>Land preservation versus use debate <a href="http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/preservation-versus-use/">www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/preservation-versus-use/</a></p> <p>Biodiversity battleships <a href="http://www.sciencelearn.org.nz/Science-Stories/Resource-Management/Biodiversity-battleships">www.sciencelearn.org.nz/Science-Stories/Resource-Management/Biodiversity-battleships</a></p>
	<b>Multimedia</b>	<p>Interactive timeline that explores how NZ's unique ecosystems developed – info includes the development of predator-free islands <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Timeline">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Timeline</a></p>



## Pollination and seed dispersal

<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L1/2 – Living World – Life processes – Recognise that all living things have certain requirements so they can stay alive</p> <p>L3/4 – Recognise that there are life processes common to all living things and that these occur in different ways</p> <p>L5/6 – Living world – Life processes – Identify/relate key structural features and functions to the life processes of animals</p> <p>L7 – Living World – Explore the diverse ways that animals and plants carry out life processes</p>
<b>During your visit to Hamilton Zoo</b>	<ul style="list-style-type: none"> <li>• Most bird-pollinated flowers have lots of nectar, often at the bottom of a tube of petals. Can you spot any birds looking for nectar as you walk through the aviary?</li> <li>• Look at the native plants in the aviary. How do they attract birds? (Depending on the season that you visit the zoo you may need to look at the pictures on the signs too).</li> </ul>	
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>Birds’ role in ecosystems <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Birds-role-in-ecosystems">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Birds-role-in-ecosystems</a></p> <p>Info sheet about how plants attract pollinators <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Science-Ideas-and-Concepts/Attracting-pollinators">www.sciencelearn.org.nz/Contexts/Pollination/Science-Ideas-and-Concepts/Attracting-pollinators</a></p> <p>Decline of birds and pollination (article about NZ science research) <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/NZ-Research-Collection/Decline-of-birds-and-pollination">www.sciencelearn.org.nz/Contexts/Pollination/NZ-Research-Collection/Decline-of-birds-and-pollination</a></p> <p>Pollination glossary <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Key-Terms">www.sciencelearn.org.nz/Contexts/Pollination/Key-Terms</a></p>
	<b>Student activities</b>	<p>Pollination pairs (students match native flowers with their pollinators) <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Teaching-and-Learning-Approaches/Pollination-pairs">www.sciencelearn.org.nz/Contexts/Pollination/Teaching-and-Learning-Approaches/Pollination-pairs</a></p> <p>Pollination role-plays <a href="http://www.sciencelearn.org.nz/Science-Stories/Seeds-Stems-and-Spores/Pollination-role-plays">www.sciencelearn.org.nz/Science-Stories/Seeds-Stems-and-Spores/Pollination-role-plays</a></p> <p>Unit plan: Pollination (early primary) <a href="http://www.sciencelearn.org.nz/My-Sci/Teacher-Ideas/Unit-plans/Pollination-early-primary">www.sciencelearn.org.nz/My-Sci/Teacher-Ideas/Unit-plans/Pollination-early-primary</a></p>
	<b>Multimedia</b>	<p>Interactive timeline that explores how scientists have changed their ideas about the importance of bird pollination in NZ <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Timeline">www.sciencelearn.org.nz/Contexts/Pollination/Timeline</a></p> <p>Video clip: Bird pollination in NZ <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/Bird-pollination-in-New-Zealand">www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/Bird-pollination-in-New-Zealand</a></p> <p>Video clip: The pollination problem (declines in numbers of native birds) <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/The-pollination-problem">www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Video/The-pollination-problem</a></p> <p>Image: Tui on flax flowers <a href="http://www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Images/Tui-on-flax-flowers">www.sciencelearn.org.nz/Contexts/Pollination/Sci-Media/Images/Tui-on-flax-flowers</a></p>

## Flight and migration

<b>Achievement objectives / curriculum links</b>	<b>Science</b>	L1-6 – Physical World – Physical inquiry and physics concepts L3/4 – Living world – Evolution – Explore how birds in NZ are quite different to other areas of the world L5/6 – Living world – Life processes – Identify/relate key structural features and functions to the life processes of animals
<b>During your visit to Hamilton Zoo</b>		<ul style="list-style-type: none"> <li>• Compare the native birds with the exotic birds on display at the zoo. What do their feathers look like? How big are they? How are they moving around their enclosure?</li> <li>• Can you spot any native birds at the zoo that are flightless?</li> <li>• Try to spot a banded rail. They can fly but choose not to. How do they move around the aviary?</li> </ul>
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	Flight resources from the Science Learning Hub <a href="http://www.sciencelearn.org.nz/Contexts/Flight">www.sciencelearn.org.nz/Contexts/Flight</a> How birds fly <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Science-Ideas-and-Concepts/How-birds-fly">www.sciencelearn.org.nz/Contexts/Flight/Science-Ideas-and-Concepts/How-birds-fly</a> Feathers and flight <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Looking-Closer/Feathers-and-flight">www.sciencelearn.org.nz/Contexts/Flight/Looking-Closer/Feathers-and-flight</a> Our remarkable birds – Wings but can't fly <a href="http://www.doc.govt.nz/conservation/native-animals/birds/our-remarkable-birds/">www.doc.govt.nz/conservation/native-animals/birds/our-remarkable-birds/</a> Flightless land birds <a href="http://www.teara.govt.nz/en/land-birds-overview/page-3">www.teara.govt.nz/en/land-birds-overview/page-3</a>
	<b>Student activities</b>	Birds and planes (looks at wing shape and size related to flight capability) <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Teaching-and-Learning-Approaches/Birds-and-planes">www.sciencelearn.org.nz/Contexts/Flight/Teaching-and-Learning-Approaches/Birds-and-planes</a> Tracking E7 (godwit migration) <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Teaching-and-Learning-Approaches/Tracking-E7">www.sciencelearn.org.nz/Contexts/Flight/Teaching-and-Learning-Approaches/Tracking-E7</a> Bird hotel (In this activity students take on the role of migrating birds) <a href="http://www.sciencelearn.org.nz/Contexts/Life-in-the-Sea/Teaching-and-Learning-Approaches/Bird-hotel">www.sciencelearn.org.nz/Contexts/Life-in-the-Sea/Teaching-and-Learning-Approaches/Bird-hotel</a>
	<b>Multimedia</b>	Wings for flight interactive (compare the flight capabilities of planes with birds) <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Animations-and-Interactives/Wings-for-flight">www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Animations-and-Interactives/Wings-for-flight</a> Video clip: Wing structure and feathers on godwits <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Video/Wings-with-feathers">www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Video/Wings-with-feathers</a> Video clip: The longest flight (godwit migration and conservation) <a href="http://www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Video/The-longest-flight">www.sciencelearn.org.nz/Contexts/Flight/Sci-Media/Video/The-longest-flight</a>



Endangered species		
<b>Achievement objectives / curriculum links</b>	<b>Science</b>	<p>L1/2 – Living World – Evolution – Explain how we know that some living things from the past are now extinct</p> <p>L3/4 – Living World – Ecology – Explain how birds respond to environmental changes, both natural and human-induced</p> <p>L5/6 – Living World – Ecology – Investigate the impact of natural events and human actions on a NZ ecosystem</p> <p>L7 – Living World – Ecology – Explore ecological distribution patterns and explain possible causes for these patterns</p>
<b>During your visit to Hamilton Zoo</b>		<ul style="list-style-type: none"> <li>• Look at the signs throughout the zoo; they include information about the conservation status of each animal (rare, threatened etc.)</li> <li>• Compare the threats facing native birds versus exotic birds. Are there any similarities or differences?</li> <li>• Look for the extinction poster in the native birds area. What has caused the most damage to native bird populations in NZ?</li> </ul>
<b>Useful resources: Pre-visit and post-visit</b>	<b>Information</b>	<p>NZ Birds online <a href="http://nzbirdsonline.org.nz/">nzbirdsonline.org.nz/</a> (Click on the 'Conservation status' tab)</p> <p>Predation of native birds <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Predation-of-native-birds">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Predation-of-native-birds</a></p> <p>Protecting native birds <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Protecting-native-birds">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Protecting-native-birds</a></p> <p>Methods of predator control (downloadable PowerPoint) <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Methods-of-predator-control">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Methods-of-predator-control</a></p> <p>The Hamilton Halo project aims to bring native birds, such as tūi and bellbirds, back into Hamilton city <a href="http://www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/">www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/</a></p> <p>A list of websites with information about the conservation of individual species of native birds (e.g. Kakapo recovery) <a href="http://www.nzfalcon.org.nz/native-bird/new-zealand-bird-websites.html">www.nzfalcon.org.nz/native-bird/new-zealand-bird-websites.html</a></p> <p>List of endangered birds in NZ <a href="http://www.doc.govt.nz/conservation/threats-and-impacts/difference-between-endangered-and-threatened/threatened-birds/">www.doc.govt.nz/conservation/threats-and-impacts/difference-between-endangered-and-threatened/threatened-birds/</a></p> <p>Info sheet about translocating animals <a href="http://www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Translocation">www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Translocation</a></p> <p>Info sheet about conservation rankings (endangered, threatened etc.) <a href="http://www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Conservation-rankings">www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Conservation-rankings</a></p>

	<b>Student activities</b>	<p>Possum picnic <a href="http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/possum-picnic/">www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/activities/possum-picnic/</a></p> <p>Exploring genetic variation <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Exploring-genetic-variation">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Exploring-genetic-variation</a></p> <p>Ethics in bird conservation <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Ethics-in-bird-conservation">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Ethics-in-bird-conservation</a></p> <p>Conservation ranking in action <a href="http://www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Conservation-ranking-in-action">www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Conservation-ranking-in-action</a> (this could be adapted for use with native birds with info sheets from <a href="http://nzbirdsonline.org.nz/">nzbirdsonline.org.nz/</a> )</p> <p>For more activities related to bird conservation see the <a href="#">Conservation Action</a> box.</p>
	<b>Multimedia</b>	<p>Interactive timeline that explores how NZ's unique ecosystems developed – info includes bird extinctions and the development of predator-free islands <a href="http://www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Timeline">www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Timeline</a></p> <p>Video clip: Translocating animals <a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Sci-Media/Video/Translocating-animals">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Sci-Media/Video/Translocating-animals</a></p>

## Conservation action – How you can help conserve our native birds

### Achievement objectives / curriculum links

Science

All levels – Nature of Science – Participating and contributing

New Zealand is a world leader in the techniques required to bring severely endangered bird species back from the brink of extinction. While a large number of our native birds are [extinct](#) – lost forever – it is not too late to help the species remaining.

In New Zealand the protection of threatened species is led by the Department of Conservation. Their approach has been to:

- Improve the birds' natural habitats
- Remove predators in areas where threatened species live naturally
- Transfer threatened species to predator-free islands
- Breed threatened species in captivity

Hamilton Zoo is involved in recovery programmes that involve captive breeding and breeding for release. The zoo holds adults and breeds juveniles that are then released to boost wild populations, or start new populations in areas where the animals have become extinct locally. Hamilton Zoo has been actively involved in breeding programmes for a number of species including Kōkako, Pateke (brown teal) and Korimako (bellbirds). Hamilton Zoo also supports scientific research and has working partnerships with other bird conservation organisations; for example, we are working with Wingspan to release NZ falcon back into the wild. We also make donations to organisations such as the Kea Conservation Trust and support the work of other conservation initiatives including Maungatautari ecological island. In the future, Hamilton Zoo plans to introduce native birds into the Waiwhakareke reserve across the road from the zoo.

For more information about keeping animals in captivity for conservation see this information sheet

[www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Captive-management-for-conservation](http://www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Captive-management-for-conservation)

Action	Information	Links
Make a bird feeder	In winter there are fewer flowers, berries and insects for native birds to eat. You can help supplement their food supply by setting up a bird table in your garden where they can feed.	<a href="http://www.forestandbird.org.nz/saving-our-environment/make-bird-feeder-your-garden">www.forestandbird.org.nz/saving-our-environment/make-bird-feeder-your-garden</a>
	Two ideas for simple bird feeders from the Kiwi Conservation Club.	<a href="http://www.kcc.org.nz/start-bird-cafe">www.kcc.org.nz/start-bird-cafe</a> <a href="http://www.kcc.org.nz/popcorn-strings">www.kcc.org.nz/popcorn-strings</a>

	Instructions to make a pinecone bird feeder.	<a href="http://www.doc.govt.nz/getting-involved/conservation-activities/attract-birds-to-your-garden/make-a-pinecone-bird-feeder/">www.doc.govt.nz/getting-involved/conservation-activities/attract-birds-to-your-garden/make-a-pinecone-bird-feeder/</a>
	More detailed information about feeding birds at home from Zealandia.	<a href="http://www.visitzealandia.com/wp-content/uploads/2013/11/Feeding-birds-at-home-Final.pdf">www.visitzealandia.com/wp-content/uploads/2013/11/Feeding-birds-at-home-Final.pdf</a>
<b>Make a tracking tunnel</b>	Make a tracking tunnel to monitor the presence of pest species in a neighbouring gully or school grounds.	<a href="http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Making-a-tracking-tunnel">www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Making-a-tracking-tunnel</a>
<b>Report a native bird sighting</b>	If you see a bellbird, kākā, kererū or tūi in the Waikato region, let Waikato Regional Council know using their online form.	<a href="http://www.waikatoregion.govt.nz/Forms/Enquiries/bird-sighting/">www.waikatoregion.govt.nz/Forms/Enquiries/bird-sighting/</a>
	NatureWatch NZ is a website where you can record your own sightings of native birds. You can also explore maps to see where other birds have been spotted.	Website <a href="http://naturewatch.org.nz/">naturewatch.org.nz/</a> App <a href="https://itunes.apple.com/nz/app/naturewatch-nz/id556791608?mt=8">itunes.apple.com/nz/app/naturewatch-nz/id556791608?mt=8</a>
	Each year (In July) Landcare Research carries out the garden bird survey. The survey is a citizen science project established to monitor the population trends of common garden birds in NZ. They hope that the annual garden bird survey will act as an early-warning system if currently common native species start declining.	<a href="http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/garden-bird-surveys">www.landcareresearch.co.nz/science/plants-animals-fungi/animals/birds/garden-bird-surveys</a>
<b>Plant species that provide food for native birds</b>	By planting certain native species you can help to provide year-round food for native birds. Native species provide a summer food source, as many of the introduced species only flower over winter. These instructions are specific to the Waikato.	<a href="http://www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Gardeners-guide/">www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Gardeners-guide/</a>
	A list of suggested plants to attract native birds and a monthly calendar from the Department of Conservation.	<a href="http://www.doc.govt.nz/getting-involved/conservation-activities/attract-birds-to-your-garden/what-to-plant/">www.doc.govt.nz/getting-involved/conservation-activities/attract-birds-to-your-garden/what-to-plant/</a>

<b>Control rats and possums on your property (or in your school grounds)</b>	Information for Hamilton residents about how to make it safer for native birds to breed in the city by controlling possums and rats on your property.	<a href="http://www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Pest-control/">www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Pest-control/</a>
	Information about setting rat traps from the Department of Conservation.	<a href="http://www.doc.govt.nz/getting-involved/conservation-activities/rat-traps/">www.doc.govt.nz/getting-involved/conservation-activities/rat-traps/</a>
<b>Make your cat conservation friendly</b>	Cats can do a lot of damage to our native species. For example, cats were mainly responsible for tūi, North Island saddleback, pied tit and red-crowned parakeet dying out on Cuvier Island, off the Coromandel coast.  This simple quiz contains tips to make your cat more conservation friendly.	<a href="http://www.doc.govt.nz/getting-involved/conservation-activities/make-your-cat-conservation-friendly/">www.doc.govt.nz/getting-involved/conservation-activities/make-your-cat-conservation-friendly/</a>
<b>Write a letter or be a cyber activist</b>	Information from the Kiwi Conservation Club about how to get your views on a conservation issue heard.	<a href="http://www.kcc.org.nz/get-writing">www.kcc.org.nz/get-writing</a> <a href="http://www.kcc.org.nz/become-cyber-activist">www.kcc.org.nz/become-cyber-activist</a>
<b>Join a community conservation group</b>	Get involved with conservation groups who are working with the Department of Conservation (DOC) to protect New Zealand's natural and cultural heritage.	<a href="http://www.doc.govt.nz/getting-involved/volunteer/groups/waikato/">www.doc.govt.nz/getting-involved/volunteer/groups/waikato/</a>
<p><b>For more information and ideas talk to the Education Team or visit the Department of Conservation website</b></p> <p><a href="http://www.doc.govt.nz/getting-involved/conservation-activities/">www.doc.govt.nz/getting-involved/conservation-activities/</a></p>		

## Useful resources

### Websites and apps

#### **NZ Birds online**

[nzbirdsonline.org.nz/](http://nzbirdsonline.org.nz/)

A searchable encyclopaedia of New Zealand birds (living and extinct). Information, photos, recordings of bird calls, conservation status etc.

#### **Birds New Zealand**

[www.osnz.org.nz/](http://www.osnz.org.nz/)

The website for The Ornithological Society of New Zealand.

#### **Conserving native birds teaching resources (Science Learning Hub)**

[www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds](http://www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds)

Info sheets and student activities.

Unit plan: [www.sciencelearn.org.nz/My-Sci/Teacher-Ideas/Unit-plans/Conserving-Native-Birds](http://www.sciencelearn.org.nz/My-Sci/Teacher-Ideas/Unit-plans/Conserving-Native-Birds)

#### **Kiwi Conservation Club**

[www.kcc.org.nz/](http://www.kcc.org.nz/)

Forest & Bird club for kids: Info sheets, events, games etc.

#### **Meet the locals: Videos and teaching resources from TVNZ**

[tvnz.co.nz/the-learning-hub/nz-biology-bird-in-hand-3341817](http://tvnz.co.nz/the-learning-hub/nz-biology-bird-in-hand-3341817)

#### **Birds of New Zealand App**

Full version: [itunes.apple.com/nz/app/birds-of-new-zealand/id770495936?mt=8](https://itunes.apple.com/nz/app/birds-of-new-zealand/id770495936?mt=8)

Free version: [itunes.apple.com/nz/app/birds-of-new-zealand-lite/id793112242?mt=8](https://itunes.apple.com/nz/app/birds-of-new-zealand-lite/id793112242?mt=8)

### Books

**Birds of New Zealand: A photographic guide** - Paul Scofield & Brent Stephenson  
[Auckland University Press]

**A Mini Guide to the Identification of New Zealand's Land Birds** – Andrew Crowe  
[Penguin Random House NZ]

**Which New Zealand Bird?** – Andrew Crowe [Penguin Random House NZ]

**Tea for the Tūi: Fun recipes to entice birds to your garden** –Rosemary Tully [New Holland Publishers NZ Ltd]

**The Bush Supermarket** – Judy Stoud

[School Journal – Pt 03 No.2 1995 – 10-12yrs - Article]

*By having different equipment - eyes, wings, tail, beak, and feet - and by choosing different living areas, the birds share out the food available at different levels in the bush.*

**Birds: Structure, Function and Adaptation**

[Building Science Concepts – Ministry of Education]

**Is This an Animal?** – Introducing the Animal Kingdom

[Building Science Concepts – Ministry of Education]

**Fur, Feathers, and Bark: Animal and Plant Coverings**

[Building Science Concepts – Ministry of Education]

*National Library of NZ and local libraries will have books to help with this topic.*



