



Banks Peninsula Conservation Trust

Morepork Education Kit

Ninox novaeseelandiae (Gmelin, 1788)

Photo: Sabine Bernert
Wingspan



Key learning outcomes:

1. Evaluate morepork habitat requirements
2. Describe morepork behaviour and adaptations
3. Learn about the importance of morepork in New Zealand
4. Effectively monitor morepork using the NatureWatch database



IGNS (2002)

BPCT vision "To create an environment in which the community value, protect and care for the biodiversity, landscapes and character of Banks Peninsula"

<http://www.bpct.org.nz/>

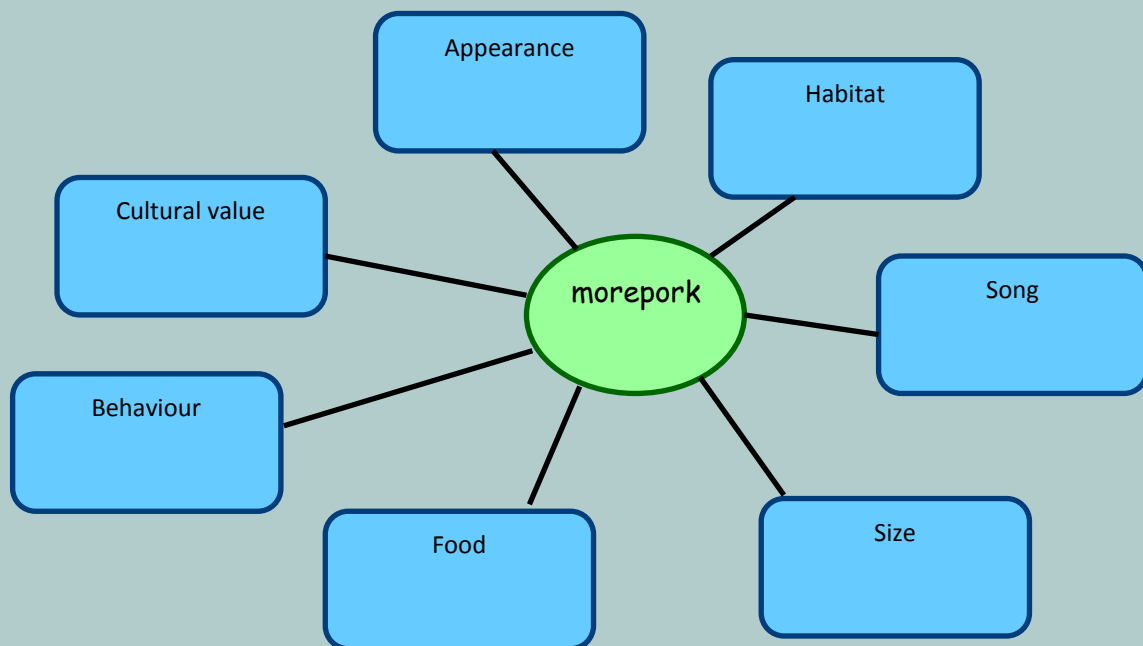
LEARNING OUTCOME 1:

Evaluate morepork habitat requirements

MOREPORK IN NEW ZEALAND

Getting started: what do you know about morepork already?

In small groups create a brainstorm showing everything you already know about morepork and where you think they live.



In your small groups present your thoughts to the class.

REFLECTION BOX

What have I learned?

MOREPORK IN CANTERBURY

Morepork habitats

Have you seen me before?

Have you heard me?



Photo: Adam Clarke

Where in New Zealand are you likely to find morepork?

(Draw on the map)



INFORMATION BOX

Morepork are widespread and abundant across most of New Zealand, found in native forests as well as in towns and cities. However, only small populations of morepork occur in Marlborough, Canterbury and Otago. Only small local populations are found on Banks Peninsula and the foothills of the Southern Alps. The main reasons given for the disappearance of morepork in Canterbury are habitat loss and predation.

Why are there few morepork in Canterbury?

Activity 1:

Draw two pictures which illustrate and explain the main threats to morepork in Canterbury ?



Activity 2:

In small groups, share your drawings and provide ideas to your other group members.

INFORMATION BOX

Morepork make their nests and raise their young in holes in trees or in the fronds of tree ferns. This makes them vulnerable to predators like wild cats, stoats, rats and possums because they cannot escape. If there are not enough nest holes, they can be forced to nest in cavities between tree branches or on the ground. In some places there are not very many big old trees left. Morepork have adapted to living in pine plantations but this habitat is taken away from them once the trees are ready for harvest. Predation and habitat loss are the key drivers of extinction in New Zealand.

MOREPORK ON BANKS PENINSULA

Improving habitat for morepork

INFORMATION BOX

In 2001 the Banks Peninsula Conservation Trust formed a group which started planning to bring the community together to restore native biodiversity. Since then, more than 50 covenants have been created on private land to protect areas of native vegetation that might support native birds, insects, geckos and skinks. The Banks Peninsula Conservation Trust has been working with DOC to control predators and improve the chances of morepork successfully raising chicks. Another idea is to provide nest boxes for the morepork to raise their chicks in. We need to find out where the morepork are on the peninsula to do this. The trust are using a few new methods to find out where the morepork live. These include using special recording devices called 'acoustic monitors' which record morepork calling over a one week period. The other methods include asking the public to text the trust when they hear a morepork calling or to enter the information onto a website called NatureWatch.

Activity 3:

Imagine you were working together with the Banks Peninsula Conservation Trust putting together a plan for morepork conservation on the Peninsula. Read the Banks Peninsula Conservation Trust website section about the creation of covenants on Banks Peninsula and write down what you think were the positive parts of this. Can you think of some actions that might help morepork to survive? Record the possible benefits to morepork in the reflection box below.

REFLECTION BOX

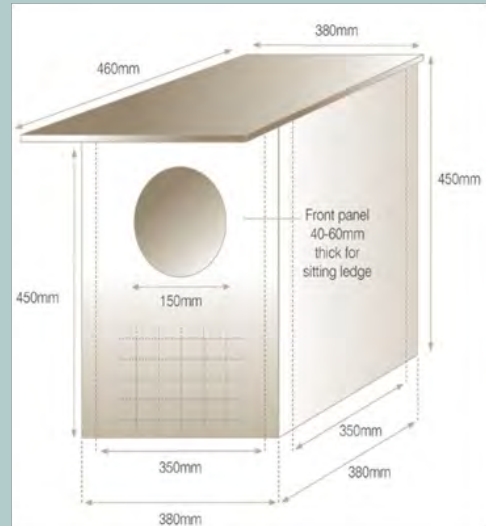
What actions did you think of that might help morepork survive on Banks Peninsula?

Building a morepork nest box:

Activity 4:

Attempt to design and make your own nest box from *untreated* plywood. What would it look like? Using the resources provided can you build a nest box for morepork. Test your nest by placing it in a tall tree (preferably surrounded by other big trees or bush where it will be dark).

Thanks to Akaroa Mens Shed for helping with this fun activity!



2 or 3 eggs are laid in the nest hole and incubation time is around one month.

It isn't known how old they are when they first breed.

Young morepork will be able to leave the nest after 35-40 days but stay with parents for a while.

Access to food is critical and those with a better supply will have a greater chance of fledgling survival and success.

Mostly males feed the young.



This is DOC scientist Moira Pryde. She is attaching a transmitter to a morepork so that it can be followed.

Photo: Danilo Hegg

Radio-tracking

Morepork fitted with transmitters can be followed around. The transmitters emit a unique signal that is picked up through a monitoring technique called radio-tracking. Radio tracking allows us to monitor the movement and behaviour of birds so we can find out more about their life and work out ways to help protect them from any threats (e.g., predators).



Photo: Patsy Dart

LEARNING OUTCOME 2:

Morepork behaviour and adaptations

Curved sharp beak

Brown feathers on its back and flanks

Large eyes on the front of the birds face.

Mottled white and brown feathers on it's chest.

Feathers that have a 'fringe' so that they fly silently.

A neck that allows the bird to rotate it's head around to the back.



Photo: Andrew Thomas
Wingspan

Sharp black talons

Morepork make a range of different calls include a 'cree' or screech.

Morepork behaviour

Your class may be fortunate enough to hear morepork during an overnight visit to Banks Peninsula. If so, can you hear just one morepork or is another one calling back to it? How far away do you think the morepork is? What time of night is it and what are the weather conditions like.

Using some of the information on morepork provided above can you note down some morepork behaviours? What do the adaptations tell us about their behaviour?

REFLECTION BOX

Behavioural traits:

Diet

Morepork are the natural top predators in a forest. They are birds of prey and eat things like small birds, insects and even mice now that they have been introduced into New Zealand. However, morepork feed mainly on insects which make up a large portion of their diet. Large insects such as beetles, moths, weta and cicadas are preferred prey items. In winter, morepork run short of food and sometimes die of starvation.



Photo: Adam Clarke

REFLECTION BOX

What is a top predator? Why is predation important in an ecosystem?

Explain the relationship between birds & insects in a forest ecosystem?

What does a morepork eat? What sort of insects might be available at night?

Breeding

INFORMATION BOX

Morepork breed in spring. The breeding season will start with morepork calling for mates in September and October. Breeding then occurs anywhere between October to January. Females lay 2 or 3 eggs and once they have hatched the chicks take around 40 days to mature. During this time the male brings food to the nest all night long. They stay in a family group for a few months before leaving to find their own territory.

VISIT TO HEAR OUR CALL:

<http://www.doc.govt.nz/conservation/native-animals/birds/birds-a-z/morepork-ruru/>

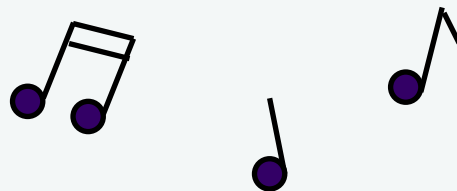
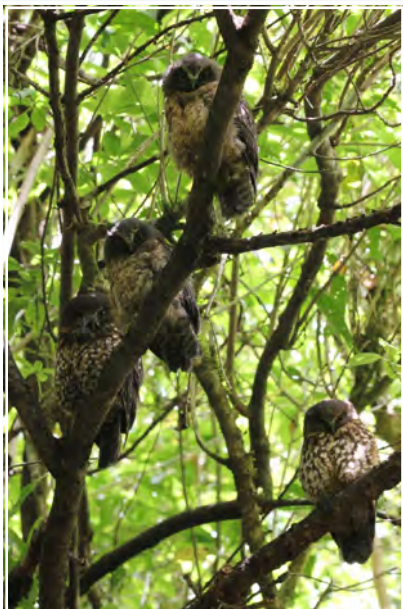


Photo: Adam Clarke

Life Span

Morepork choose a mate for life. But nobody knows how long that they live for. The oldest known bird is 40yrs old but this one lives in captivity.

A study in the Eglington Valley (Fiordland) found an equal sex ratio but in other areas e.g., West Coast of the South Island, there were fewer females than males. This could be because the females are vulnerable to predation when raising their chicks in nest holes. Low productivity was recorded in the Eglington Valley and on Ponui Island (Hauraki Gulf), but the causes are unclear.

A question for the experts!

Morepork evolved without having to worry about any mammalian predators. How does this make morepork vulnerable now?

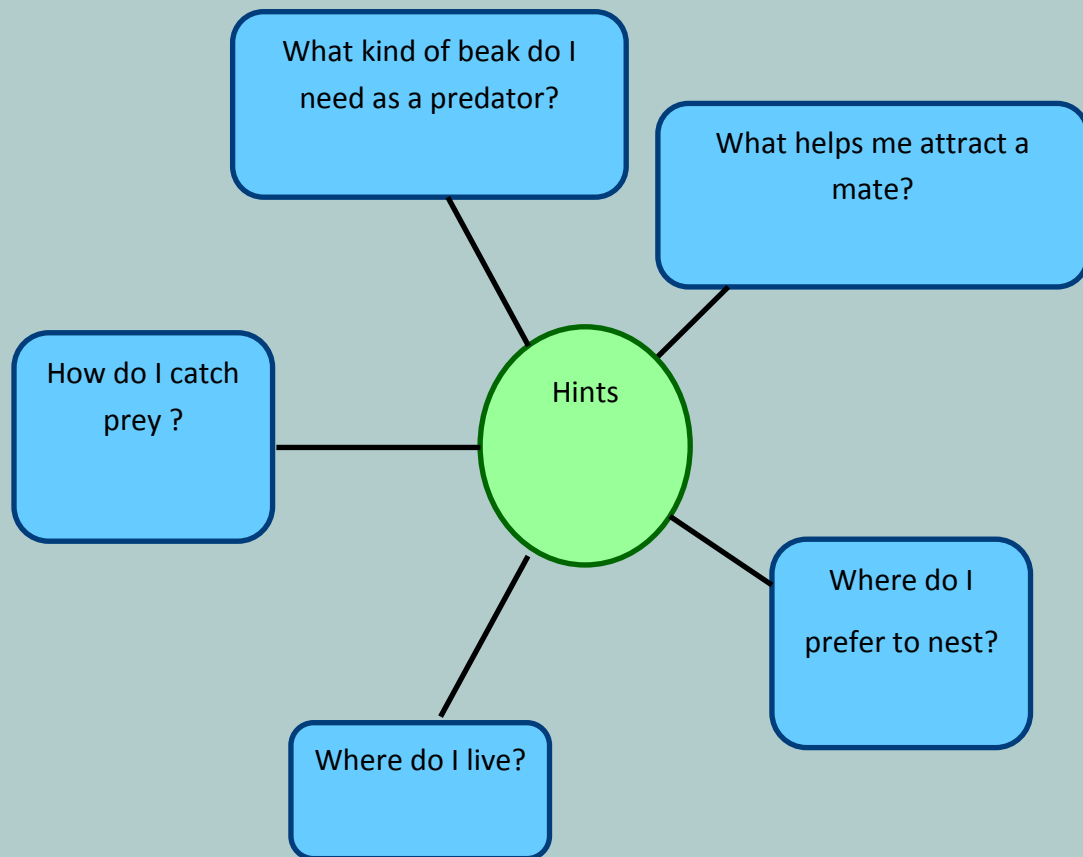


Photo: John Parkes

Activity 5:

To test your knowledge on morepork behaviour and physiology using the questions below, then design and create a junk model owl to show the adaptations it has to survive.

Thanks to EnviroSchools for this activity!



LEARNING OUTCOME 3:

The importance of morepork to New Zealanders.

Many New Zealanders think of the morepork as an iconic New Zealand bird. The call is something we associate with 'home'.

Before Europeans arrived in New Zealand, the Maori people knew morepork as 'Ruru'. Maori consider Ruru as a guardian and because it is nocturnal (only active at night) Maori associate it with the spirit world and their call is a sign of good news. If Ruru makes the high pitched 'cree' noise Maori believe that death or bad news is near. Their feathers are used to make Maori cloaks.

Here is a Maori proverb used to warn an enemy that they were being watched:

Etia anō āku mata me te mata-ā-ruru e tīwai ana
Me te mata kāhu e paro noa rā kai te tahora!

My eyes are like morepork eyes turning from side to side,
Like the eyes of a hawk who soars over the plain! ²

Activity 6:

In small groups, using a mix of music and drama, create a performance around this Maori interpretation and present it to the class.

Activity 7:

Try asking a few people in your family or community whether they have ever heard the call of the morepork. Write down what they say?



Photo: Moira Pryde

LEARNING OUTCOME 4:

Monitor morepork using the online tool NatureWatch NZ

We are not sure exactly where morepork are on Banks Peninsula. They have been heard in some places but not others. To find out where they are present and absent, we are asking the public to let us know if they have seen or heard the birds.

This is where YOU can help US! And help the Morepork!

NatureWatch NZ



Activity 8:

Find a computer whizz in your class or school. Search NatureWatch which is an online monitoring tool that is being used all around the country to record observations of plants and animals. Has anyone reported seeing or hearing morepork on the NatureWatch website? Where and when?

<http://naturewatch.org.nz/>

Using NatureWatch NZ you can record sightings or calls of birds such as morepork and tūī.

Important information to record:

- ✓ Location
- ✓ Who you are
- ✓ Time and date
- ✓ Habitat/vegetation type



Photo: Courtesy of DOC

Keep an eye out for us on the road at night and early morning.

Don't run us over *Please!*

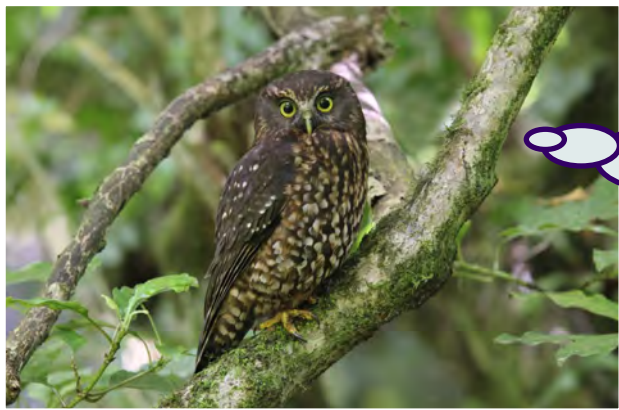


Photo: Adam Clarke

You are now on your way to being a morepork expert! Go out and share your knowledge with others!

FEEDBACK

We hope you have enjoyed learning about morepork and are now as passionate about this bird as we are! In order to make this education kit as useful as possible for other schools please answer the following questions:

How interested were you in this topic? Has this interest level changed?

What activities did you particularly enjoy in this education kit?

Were there any activities you found particularly difficult? Why?

What would I like to know more about this topic?

How could my learning have been improved?

Was the NatureWatch website easy to use? What would you like changed?

HOW THIS EDUCATION KIT LINKS TO THE NEW ZEALAND CURRICULUM

LEVEL 2

FOCUS: MOREPORK CONSERVATION AND MONITORING ON BANKS PENINSULA

BIG IDEAS

Morepork play an important role in the New Zealand forest ecosystem; morepork are likely to be in decline in Canterbury and monitoring morepork on Banks Peninsula will add to our knowledge of the species. Targeted predator control near nesting sites is likely to enhance species survival and ultimately ensure that morepork survive on Banks Peninsula.

MAJOR COMPETENCY FOCUS

Thinking:

Students will explore and critically evaluate the importance of morepork to the people of New Zealand. Reflect on current morepork conservation management actions, asking questions, drawing on personal knowledge, and using problem solving skills to identify threats and conservation management strategies.

Relating to others: Students will be required to interact effectively with their peers in order to share and debate ideas relating to the importance of morepork and the conservation status of morepork in Canterbury. Students will be required to work together and with their community when monitoring morepork on Banks Peninsula.

Participating and contributing: Students have the opportunity to actively engage with their community about morepork conservation. Through this interaction they will generate their own knowledge to enable community monitoring tools such as NatureWatch to be utilised more widely and effectively by all generations.

ASSESSMENT

It is up to each school to decide how they may wish to assess the activities and through which learning areas. This education kit is to be used for assessment as each school sees fit.

LEARNING AREA LINKS

LEVEL 2 SCIENCE

Nature of Science

Students will:

Investigating in Science

- Build on prior experience, working together to share and examine their own and other's knowledge.
- Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.

Participating and contributing

- Use students' growing science knowledge when considering issues of concern to them.
- Explore various aspects of an issue and make decisions about possible actions.

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.

LEVEL 2: THE ARTS

Students will:

- Initiate and develop ideas with others to create drama.
- Present and respond to drama, identifying ways in which elements, techniques, conventions, and technologies combine to create meaning in their own and other's work.
- Explore some art-making conventions, applying knowledge of elements and selected principles through the use of materials and processes.
- Describe the ideas their own and others' objects and images communicate.

LEVEL 2: ENGLISH

Speaking, writing, and presenting processes and strategies

Students will:

- Integrate sources of information, processes, and strategies with developing confidence to identify, form, and express ideas.

By using these processes and strategies when speaking, writing, or presenting, students will:

Ideas: Select, form, and communicate ideas on a range of topics.

Language features: Use language features appropriately, showing a developing understanding of their effects.

Structure: Organise texts, using a range of appropriate structures.

VALUES

Students will be encouraged to value:

Innovation, inquiry, and curiosity: By thinking critically, creatively and reflectively on the plight of morepork in Canterbury and conservation actions on Banks Peninsula.

Community and participation: By becoming effective NatureWatch users and actively encouraging the monitoring of morepork using Nature Watch and community based monitoring on Banks Peninsula.

Ecological sustainability: By learning about the role and behaviour of morepork and applying this knowledge to nature conservation practices.

Teachers Hand Out— to support the Morepork Education Kit.

Morepork facts

- Morepork are in the Order: Strigiformes and their latin name (genus & species) is *Ninox novaeseelandiae*
- They were first described by Gmelin in 1788
- Endemic (unique) to New Zealand
- Medium sized bird (30 cm)
- Fully protected in New Zealand and the only remaining native owl.
- Strigiformes (see definition in Wikipedia)
- Has brown feathers on its back and is mottled on its front.
- Their beak is curved and sharp for tearing their prey.

Cultural interest

- The name 'Ruru' is from the Maori language and is an imitation of their call. Early European colonists called them morepork also because of their call.
- The presence of morepork is thought to be a bad omen by Maori and they are

Distribution, habitat and threats

- Morepork are found through most of New Zealand (but are now uncommon on the east coast of the South Island). They are especially common in the North Island and the west and south coasts of the South Island.
- There are closely related owl species in Australia and on Norfolk Island.
- Morepork can also occupy exotic habitats such as urban environments and pine plantations.
- Populations have declined since human settlement due to habitat destruction and introduced pests.
- The species is still considered secure but they are vulnerable because they nest in cavities in trees.
- Key threats are through predation, particularly by stoats and rats which kill adults and chicks in nest holes.
- Another major threat is destruction of habitat and a lack of suitable nest holes.
- Prefer dark mature forest but can tolerate small remnant patches of vegetation, regrowth, exotic plantations and well-vegetated urban environments.
- Usually seen singly, or with chicks who spend time on perches preparing for their first flight.

Feeding

- Insects such as moths, weta and beetles are their primary source of food.
- But bats, and mice are also on the menu when available.
- Morepork are top predators and can be vulnerable to second generation poisons that accumulate in the bodies of some mammals.

- Male morepork forage for food and bring it to the nest hole during the breeding season.

Song

- Calls vary between the well known 'Morepork' and screeches.
- Morepork call to attract a mate and also to designate their territory.
- Morepork rarely call during the day and mostly call at night, especially when it is cool and clear.
- They are sometimes heard calling at dusk but more commonly after dark or in the early hours of the morning around 4am.
- A female will call and her mate in a nearby tree will call back to her.

Behaviour

- Males can be very territorial.
- Morepork have large eyes and binocular vision to help them find prey at night.
- Like other owls, they have an extra vertebrae in their neck enabling them to rotate their head and see behind them.
- As with other birds they will often erect their feathers in an attempt to look larger and intimidating.
- Special fringed feathers on their wings enable them to fly silently and approach prey without being heard.
- Morepork have clearly defined roosting territories but foraging areas overlap. In Fiordland, their territories are around 43ha but territory size is likely to be larger on Banks Peninsula where there are fewer birds.
- Nesting is restricted to areas with suitable habitat and a reliable source of food items.
- It is not known how long morepork live for but the oldest known morepork in captivity is over 40 years old.
- A study in the Hauraki Gulf showed that morepork prefer nesting sites that were 10m above the ground.

- Both adults feed the young as they get older.
- Chicks will leave the nest hole after about 3 weeks.

Contacts

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Stephenson, B.M.; Minot, E.O.; Armstrong, D.P. 1999. Fate of moreporks (*Ninox novaeseelandiae*) during a pest control operation on Mokoia Island, Lake Rotorua, North Island, New Zealand. *New Zealand Journal of Ecology* 23: 233-240.

Weblinks

<http://www.doc.govt.nz/conservation/native-animals/birds/land-birds/morepork-ruru/>

<http://www.wingspan.co.nz>

<http://www.waikatoregion.govt.nz/Environment/Natural-resources/Biodiversity/Hamilton-Halo/Hamilton-city-morepork-survey/>

<http://nzcurriculum.tki.org.nz/Curriculum-documents/The-New-Zealand-Curriculum>

[http://en.wikipedia.org/wiki/Morepork_\(bird\)](http://en.wikipedia.org/wiki/Morepork_(bird))

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

<http://www.kcc.org.nz/morepork>

<http://nzbirdsonline.org.nz/species/morepork#bird-sounds>

<http://www.bpct.org.nz/our-projects/moreporkoutreachproject.asp>

This Morepork Education Kit (prepared by Dr Alison Evans) is based on the Tui Education Kit which was prepared by: **Laurien Heijs** in 2013.

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