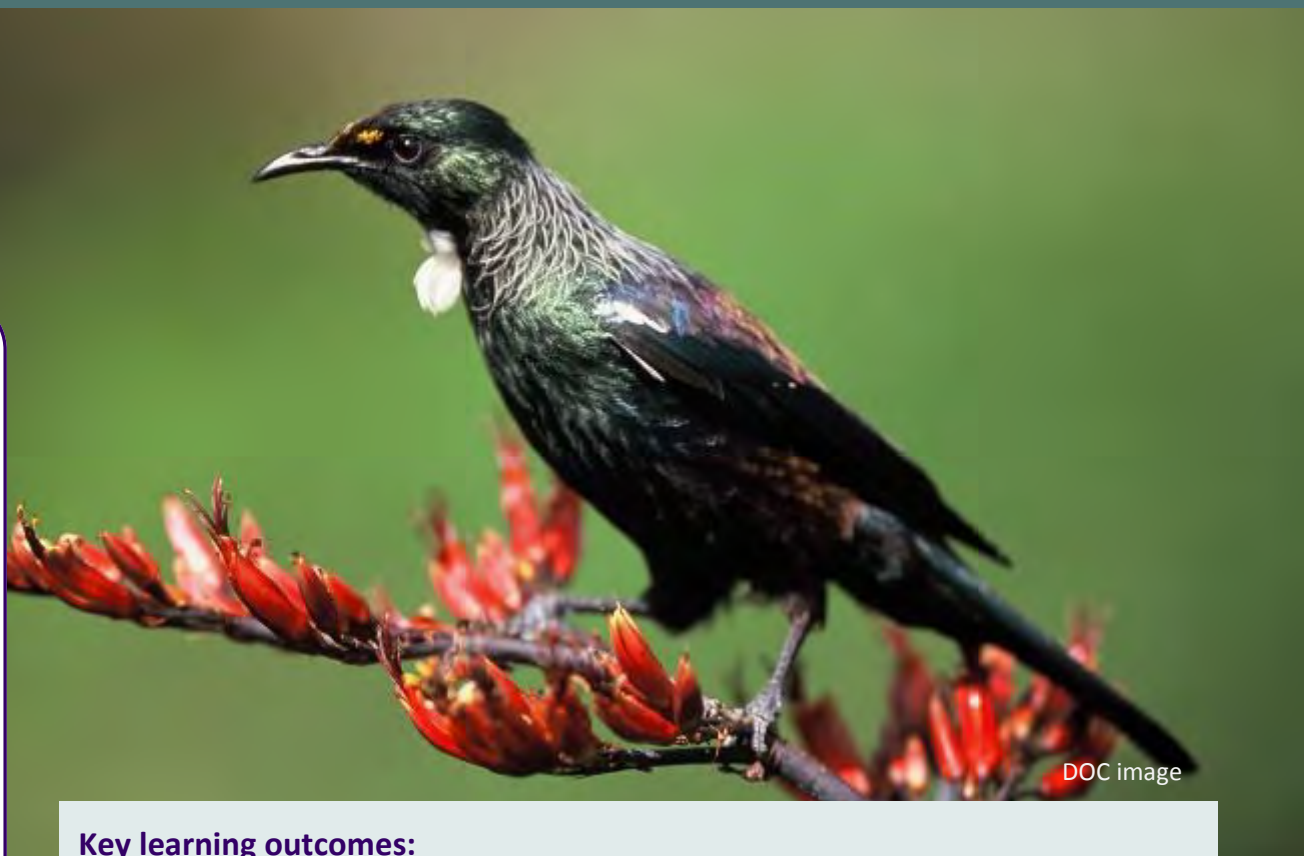


LEVEL 3 LEARNING PROGRAMME FOR CANTERBURY SCHOOLS



Banks Peninsula Conservation Trust

Tūi Education Kit



Key learning outcomes:

1. Learn about the importance of tūi in New Zealand
2. Evaluate their conservation status in Canterbury, in particular on Banks Peninsula
3. Describe tūi physiology and behaviour
3. Effectively observe and monitor tūi using the NatureWatch database



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/>

HOW THIS EDUCATION KIT LINKS TO THE NEW ZEALAND CURRICULUM

LEVEL 3

FOCUS: TUI CONSERVATION AND MONITORING ON BANKS PENINSULA

BIG IDEAS

That tūi play an important role in the New Zealand forest ecosystem; that tūi have been newly reintroduced to Banks Peninsula after disappearing from Canterbury, and the importance of monitoring tūi on Banks Peninsula to add to knowledge of the species. Target predator control to enhance species survival and ultimately ensure tūi reintroduction success, enabling the potential reintroduction of other native fauna.

MAJOR COMPETENCY FOCUS

Thinking: Students will explore and critically evaluate the importance of tūi in New Zealand and the plight of tūi in Canterbury, reflecting on current tūi conservation management actions, asking questions, drawing on personal knowledge, and using problem solving skills to identify threats to tūi and tūi 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 tūi and the conservation status of tūi in Canterbury. Students will be required to work together and with their community when monitoring tūi on Banks Peninsula.

Participating and contributing: Students have the opportunity to actively engage with their community about tūi 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.

VALUES

Students will be encouraged to value:

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

Community and participation: By becoming effective NatureWatch users and actively encouraging the monitoring of tūi using Nature Watch in the Banks Peninsula community

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

LEARNING AREA LINKS

LEVEL 3 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 3: 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 3: 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.

LEARNING OUTCOME 1:

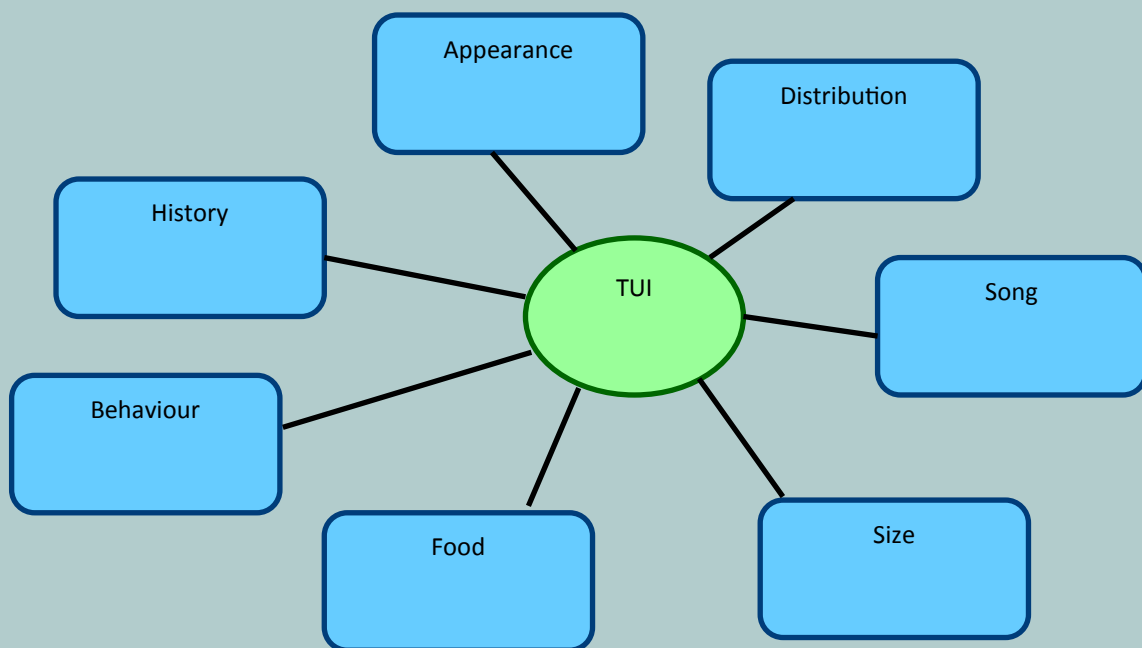
Learn about the importance of tūi in New Zealand and critically evaluate their conservation status in Canterbury, in particular on Banks Peninsula

TUI IN NEW ZEALAND

1. Getting started: what do you know about tūi already?

A. As a class create a brainstorm showing everything you already know about tūi.

B. Then can you move any of your initial knowledge into the following boxes:



Choose an interesting way of sharing what you already know in 30 seconds. E.g. Mini drama, poem, rap, freeze-frame, story.

TUI IN CANTERBURY AND BEYOND

2. Tūi distribution



Bruno Peeters

Have you seen me before?

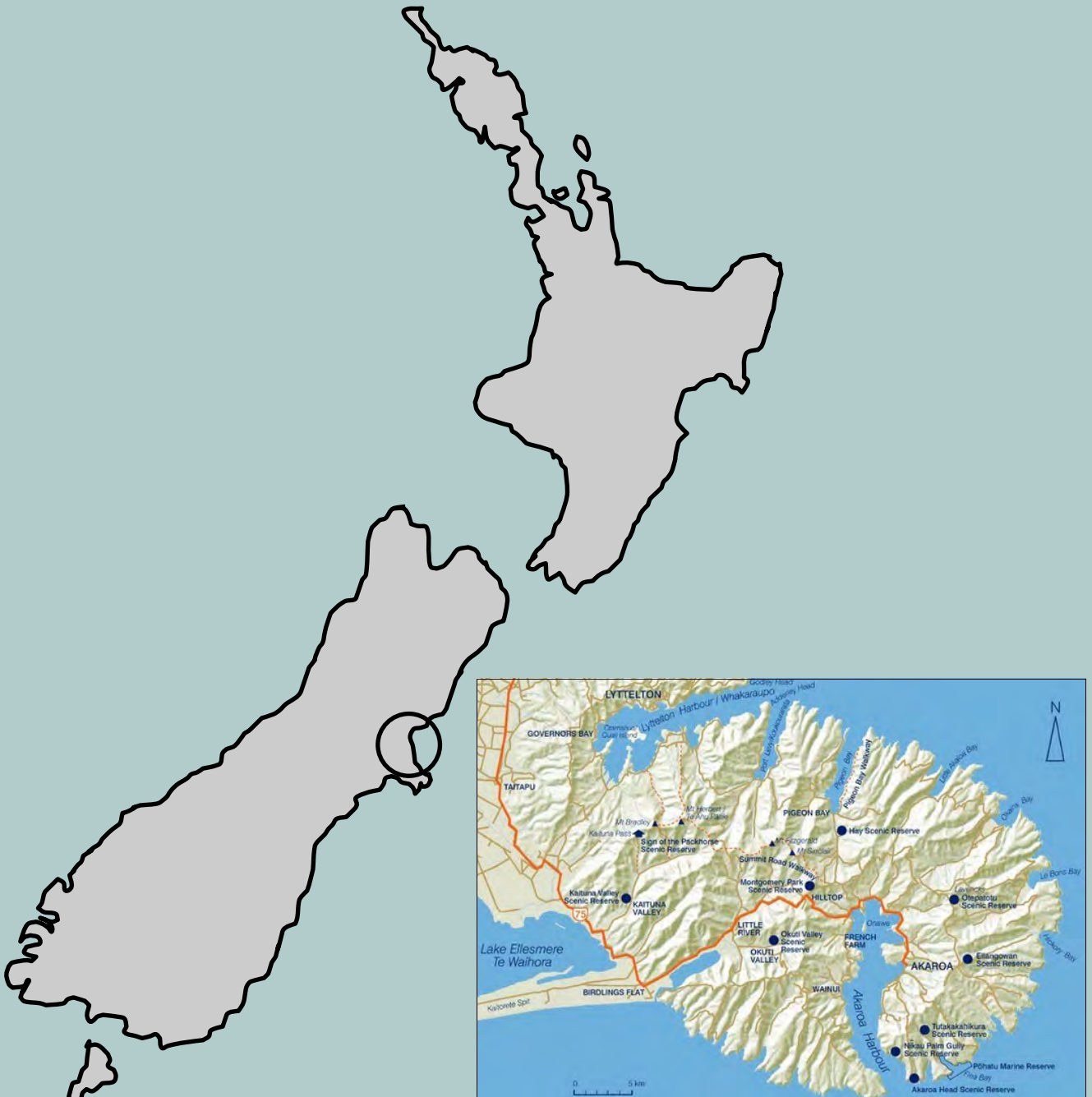
Where did you see me?

A. Starting with Banks Peninsula ,record all your own observations of tūi

B. Have you seen tūi anywhere else in New Zealand, mark them on the map!

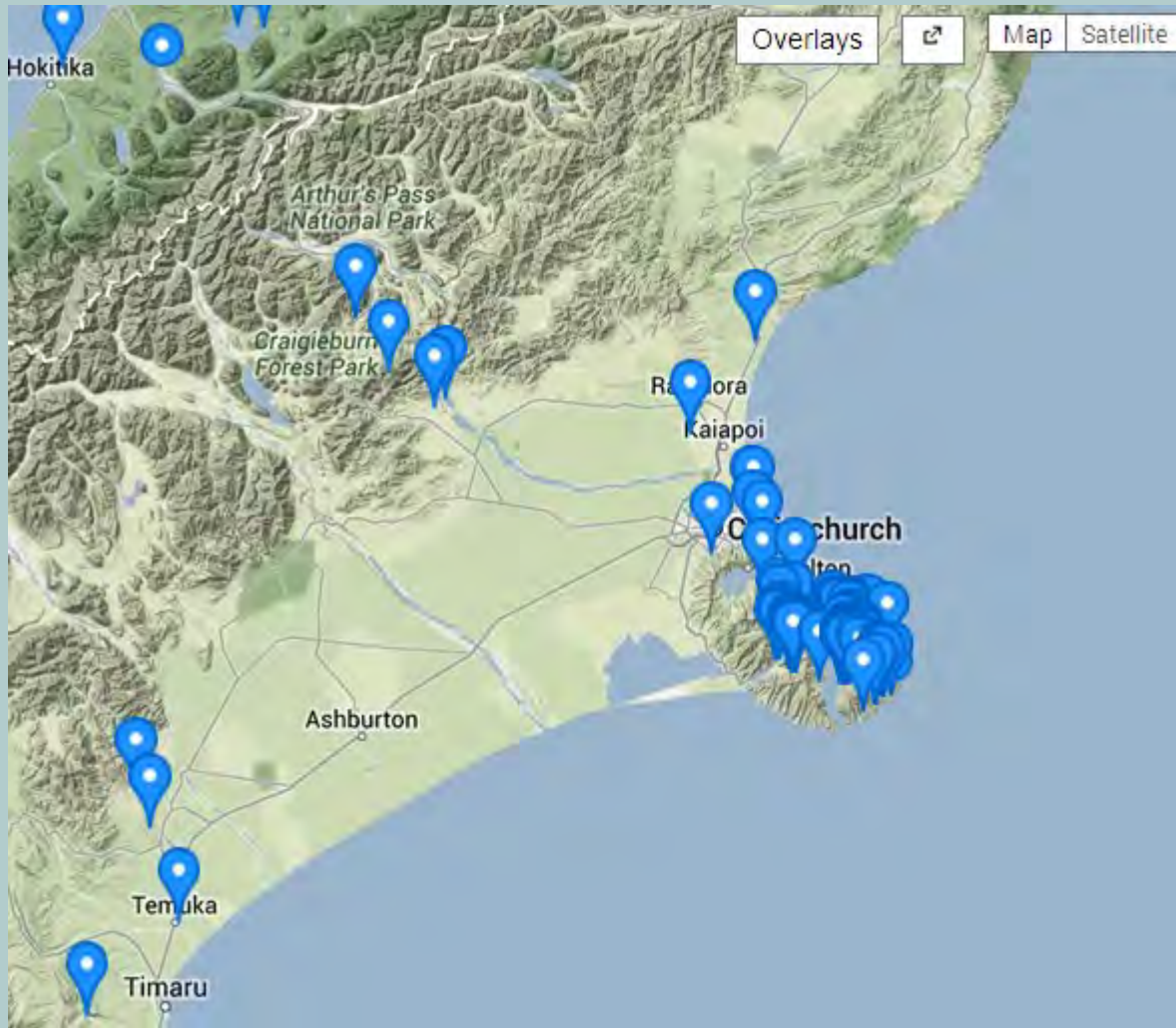
C. Using www.naturewatch.org.nz explore where tūi have been sighted throughout New Zealand.

Are there any gaps?



TUI IN CANTERBURY AND BEYOND

On the following Naturewatch map of Canterbury, do you notice any significant gaps in the distribution of tūi?



INFORMATION BOX

Tūi are widespread and abundant across most of New Zealand, found in native forests as well as in towns and cities. Since the 1970s however, tūi have disappeared from Canterbury, with only small local populations found in the foothills of the Southern Alps. The main reasons given for the disappearance of tūi in Canterbury are habitat loss, predation and potentially disease.

3. Why are there few tūī in Canterbury?

Let's play the Pest Game !!! (Instructions included in Teachers Hand Out in back of booklet)

Do some research to create a poster which illustrates and explains the main threats to tūī and why these may have caused tūī to largely disappear from Canterbury and Banks Peninsula. You can choose all or just one threat.

As a class devise success criteria before you start.



PREDATION



HABITAT LOSS



DISEASE

As a class refer to your Success Criteria and choose one winning poster to be displayed at the Banks Peninsula Conservation Trust's headquarters! Contact details at the back of this book.

Teachers note:

Don't forget the teacher's information at the back of this book.

If you are finding research hard, BPCT's Marie Haley is a great resource for tūī information (contact at the back of this booklet).

REFLECTION BOX

What new things do I know?

TUI ON BANKS PENINSULA



4. Reintroducing the tūi



INFORMATION BOX

As you have learned, tūi virtually disappeared from Canterbury in the 1960s- 1970s. On Banks Peninsula only the occasional tūi was being sighted. No tūi were observed successfully breeding, and the species was considered locally extinct.

In 2007 the Banks Peninsula Conservation Trust formed a group which started planning to bring back tūi to Banks Peninsula, to see this iconic bird returned with the hope of developing a successfully breeding population of tūi. A reintroduction plan was developed and approved by the Department of Conservation; to translocate 72 tūi from Maud Island in Marlborough Sounds to Hinewai Reserve on Banks Peninsula over the 2009 and 2010 summers.

Imagine you were working together with the Banks Peninsula Conservation Trust putting together a plan for the reintroduction of tūi to the Peninsula... Using the six thinking hats can you summarise the planning process:

	BLUE HAT - PROCESS Thinking about thinking What thinking is needed? Organising the thinking Planning for action	
	RED HAT – FEELINGS Intuition, hunches, gut instinct My feelings right now Feelings can change No reasons are given	

	YELLOW HAT – BENEFITS Positives, plus points Logical reasons are given Why an idea is useful	
	WHITE HAT – FACTS Information and data Neutral and objective What do I know? What do I need to find out? How will I get the information I need?	
	GREEN HAT – CREATIVITY Ideas, alternatives, possibilities Provocations Solutions to black hat problems	
	BLACK HAT – CAUTIONS Difficulties, weaknesses, possible dangers Logical reasons are given Spotting the risks	

A **guest speaker** (teacher to contact to BPCT) will come in from the Banks Peninsula Conservation Trust Tūi Restoration Group to discuss with the class the reintroduction of tūi to Banks Peninsula and the planning process that was undertaken. Write down any questions you have before they come.

REFLECTION BOX

Q: _____

A: _____

Q: _____

A: _____

Notes: _____

LEARNING OUTCOME 2:

Describe tūi physiology and behavior (explain/discuss meaning)

Black curved sharp
beak

Brown feathers on its
back and flanks

Two unusual curled
white feather tufts on
the throat called “poi”

Blue-green shining
feathers that change
colour in the light

Small white-shafted feathers
on the back and sides of the
neck that look like a lacy
collar

Small white shoulder
patches on the upper-wing
show in flight but other-
wise hidden

Teacher to organise
mini trip! Contacts in
the back!

Sharp black talons

Male and female very
similar except male larger



Laurie Richards

1. Observing tūi behaviour

Your class may be fortunate enough to arrange a visit to Akaroa. If so, visit 18 Smith Street, Akaroa where tūi are regular visitors to Kit and Rob’s garden. Kit and Rob have set up a feeder station for the tūi in their garden which makes an excellent place to observe tūi behaviour.

Using some of the information on tūi physiology above, your observations in the field or internet videos, can you note down some behavioural traits of tūi?

REFLECTION BOX

Behavioural traits:

[illegible]

To learn more about bird beak adaptations contact the Enviroschools Canterbury team for a fun activity (contacts at the back)!

2. Pollination

Tūi are pollinators of many native New Zealand plants including flax, kowhai, and kaka beak. Do you know what **pollination** is?

To learn about pollination watch: <http://www.youtube.com/watch?v=4TdeAzVGdIo> or visit the display garden at the DOC nursery, Motukarara. Contact Nicky Robb (nrobb@doc.govt.nz) for a tour!



REFLECTION BOX

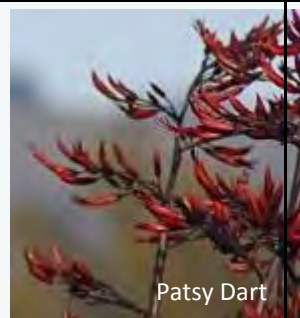
Why is pollination important?

Explain the mutual relationship between birds & plants that allows pollination to occur:

What does the tūi gain?



What does the plant gain?



3. Breeding

Tūi breed in early spring. The breeding season will start with courtship displays in September and October where tūi will sing high up in trees in the early morning and late afternoon and will perform mating displays where birds rise at great speed in a vertical climb and then drop into a powered dive repeatedly. A relationship will be cemented with a tūi singing duets with its chosen partner. Breeding then occurs anywhere between September to January.

A Maori Kaumatua, Mere Ngamai o Te Wharepouri, the lady of Ngati-Awa, has recited the Maori concept of one of these courtship duets between a pair of tūi.

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

Two birds are sitting on a bough of a tree, the *tane* and the *wahine*,. The *tane* says to his bird wife:

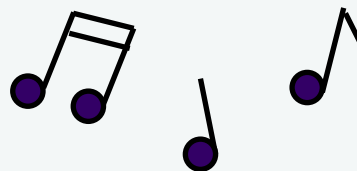
*"Te tu e hu,
Te tu e hu,
Te to karekare
Te memeke tetere ma-maku
Riri hengihengi"*

(These words describe the gentle soothing sound of the birds as they flit on softly winnowing wings to and fro, and their movements in shaking their plumage free of moisture in the foliage).

The male bird nods his head repeatedly as he utters these words and shakes his white throat-tassel.

The female bird says:

*"Ko wai, ko wai tenei?
Ko au, ko au;
Tūi pai, huruhuru maeneene.
Ko terepu, terewai.
Horohoro-horo!"*



(Who, who is this? 'Tis I, the pretty *tūi*, with soft, smooth plumage.' The last words in the last two lines are onomatopoeic, descriptive of the musical call and the deep-throated gurgling sound often uttered by the *tūi*).

The pair flap their wings and they rise and fly away to the fork of a tree nearby, where the *keikei*-plant grows in great bunches, with ripe *tirori* fruit (patangatanga), usually called the *tawhara*, which is the name of the flower.

The female bird utters these words:

*"E toro
E toro
Ki te pakihaka tirori
Ma taua."*

("Reach out, stretch out and break off the sweet fruit of the *keikei* for us two").

The birds feast of the *tirori* fruit, and then the *tane* utters this in a flute-like note, prolonged to a whistle:

"Hu-hu-e! Whio-o, whio-o!"

4. Nesting

After mating, the female tūi will build a nest to provide a safe home for nestlings after they hatch. A tūi nest is bulky (its messy!) and cup-shaped and is made of sticks and twigs and lined with fine grass.

Tūi nests are seldom found. They are typically between 4-8 metres from the ground and found on the edges rather than the depth of the bush.

Can you spot any bird's nests in your neighbourhood? If you find a nest, is it messy or tidy?

Building a tūi nest:

Attempt to make your own tūi nest using resources found from your school grounds. This can help give you an appreciation of the hard work tūi have to go through each breeding season!

Test your nest by placing it in a low branch of a tree and place marbles in it to represent eggs. How many can it hold? Tūi nests usually contain between 2 and 4 eggs.

Thanks to EnviroSchools staff for this fun activity!



Eggs are white, sometimes with a pink tinge, and have rust-red veins.

First breed at approximately 2 years

Access to nectar determined by distance to nest site so closer nests will have a greater chance of fledgling survival and success.

Young tūi will be independent and leave the nest at approximately 28 to 35 days

Both males and females feed the young.



5. Feeding

Tūi feed mainly on nectar (as well as fruits) from the flowers of plants and trees, although insects make up a portion of their diet. In Akaroa, people regularly observe tūi eating cicadas from kanuka. Using the list of plants tūi feed on below (also found here: <http://www.bpct.org.nz/Files/Food-for-Tūi-09.pdf>) go into your school grounds or nearby looking for plants to identify the nectar sources available to tūi. Could your school put in more plants to attract birds such as tūi?

Are there any periods during the year where food is scarce for tūi in your school grounds? What about in your neighbourhood?

Tūi tucker planting list—attracting tūi to your garden

some nectar/fruit





main season nectar/fruit

main season but not every year

Banks Peninsula native nectar plants		Height	Growth rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Climbing fuchsia	<i>Fuchsia perscandens</i>														
Fierce lancewood	<i>Pseudopanax ferox</i>	6 m tree	med												
Fivefinger/whauwhaupaku	<i>Pseudopanax arboreus</i>	8 m tree	fast												
Harakeke/NZ flax	<i>Phormium tenax</i>	2.5 m grass	med												
Kōhūhū/black matipo	<i>Pittosporum tenuifolium</i>	10 m tree	med												
Lancewood/horoeka	<i>Pseudopanax crassifolius</i>	12 m tree	med												
Lemonwood/tarata	<i>Pittosporum eugenioides</i>	12 m tree	med												
Mountain fivefinger	<i>Pseudopanax colensoi</i>	5 m tree	med												
Mountain flax/wharariki	<i>Phormium cookianum</i>	1 m grass	med												
Patē/sevenfinger	<i>Schefflera digitata</i>	6 m tree	fast												
Rohutu	<i>Lophomyrtus obcordata</i>	5 m tree	med												
Tree fuchsia/kōtukutuku	<i>Fuchsia excorticata</i>	12 m tree	fast												
Weeping Banks Peninsula kōwhai	<i>Sophora microphylla</i>	10 m tree	med												
White climbing rātā/akatea	<i>Metrosideros diffusa</i>														
Banks Peninsula native fruit plants															
Broadleaf	<i>Griselinia littoralis</i>	15 m tree	med												
Cabbage tree/ti-kōhika	<i>Cordyline australis</i>	15 m tree	fast												
Fivefinger/whauwhaupaku	<i>Pseudopanax arboreus</i>	8 m tree	fast												
Green coprosma	<i>Coprosma virens</i>	3 m shrub	fast												
Horopito/pepperwood	<i>Pseudowintera colorata</i>	10 m tree	slow												
Kahikatea	<i>Dacrydium discoloroides</i>	40 m tree	med												
Kaikōmako	<i>Pennantia corymbosa</i>	12 m tree	slow												
Karamū	<i>Coprosma robusta</i>	5 m tree	fast												
Lowland tōtara	<i>Podocarpus totara</i>	30 m tree	med												
Māhoe/whiteywood	<i>Melicope ramiflora</i>	10 m tree	med												
Marbleleaf/putaputawētā	<i>Carpodetus serratus</i>	10 m tree	med												
Mikimiki	<i>Coprosma propinqua</i>	5 m shrub	med												
Mikimiki	<i>Coprosma rubra</i>	3 m shrub	med												
Mikimiki	<i>Coprosma wallii</i>	2 m shrub	med												
Mountain fivefinger/orihou	<i>Pseudopanax colensoi</i>	5 m tree	med												
Mountain tōtara	<i>Podocarpus hallii</i>	20 m tree	med												
New Zealand ngai	<i>Myoporum laetum</i>	8 m tree	fast												
NZ passionfruit/kohia	<i>Passiflora tetrandra</i>	20 m vine	fast												
Patē/sevenfinger	<i>Schefflera digitata</i>	6 m tree	fast												
Pōkākā	<i>Eleocharis hookeriana</i>	15 m tree	med												
Puka/shining broadleaf	<i>Griselinia lucida</i>	8 m tree	fast												
Red matipo/māpou	<i>Myrsine australis</i>	7 m tree	med												
Rigid mikimiki	<i>Coprosma rigida</i>	4 m shrub	med												
Rōhutu/native myrtle	<i>Lophomyrtus obcordata</i>	5 m tree	med												
Round-leaved coprosma	<i>Coprosma rotundifolia</i>	4 m tree	med												
Shining karamū	<i>Coprosma lucida</i>	5 m tree	med												
Thick-leaved coprosma	<i>Coprosma crassifolia</i>	4 m shrub	med												
Thin-leaved coprosma	<i>Coprosma areolata</i>	4 m tree	med												
Tiaki/NZ oak	<i>Alectryon excelsus</i>	17 m tree	med												
Tree fuchsia/kōtukutuku	<i>Fuchsia excorticata</i>	12 m tree	fast												
Wineberry/makomako	<i>Anisotelia serrata</i>	8 m tree	fast												
Wirenetting bush/korokio	<i>Corakia cotoneaster</i>	2 m shrub	med												
Non-native nectar plants															
Bottlebrush	<i>Callistemon</i> spp.	5 m shrub	med												
Camellia*	<i>Camellia</i> spp.	5 m shrub	med												
Feijoa	<i>Feijoa sellowiana</i>	4 m tree	med												
Garden fuchsia	<i>Fuchsia magellanica</i>	3 m shrub	med												
Pincushion bush	<i>Leucospermum</i> spp.	2 m shrub	med												
Pohutukawa**	<i>Metrosideros excelsa</i>	15 m tree	med												
Protea	<i>Protea</i> spp.	2.5 m shrub	med												
Red-flowered yellow gum	<i>Eucalyptus leucophylla</i>	30 m tree	med												
Red-flowering gum	<i>Eucalyptus ficifolia</i>	10 m tree	fast												
Red hot poker***	<i>Kniphofia uvaria</i>	1.2 m clump	med												
Silk tree	<i>Albizia julibrissin</i>	10 m tree	fast												
Silky oak	<i>Grevillea robusta</i>	20 m tree	fast												
Spider flower	<i>Grevillea</i> spp.	2 m shrub	fast												
Tree lucerne/tagasaste	<i>Chamaecytisus palmensis</i>	10 m tree	fast												
Waratah	<i>Telopea</i> spp.	4 m shrub	med												

6. Create a tūi garden!

Help to attract tūi to your school and encourage the ongoing establishment of tūi on Banks Peninsula (and Christchurch) by organising your class to create a tūi garden!

<p>Create habitat for tūi by planting trees that provide a year-round nectar supply.</p> <p>Task: Draw some plants to go in your tūi garden or Draw a planting plan of your tūi garden or Borrow some binoculars to observe birds</p>	
	<p>Remove predators and grazers such as goats, deer, cattle, sheep, pigs, rats, possums, cats and stoats.</p> <p>Task: Find out if people have traps in their gardens What animals are they trapping?</p>
<p>Create a tūi feeder station: http://www.bpct.org.nz/Files/2010-SugarWaterFeeders.pdf. This is also a neat way of being able to observe tūi up close!</p> <p>Task: Ask an adult or friend to help you work together in creating sugar water feeders</p>	
	<p>Create tūi art to educate your school about this interesting and unique native bird.</p> <p>Task: Create any style of inspiring tūi artworks! Look on google for Konini School to see the awesome tūi and other environmental art around their school</p>

REFLECTION BOX

What action will you take at home and/or school?

7. Song

Tūi are very intelligent birds known for their beautiful song. The tūi call is unusual, combining high notes with clicks, cackles, timber-like creaks and groans and wheezing sounds. Each tūi call will be slightly different, geographically and seasonally as well as between genders and individuals. Some notes that the tūi sing you won't even be able to hear as they are beyond human hearing!

Go outside and listen for any tūi calling. Can you identify the different calls? If you can, record the tūi call you hear and compare it with other students recordings from other locations.

Similar to parrots, tūi also have the ability to imitate sounds, including human speech. Maori used to keep tūi in cages and train them to speak, and even to welcome people to a marae! Many of these tūi became famous and were often fought over.

One of New Zealand's most famous talking tūi is Woof Woof from the Whangarei Native Bird Recover Centre who had a permanent wing injury. To hear Woof Woof go to

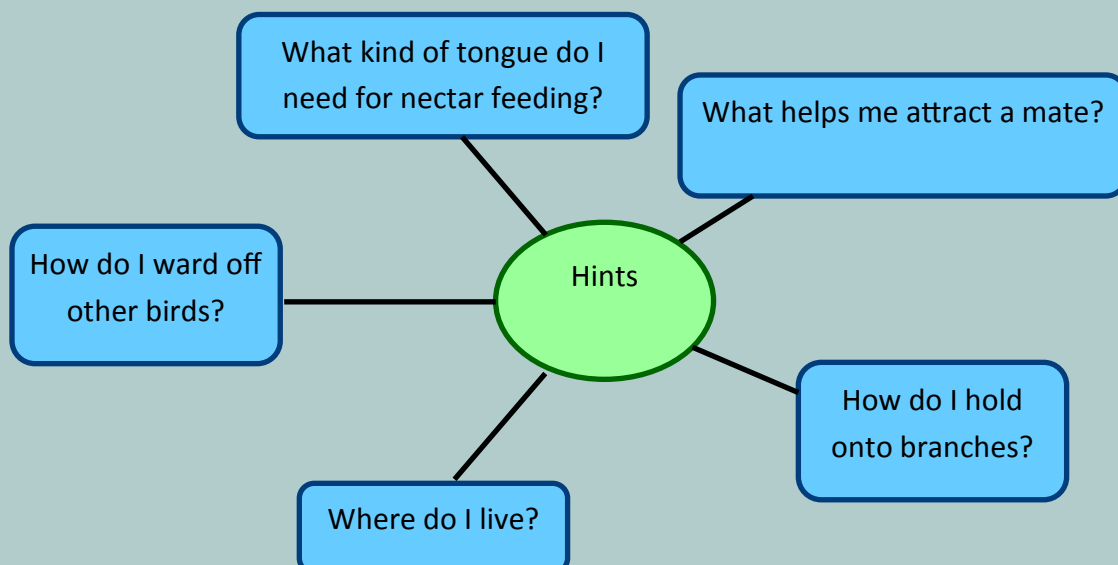
http://www.youtube.com/watch?v=TqF33vc_q68



8. Adaptations

To test your knowledge on tūi behaviour and physiology, design and create a junk model tūi to show the adaptations it has to survive. You may want to place your tūi into your tūi garden...

Thanks to EnviroSchools for this activity!



LEARNING OUTCOME 3:

Effectively observe and monitor Tūi using online tool NatureWatch NZ

The transfer of tūi from Maud Island to Banks Peninsula was the first mainland transfer for this species; we were not sure what the birds would do when they were set free in their new home. Monitoring has thus been extremely important in determining the short-term success of the reintroduction, however more monitoring is needed to ensure the long-term success of tūi, and to inform management decisions such as where predator control should be targeted.

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

1. NatureWatch NZ



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

Using NatureWatch NZ you can now go out into your neighbourhood, Akaroa or trip to Hinewai and record sightings of birds such as bellbird and tūi.

Important information to record:

- ✓ Location
- ✓ Time and date
- ✓ Habitat/vegetation type
- ✓ Leg band combination (if banded) - don't worry about this if you can't see the bands!



Your school can get copies of the tūi band combinations list from the BPCT website.

Meet some of the locals!



Hi,! My name is Buzz and I'm one of the original 72 Maud Island tūi taken to Banks Peninsula. You can identify me by the blue and red bands on my right leg and a metal (silver) band on my left leg.

Hi, I'm called Cyclops as I was found with a wound to my right eye. Don't worry, I'm fine now! I am also proud to be a true Peninsula bird, born and raised in Okuti Valley!



Laurie Silver



Lew Matthews

Hi, I'm Manu. I have a metal and a white band on my left leg and a red band on my right leg. By the way, did I mention, I loooove singing!



Laurie Richards

Hi, my name is Gordon. I was released in 2010 and like hanging around Akaroa. Currently I am in love with a pretty girl tūi and we hope to build a nest soon!



Trevord Bedford

Hi, I'm Julie and these are my chicks. Aren't they beautiful?! Your monitoring will help me look after them, so please, keep up the good work monitoring!

Play the game 'Cloak Of Protection', available from the Enviroschools team!

REFLECTION BOX

Have you recorded any tūi sightings in your neighbourhood? Or any sightings of bellbirds? Kereru? What other native birds have you observed?

What do you think of NatureWatch as a community nature monitoring tool? Are there aspects of it you would like to see changed? If so, what?

Make sure you get all your friends and family involved in tūi monitoring if you are keen! Together we can bring back the tūi song to Canterbury!

Design a poster/leaflet to inform the community of the tūi, the reintroduction and the importance of recording sightings on Naturewatch!

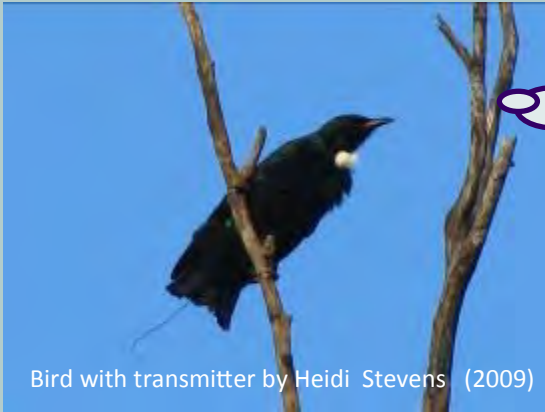
2. Radio-tracking

Apart from recording observations of tūi, some tūi are also occasionally fitted with transmitters. These transmitters emit a signal that is picked up through a monitoring technique called radio-tracking. Radio tracking allows us to monitor the movement and behaviour of tūi, so we can find out more about this fascinating bird and work out ways to help protect it from any threats (e.g. trapping predators).



Patsy Dart (2010)

Your class may have the chance to help with this monitoring work. Your teacher could contact the Department of Conservation or email toni.watts@enviroschools.org.nz to find out if it is possible to learn more about radio tracking.



Bird with transmitter by Heidi Stevens (2009)

You are now on your way to being a tūi expert! Go out and share your knowledge with the rest of your community!

FEEDBACK

We hope you have enjoyed learning about the tūi and are now as passionate about this bird as we at the Banks Peninsula Conservation Trust are! In order to make this education kit as useful as possible for other schools we would really appreciate it if you could give us some feedback. You could email feedback to enquiries@bpct.org.nz or post to BPCT, P O Box 172, Akaroa 7542.

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?

How could I share what I have learned in this education kit with others?

Teachers Hand Out—To support the Tūi Education Kit

Tūi facts

- Endemic (unique) to New Zealand
- Medium sized (30 cm)
- Fully protected in New Zealand
- Passerine (see definition in Wikipedia)
- Has brown feathers on its back and flanks, a multi-coloured iridescent sheen that changes in the light, and a small amount of white-shafted feathers on the back and sides of the neck the produce a lacy looking collar and two unusual white feathered tufts at the throat called poi.
- Their beak is perfectly curved to slip into long narrow throated flowers and their thin tongue is designed to brush up nectar.

Cultural interest

- The name tūi is from the Maori language name tūi, and is the species' formal common name.
- Plural is commonly written tūi following Maori usage.
- Early European colonists called it the Parsons bird because at first glance the bird appears completely black except for a small tuft of white feathers at its neck and a small white wing patch, thus looking like a parson in clerical attire. Students of Jane Austin would also know that a Parson was purported to have a beady and watchful eye.
- In the 1880's a law was passed banning the hunting of the tūi. They were eaten by Maori and early Europeans who liked them in a 'pie' and used their skin to line ladies hats!

Distribution, habitat and threats

- Tūi are found through most of New Zealand (except in Banks Peninsula between the 1960s to 2009. They are especially common in the North Island and the west and south coasts of the South Island, Stewart Island and the Chatham Islands. Chatham Islands has its own species of tūi .
- Other populations live on Raoul Island in the Kermadecs and in the Auckland Islands (where, with the bellbird, it is the most southerly species of honeyeater).
- Tūi are scarce in the drier, largely open country east of the Southern Alps (Canterbury), and were also once scarce in the Waikato region.
- Populations have declined since human settlement due to habitat destruction and introduced pests.
- The species is still considered secure.
- Largest mammalian threats are through predation, particularly by stoats which compete for food and sometimes take eggs. Rats are also a significant threat.
- Another major threat is destruction of habitat.
- Prefer broadleaf forests below 1500 m but can tolerate small remnant patches of vegetation, regrowth, exotic plantations and well-vegetated suburbs.
- Usually seen singly, in pairs, or small family groups but can congregate in large numbers around food sources, often in company of bellbirds, kereru and silvereyes.
- Will live where there is a balance of ground cover, shrubs and trees but will commute more than 10 km daily to feed on rich sources of nectar.

Feeding

- Nectar is normal diet
- Fruits and insects also eaten and pollen and seeds eaten occasionally.
- Favoured food: native kowhai, puriri, kahikatea, NZ flax, kaka beak, rewarewa, rata, pohutakawa, and introduced trees such as strawberry tree, banksia, flowering cherries and bottle-brushes.
- Particularly popular is the NZ flax whose nectar sometimes ferments, resulting in tūi flying in a fashion that suggests they might be drunk.

- Tūī use fruit only when nectar availability fails, usually during autumn and early winter.
- Insect feeding becomes more popular during summer and autumn when more insects are available.
- Moths main prey species during winter and are caught using hawking. Gleaning more common in spring when more juvenile insects around.
- With its brush-tongue and long bill for taking nectar, the tūī has to rely on swallowing fruits whole, which through size limits the range of fruit available to tūī .
- At concentrated food sources, access is determined by an absolute social hierarchy.
- Tūī is the largest and heaviest of the honeyeaters and is thus restricted to flowers accessible from the plant stem.

Song

- Call combines bellbird-like notes with clicks, cackles, timber-like creaks and groans, and wheezing sounds.
- As a songbird the tūī has two voice boxes which enables a range of vocalisations
- Song exhibits geographical, seasonal, gender and individual variation
- Some sounds beyond human hearing. Can observe gaps in sounds when beak is moving and throat tufts throbbing
- Will sing at night, especially around the full moon period.
- They are first in the dawn chorus, last at dusk, often singing during the day while other birds are silent. A female will sing while she is nesting and her mate in a nearby tree will sing back to her.
- Ability to imitate human speech
- Trained by Maori to imitate speech

Behaviour

- Males can be very aggressive, chasing all other birds, large and small, away from their territory
- Will also attack other tūī who fly into a favoured feeding tree
- Will often erect their feathers in an attempt to look larger and intimidating
- Short wide wings make flight loud yet enable great manoeuvrability in their preferred dense forest habitat
- They fly at great speeds, the wings whirring characteristically, the loud and noisy flying caused by a notch in the eighth primary that makes the wing tips flutter.
- Even though several tūī may feed in the same tree they have clearly defined territories. Outside of the breeding season they become partially nomadic and travel to towns and rural gardens and forest patches in search of good sources of nectar and fruit. Some birds each year summer regularly occupy breeding and winter feeding territories that are 20 plus kilometres apart.
- Tūī defend exclusive feeding territories yet breeding territories are not exclusive and access to nectar is determined by distance to nest site.
- Tūī must move to maintain nectar access throughout the year yet the need for a localised nesting site provides a constraint during breeding season.
- Nesting restricted to areas with reliable spring and summer nectar.
- Many ornithophilous (bird pollinated) plants in NZ are large trees that are widely dispersed and within each species flowering is often asynchronous. Because of this asynchronous flowering many tūī try to use the same tree and levels of aggressive behaviour and competition are high.
- Dominant individuals are typically male, older, and close residents. Females rise in status and approach that of their mates during the breeding season. Similar to bellbirds.
- A study on Tiritiri Island showed that tūī were able to establish early breeding areas and subsequently obtain the earliest nectar. The correlation between establishment of breeding areas and subsequent nectar availability suggests that tūī were responding to, and were able to monitor, future nectar.

- The first birds to obtain nectar were first to breed and this may provide two advantages. Firstly, these birds had the greatest chance of re-nesting or raising a second brood while nectar was still available. Secondly, by nesting early, their offspring were the oldest. Their greater age and size appeared to allow these chicks to dominate other chicks, allowing them greater access to autumn and winter food.
- When interspecific (between species) competition occurs between New Zealand's three species of honeyeater there is a hierarchy with tūī on top, and bellbirds and stitchbirds successively below.
- Breeding season: early spring. Courtship September and October, breeding between September to January.
- During breeding season tūī sing high up in trees in the early morning and late afternoon
- To cement the relationship, tūī will sing duets with their chosen partner.
- Females build nests of twigs, grasses and mosses.
- Both adults feed the young
- Tūī chicks will leave home after about 3 weeks.

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The Pest Game

This is a game that introduces students to the following concepts:

NZ native fauna

Camouflage in native birds

Different senses used by birds and mammals to hunt for food

How NZ's biodiversity has been reduced by introduced species

Some important facts student need to know to get the most out of the game.

NZ native birds filled all the niches usually occupied by mammals. The eagles were the lions of the sky.

Birds use their eyesight to hunt and therefore birds being hunted rely often on camouflage and sitting still to escape being caught. (eg the kakapo.)

Many birds (now extinct) nested on the ground

Many birds were weak fliers

N.B. The numbers of pests used depends on the size of the group

Activity	Info and Questions
1. Define the boundaries of an area Students move around as if they are native birds or stand still like trees. This is what it was like before humans came to Aotearoa.	What was living in NZ before people arrived? (Lots of birds -only 2 types of bat -only mammal, insects, and reptiles). What sorts were there? How did they move, What did they eat? How did they hunt? How did they escape predators?

<p>2. Introduce a kiore by giving one student a mask. The rat or kiore is able to tag anyone of the students. If they are tagged they must stand with their arms out like a tree. The other students (that have not been tagged- the birds) are allowed to tag the tree so it can become a bird again.</p> <p>After each round of the game find out how many students have become trees - what effect are the predators having?</p>	<p>Who were the first people to arrive in Aotearoa?</p> <p>The kiore was the first pest to come to New Zealand, arriving with Maori. It spread throughout New Zealand but did not have a huge impact on the environment because it is small, and mostly vegetarian.</p> <p>How could the kiore affect the birds?</p> <p>Did it have much impact on bird populations?</p>
<p>3. Introduce another rat this is the ship rat that arrived in NZ with Captain Cook. Play the game again.</p>	<p>Who were the next people to arrive in NZ?</p> <p>The ship rat could climb trees.</p> <p>How would this effect birds?</p>
<p>4. Introduce four weasels and 2 cats. These animals can do the same as the rat in the game,</p>	<p>With more and more Europeans arriving they brought with them other animals which became pests.</p> <p>Why did they bring cats?</p> <p>Why did they bring weasels?</p> <p>What sense did these carnivores hunt with?</p> <p>How are the birds effected now?</p>

4. Next introduce 4 -5 possums. They can only tag the trees. Once a tree is tagged it is out of the game and must stand on the area out of the game boundary.

At the end of this round need to look at how many birds are left/trees etc.

Why were possums introduced?

How do they affect birds?

How do they affect trees?

As the game progresses the number of native birds and trees diminish and reflects the effect of pests on the environment.

Reflection

Did you have fun? Why?

What did you learn?

Name the pests included in the game

Where did they come from?

Why were they 'brought' to New Zealand?

Are there any other introduced pests in New Zealand? Name the ones you know.

How are they impacting on our environment?

What is happening to our forests and biodiversity?

What has people's role in this been?

Explain why decreasing biodiversity is a concern?

What can we do to stop this happening?

What can you do at school, home, community, nationally?,