



Reptiles and amphibians

A science resource
for use at school and Hamilton Zoo



What we can offer

We have a great Tuatara house and native reptile corner here at Hamilton Zoo. Move slowly and quietly near reptile enclosures otherwise you'll find that everything hides from you!

On your visit to Hamilton Zoo you can:

- Explore the Tuatara house and reptile enclosures.
- Arrange a visit to the Waiwhakareke restoration project across the road from the zoo.
- **Book a session with our education team.**
- Add on a Native Reptile face to face to your visit.

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 reptiles and amphibians in conjunction with a visit to Hamilton Zoo. It provides curriculum links, suggestions for your visit and useful resources for the following topics:

- [Classification](#)
- [Adaptation](#)
- [Habitat](#)
- [Pollination and seed dispersal](#)
- [Endangered species](#)

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

Contact Us

Education Team at Hamilton Zoo

Phone: 07 838 6887

Email: zoo.education@hcc.govt.nz

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

Send an email to 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.

Classification

Achievement objectives/ curriculum links	Science	<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 reptiles and amphibians in NZ are quite different to other areas of the world</p>
During your visit to Hamilton Zoo	<ul style="list-style-type: none"> • Look closely at the skinks and geckos. What similarities and differences can you see? • The tuatara is not a lizard. Can you spot any different physical features on the tuatara compared with the skinks and geckos? 	
Useful resources: Pre-visit and post-visit	Information	<p>Information about the reptiles and amphibians at Hamilton Zoo hamiltonzoo.co.nz/our-animals/reptiles/ and hamiltonzoo.co.nz/our-animals/amphibians/</p> <p>Further information about reptiles at Hamilton Zoo http://www.stqry.com/v/Hamilton-Zoo/o_8b4d44c77d8211ebb6fdc89d81917066</p> <p>Electronic database with species descriptions, habitat information, images and distribution maps www.doc.govt.nz/conservation/native-animals/reptiles-and-frogs/reptiles-and-frogs-distribution-information/electronic-atlas/</p> <p>Info sheet – Native frogs www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Native-frogs</p> <p>Info sheet – Native skinks and geckos www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Native-skinks-and-geckos</p> <p>Info sheet – Tuatara www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Tuatara</p> <p>Classification system info sheet www.sciencelearn.org.nz/Contexts/Hidden-Taonga/Science-Ideas-and-Concepts/Classification-system</p>
Student activities		<p>Similarities and differences: skinks and geckos www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Similarities-and-differences-skinks-and-geckos</p> <p>Where do we fit? images.tvnz.co.nz/tvnz_images/digital/Family/meet_the_locals/education-resources/reptiles-Where-do-we-fit.pdf</p> <p>Observation: learning to see www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Observation-learning-to-see</p>
Multimedia		<p>Interactive Venn diagram: Similarities and differences: skinks and geckos www.sciencelearn.org.nz/content/download/10538/199629/version/35/file/Venn+diagram+interactive.swf</p> <p>Interactive resource: Unique NZ - Reptiles and amphibians www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Interactive/Unique-New-Zealand</p> <p>Video clip: Cold blooded? www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Cold-blooded</p> <p>Tuatara poster www.reptiles.org.nz/uploads/PDF/Tuatara_poster7.pdf</p>

Adaptation

Achievement objectives / curriculum links	Science	<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>
During your visit to Hamilton Zoo	<ul style="list-style-type: none"> • Unless you are very quiet you may find it difficult to spot the reptiles as they may run and hide when they hear you coming. How do you think this adaptation helps them survive in the wild? • Can you describe any other adaptations that help the reptiles survive in the wild? 	
Useful resources: Pre-visit and post-visit	Information	<p>These info sheets contain information about adaptations of our native reptiles and amphibians:</p> <p>-Frogs www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Native-frogs</p> <p>-Skinks & geckos www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Native-skinks-and-geckos</p> <p>-Tuatara www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Looking-Closer/Tuatara</p>
	Student activities	<p>Prey behaviour: freeze or flee www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Prey-behaviour-freeze-or-flee</p> <p>Adaptations of the jewelled gecko - see section 7 tvnz.co.nz/the-learning-hub/nz-biology-reptiles-3342386</p>
	Multimedia	<p>Interactive resource: Unique NZ - Reptiles and amphibians www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Interactive/Unique-New-Zealand</p> <p>Meet the locals: Jewelled geckos http://tvnz.co.nz/meet-the-locals/2008-episode-116-video-2262426</p> <p>Video clip: Fat skink, thin skink www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Fat-skink-thin-skink</p> <p>Video clip: Reptile racetrack www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Reptile-racetrack</p>

Habitat		
Achievement objectives / curriculum links	Science	<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>
During your visit to Hamilton Zoo		<ul style="list-style-type: none"> • Compare the native reptile corner with other animal enclosures at the zoo. What are the similarities and differences? How closely do you think the reptile corner represents their habitat in the wild? • Compare the native reptile enclosures with the Australian reptile enclosure. What are the differences? Why? • Do you think there are any wild lizards at the zoo? If so, where do you think they might live?
Useful resources: Pre-visit and post-visit	Information	<p>The distribution of reptiles and amphibians in NZ www.doc.govt.nz/conservation/native-animals/reptiles-and-frogs/reptiles-and-frogs-distribution-information/</p> <p>Threats to native reptiles and amphibians (including habitat loss) www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Threats-to-native-reptiles-and-amphibians</p> <p>Info sheet about translocating animals www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Translocation</p> <p>NZ research about tuatara translocation (and the impact of temperature in the location) www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/NZ-Research/Tuatara-temperature-and-translocation</p> <p>NZ research about keeping skinks in captivity www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/NZ-Research/Captive-management-of-skinks</p>
	Student activities	<p>Create a lizard-friendly garden www.forestandbird.org.nz/get-involved/backyard-projects-/backyard-biodiversity-/creating-lizard-friendly-garden</p> <p>Create a lizard-friendly habitat www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Create-a-lizard-friendly-habitat</p>
	Multimedia	<p>Video clip: Captive management www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Captive-management</p>

Pollination and seed dispersal

Achievement objectives / curriculum links	Science	<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>
During your visit to Hamilton Zoo	<ul style="list-style-type: none"> Some geckos play a role in plant pollination (by transferring pollen when they move from one plant to another) and with seed dispersal (when they eat berries). Can you spot any native plants in the aviary that have berries or flowers with nectar? berries? 	
Useful resources: Pre-visit and post-visit	Information	<p>The role of lizards in New Zealand plant reproductive strategies bit.ly/1mQYoR1</p> <p>Pollination glossary www.sciencelearn.org.nz/Contexts/Pollination/Key-Terms</p> <p>Info sheet that showing some native species that are pollinated by lizards http://www.aucklandcouncil.govt.nz/EN/environmentwaste/naturalenvironment/Documents/biodiversitynativeplantspeciesguide.pdf</p> <p>Lizards in their environment www.teara.govt.nz/en/lizards/page-3 (information about pollination at the end of this article)</p>
	Student activities	<p>Pollination pairs (students match native flowers with their pollinators) www.sciencelearn.org.nz/Contexts/Pollination/Teaching-and-Learning-Approaches/Pollination-pairs</p> <p>Pollination role-plays www.sciencelearn.org.nz/Science-Stories/Seeds-Stems-and-Spores/Pollination-role-plays</p>
	Multimedia	<p>Podcast: Bats and Geckos as Pollinators www.radionz.co.nz/national/programmes/ourchangingworld/audio/2526961/bats-and-geckos-as-pollinators</p> <p>Video clip: Geckos becoming pollinators as they feed on nectar from pōhutukawa flowers www.teara.govt.nz/en/video/13529/geckos-feeding</p>

Endangered species

Achievement objectives / curriculum links	Science	<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 reptiles and amphibians 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 New Zealand ecosystem</p> <p>L7 – Living World – Ecology – Explore ecological distribution patterns and explain possible causes for these patterns</p>
During your visit to Hamilton Zoo	<ul style="list-style-type: none"> • Look at the zoo signs; they include information about the conservation status of each animal (rare, threatened etc.) • What are the main threats to our native reptiles and amphibians? 	
Useful resources: Pre-visit and post-visit	Information	<p>Threats to native reptiles and amphibians (including habitat loss) www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Threats-to-native-reptiles-and-amphibians</p> <p>NZ science research that is focused on reptile and amphibian conservation www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/NZ-Research</p> <p>Info sheet about extinction www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Extinction</p> <p>Info sheet about keeping animals in captivity for conservation www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Captive-management-for-conservation</p> <p>Info sheet about translocating animals www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Translocation</p> <p>Info sheet about conservation rankings (endangered, threatened etc.) www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Science-Ideas-and-Concepts/Conservation-rankings</p>
Student activities		<p>Conservation ranking in action www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Conservation-ranking-in-action</p> <p>Ethics in conservation science www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Ethics-in-conservation-science</p> <p>Create a lizard friendly habitat www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Create-a-lizard-friendly-habitat</p>
Multimedia		<p>Interactive resource: Unique NZ - Reptiles and amphibians www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Interactive/Unique-New-Zealand</p> <p>Interactive timeline: An historical look at the conservation of native reptiles and amphibians www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Timeline</p>

		<p>Video clip: Threats to frogs www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Threats-to-frogs</p> <p>Video clip: Conservation rankings www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video/Conservation-rankings</p> <p>A selection of short video clips about the conservation of reptiles and amphibians www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Sci-Media/Video</p> <p>Tuatara poster www.reptiles.org.nz/uploads/PDF/Tuatara_poster7.pdf</p> <p>Meet the locals: Tuatara tvnz.co.nz/meet-the-locals/meet-locals-2008-episode-97-video-1902092</p>
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Conservation action – How you can help conserve our native reptiles and amphibians

Achievement objectives / curriculum links	Science	All levels – Nature of Science – Participating and contributing
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Hamilton Zoo’s conservation efforts for our native reptiles and amphibians focus on two main species: The tuatara and Hochstetter’s frogs.

Hamilton Zoo played an important role in the Stanley Island Tuatara Programme. Eggs that were laid at Hamilton Zoo were transferred to Victoria University in Wellington for hatching and then these individuals were later released into the wild.

Hochstetter’s frogs are kept at Hamilton Zoo for four main reasons:

- To protect these individuals from the chytrid fungus (and other threats to wild populations)
- To enable the keepers to develop husbandry skills and share their knowledge with other amphibian conservationists
- To learn how to breed them in captivity to provide individuals for future translocations
- To support the zoo’s role to educate people about native frog conservation

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

Action	Information	Links
Plant species that provide food and shelter for native reptiles	Create a lizard-friendly back garden.	www.forestandbird.org.nz/get-involved/backyard-projects-/backyard-biodiversity-/creating-lizard-friendly-garden
	Create a lizard-friendly habitat in your school grounds.	www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Teaching-and-Learning-Approaches/Create-a-lizard-friendly-habitat
	More specific planting advice for different regions.	www.reptiles.org.nz/habitat-enhancement.html
Make a tracking tunnel	Make a tracking tunnel to monitor the presence of pest species in a neighbouring gully or school grounds.	www.sciencelearn.org.nz/Science-Stories/Conserving-Native-Birds/Making-a-tracking-tunnel

Report a sighting	To report a sighting download the Amphibian and Reptile Distribution Scheme (ARDS) cards and help the Department of Conservation gather information for the herpetofauna database.	www.doc.govt.nz/conservation/native-animals/reptiles-and-frogs/reptiles-and-frogs-distribution-information/species-sightings-and-data-management/report-a-sighting/
	NatureWatch NZ is website where you can record your own sightings of native animals. You can also explore maps to see where other reptiles and amphibians have been spotted.	Website naturewatch.org.nz/ App itunes.apple.com/nz/app/naturewatch-nz/id556791608?mt=8
	Information if you find a sick or injured reptile.	www.reptiles.org.nz/injured-animals.html
Control rats and possums on your property (or in your school grounds)	Information about setting rat traps from the Department of Conservation.	www.doc.govt.nz/getting-involved/conservation-activities/rat-traps/
	Information for Hamilton residents about how to make it safer for native animals in the city by controlling possums and rats on your property.	www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Pest-control/
Make your cat conservation friendly	Cats can do a lot of damage to our native species. This simple quiz contains tips to make your cat more conservation friendly.	www.doc.govt.nz/getting-involved/conservation-activities/make-your-cat-conservation-friendly/
Write a letter or be a cyber-activist	Information from the Kiwi Conservation Club about how to get your views on a conservation issue heard.	www.kcc.org.nz/get-writing www.kcc.org.nz/become-cyber-activist
Raise money for conservation causes	For example, you could choose to run an event that raises awareness and money for NZ Frogs.	www.nzfrogs.org/NZ+Frogs/Save+the+frogs.html
Join a community conservation group	Get involved with conservation groups who are working with the Department of Conservation to protect NZ's natural and cultural heritage.	www.doc.govt.nz/getting-involved/volunteer/groups/waikato/
<p>For more information and ideas talk to the Education Team or visit the Department of Conservation website www.doc.govt.nz/getting-involved/conservation-activities/</p>		

Useful resources

Websites and apps

NZ Frog: Information and resources about frog conservation

www.nzfrogs.org/Resources.html

Saving reptiles and amphibians teaching resources (Science Learning Hub)

www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians

Info sheets, links to NZ science research and student activities.

Meet the locals: Videos and teaching resources from TVNZ

tvnz.co.nz/the-learning-hub/nz-biology-reptiles-3342386

Kiwi Conservation Club

www.kcc.org.nz/

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

The Science Learning App - SciTV - showcases the video and images contained within our contexts and science stories, including Saving Reptiles and Amphibians (free).

www.sciencelearn.org.nz/Help/App

NatureWatch NZ

Website naturewatch.org.nz/

App itunes.apple.com/nz/app/naturewatch-nz/id556791608?mt=8

Useful vocab www.reptiles.org.nz/glossary.html and

www.sciencelearn.org.nz/Contexts/Saving-Reptiles-and-Amphibians/Key-Terms

Books

A Photographic Guide to Reptiles and Amphibians of New Zealand – Tony Jewell and Rod Morris

[New Holland Publishers (NZ) Ltd]

Is This an Animal? – Introducing the Animal Kingdom

[Building Science Concepts – Ministry of Education]

Soil Animals – Diversity beneath our feet

[Building Science Concepts – Ministry of Education]

Skinks and geckos – Can you tell the difference - G. Patterson

[School Journals Part 3, Number 2: 58-61]