Nelson Lakes National Park is a stunningly scenic place with the lakes, beech forest, and mountains, packaged into what has been termed ‘New Zealand’s most user friendly National Park’. Amongst conservation organisations the world over, a relatively small area near Lake Rotoiti, has become famous in the last few years. The Rotoiti Nature Recovery Project is an ambitious and very successful "Mainland Island". A "Mainland Island" is a term for an area under intensive pest control. The aim is to return an area of honey dew native beech forest, back to its original pre-human, pest free state.

The National Park’s Visitor Centre has excellent displays, an audio visual show/video viewing room, and close by are easy walks with information panels. The environmental education unit “A Day at Rotoiti” provides a set of work sheets that these activities compliment.

**HOW TO GET THERE**

Lake Rotoiti is located about 70 km south west of Nelson. From Blenheim it is 1 ½ hour drive up the Wairau Valley. From Nelson take the main road south to Belgrove and turn off left at the sign. Follow the road to Top House Corner to meet Highway 63, turn right to Lake Rotoiti (also about 1 ½ hour drive). From the West Coast or Canterbury turn off at Kawatiri Junction and travel 25km to Lake Rotoiti.
FACILITIES CHECKLIST

• Good parking.
• Wheelchair accessible tracks are available into the beech forest near the lake.
• Toilets are available in many locations, including the lake front, camping areas and at the Visitor Centre.
• Water is available at the Visitor Centre, lake water should be boiled.
• There is ample space for activities.
• Lake Rotoiti is ideally located for both day and trips and school camps. There is a shop/petrol station in St Arnaud township a short distance from the Visitor Centre.
• Rotoiti Lodge is a well set-up education lodge designed for large numbers of children in boys and girls sections. For bookings phone Rotoiti Lodge office (03-521 1820). For smaller groups there is Red Deer Lodge, owned and operated by NZ Deerstalkers Assn (03-521 1886).
• A range of tracks is available from quick five minute wanders to serious alpine routes. Mountain bikes are not allowed on tracks in National Parks. There are some nearby tracks that can be ridden, enquire at the Visitor Centre.
• The Visitor Centre has displays on the Rotoiti Nature Recovery Project, geology, beech trees and the history of the area.

HAZARDS

• The lake has several small jetties extending out into deeper water.
• Wasps particularly further away from the Rotoiti Nature Recovery Project area can be a problem. Check to see if anyone is known to be allergic.
• Bumblebees can also reach quite high numbers at certain times of the year, although they are generally not as aggressive as wasps.
• Traps and poison bait stations are located in the Rotoiti Nature Recovery Project area, warning signs are in place.
• Sand flies are usually present.
NATURAL HISTORY

The majority of the trees in the park are beech of three different species. Mountain beech grows on the higher slopes, while predominantly silver beech grows lower down interspersed with red beech. The understorey has a variety of plants like broadleaf, wineberry, coprosmas, ferns and mosses.

Bellbirds can make the forest ring with their song, and the recently opened bellbird walk is a great place to watch their antics. Bellbirds and South Island robins are increasing in numbers due to the efforts of the recovery program. With less competition from wasps for the honeydew and the reduction in the number of rats and mice for insects and seeds, the future for these forest birds looks good. Kaka are breeding much better as a result of work to control stoats who eat their eggs and young.

HISTORY

Both lakes in Nelson Lakes National Park were used as food gathering places by Maori travelling to and from the West Coast to collect and trade greenstone (pounamu). By the 1840s the flat land was being grazed and as the scenic values became recognised, it became popular as a holiday spot. The National Park was formed in 1956. In 1998 the Rotoiti Nature Recovery Project began.

ACTIVITIES

Pre-trip classroom preparation

The DOC resource "A day at Lake Rotoiti" provides a vital introduction to the concept of introduced and native species and work sheets based on the interpretation panels. A short seven minute video called "We have it all (except snakes)" is also available. Contact DOC at St Arnaud to let them know you plan a visit.

Introduce the class to concepts relating to predators and prey, and competition between species for limited food. Introduced animals are often quicker at breeding and have fewer predators than the native species so their numbers increase rapidly. By weight of numbers introduced species will out compete the native animals for food and habitat.

The Visitor Centre has good introductory material on predation, competition, pest management and beech forests. If there is a video you would like to watch, this can be arranged in the audio-visual room at the centre.

Before leaving school you may like to carry out a "sound log" exercise (see Pelorus Super Site resource). This could be repeated at Rotoiti and results compared.

Things to bring

- Paper and pencils.
- 10 shallow plastic containers, and some sugar.
- A small amount of insect mesh.
- Some string.
- Insect identification book "Life-sized NZ insects" Andrew Crowe or similar.
STARTER ACTIVITIES

A. Stoat and kaka (adapted from an idea by Scott Nicol)

Define a large circle in which to play, it should be big enough for everyone to run about in but not so big as to lose the focus of the activity.

Everybody, except one person, is a kaka and can ‘fly about’ and have fun. The other person is the stoat and must try to tag the kaka. Once tagged a kaka must lie down immediately on their back with their legs and arms in the air (dead ant style).

Four other kaka are able to carry the ‘dead one’ to the boundary thus reviving the bird. During the carrying process kaka cannot be tagged by the stoat. Once revived all kaka re-enter the play. Try this combination for a few minutes until you find out if the stoat will ever make the kaka go extinct.

Try again with two stoats and, if you want, three stoats. You should find with more predators that in quite a short time the kaka will inevitably go extinct.

What can we learn from this exercise? Predators in very low numbers can sometimes be tolerated. If the predator numbers increase, they may quite quickly have a devastating effect on natural populations. If the numbers of predators aren’t controlled the extinction can occur before anyone realises that there was a problem.

This activity would be a good lead into other learning experiences based on kaka.

B. Sugar fix

This game illustrates the following interrelationship and effect of too many wasps on native bird numbers. Before you start the game, children can taste honeydew by carefully touching the end of a filament. Remember this is part of the insect! The game needs a certain level of co-operation from the students as there is quite a lot happening and as a leader you can’t always be following everything!

Beech tree → scale insect → bellbird → falcon  
(makes honeydew) wasp

First we need a beech tree with some scale insects feeding off the sap. Use four children to be the beech tree and ask them to load up their pockets with small stones, about 15 – 20 each is sufficient.

Stand them back to back to represent one or two beech trees. Every 10 seconds they need to place one stone on their open hand. This represents the honeydew droplet produced by the scale insect. Assign someone with a watch to be the 10 second timekeeper and indicate to the ‘tree’ when to put a stone out.

Someone else needs to be a baby bellbird in its nest about 20 to 30 m away from ‘the tree’.

We then need a parent bellbird to collect up to five ‘droplets’ (stones) at a time and fly back to give them to the baby.

Have one member of the class be a ‘DOC person’ watching the bellbird chick to see how many droplets get fed.

The rest of the class can stand between the ‘tree’ and the ‘baby bellbird’ as extra forest trees. The parent bird must weave in and out of these trees when flying between the nest and the tree. Now start the simulation.

Slightly more honeydew should be produced than the bellbird can keep up with. The chick should be happy and well fed!
Now we add in the wasp! The wasp can only take one drop (stone) at a time but its nest is only three metres away! Keep the simulation going, the bellbird will find it increasingly hard to collect the droplets with the wasp there, after 20 seconds or so put two wasps in (wasps breed fast!), then 3. The bellbird chick will be not be as happy as before and the parent bird will be increasingly frustrated.

Stop the simulation and discuss what was happening. Ask the ‘DOC person’ to explain what happened when the wasps came. What will be the effect of a wasp poisoning program in the Rotoiti area? What might happen to the bellbird population?

You can use the simulation to help explain the interrelationships and energy flow through the forest.

IN THE ENVIRONMENT

A. Use the worksheets from ‘A Day at Lake Rotoiti’ on the bellbird walk

B. What effect has the wasp control had?

This activity will only work well in summer. The aim is to test what changes the wasp program has had on the other insects using the recovery area. By comparing a place within the Mainland Island pest control area to a place outside the area we should see some differences. It is essential to contact the DOC people at the Visitor Centre to tell them what you are doing in case members of the public ask about the experiment, and to find a suitable control location.

You will need 10 shallow, plastic containers. Place five containers inside the wasp control area and the other five outside the area. Place each set in similar settings as the other for the best comparison (eg. West facing, dry, sloping ground under beech forest). Partially fill the container with sugary water and leave for a few hours, to allow the insects to find the sugar supply. When you return note what types of insect are using them (you may even find bellbirds using them!). Keep watching and see how frequently visits are made to the dishes. You might want to try leaving them over night, although possums will probably disturb them in places out side the pest control areas. This experiment could be repeated back at your school, or in different forest types as comparisons.

C. Honeydew production

If you find a good honeydew tree being used by wasps you could try covering some of the trunk and it’s scale insects with wasp-proof insect mesh or a flexible plastic container tied around the tree with string. The mesh needs to be spaced away from the tree, so that the thin filaments from the scale insects are not touched. Leave it for 24 hours and return to see how much honeydew was produced in that time.

Do NOT allow children to poke wasps or stumble about off the track as wasp nests can be hard to see and are very dangerous. If the situation looks bad run for about 50 metres on the track – generally they won’t follow that far. Have your retreat planned!

D. Bird watch (toutouwai)

Keep a tally of the number of robins you see. Note if they have coloured bands. Spend five minutes listening and watching for birds. Keep a record of those you see. This is a method used by DOC staff to assess if bird numbers are changing.
ABOUT THE ENVIRONMENT

A. Interview
Prepare a list of interview questions that could be used in an interview with an older person who might be able to tell you what the bush at Rotoiti was like before wasps. The older person needs to see the questions before the students arrive.

FOR THE ENVIRONMENT

A. Discussion
Is what is happening at Rotoiti a good idea and who is helping it to happen?
What animals would you like to see reintroduced to the Recovery Project area? Find out from the Information Centre what re-introductions are planned. Have a look at the information on “Friends of Rotoiti”. Who are the friends and how are they helping?

B. Bird counts and monitoring
Use the techniques you learned at Rotoiti to investigate what special species exist close to where you live. Are there any local groups working to protect these habitats?

C. Possum trap
Try designing an efficient possum trap. It need not be one that kills the animals.

D. Where next?
Having seen what has happened at Rotoiti are there any places you think should be getting the same recovery treatment? Who would you need to write to? What would you say to them? What research could you do to help convince someone it needed to be done?

E. Debate
Divide the class into two groups to debate (for and against) the value of this fictitious proposal.
A developer is proposing to build an eight storey hotel complex at St Arnaud with heliport facilities to allow helitours and heliskiing. He also plans to have a fleet of cruise boats on the lake giving guided commentaries and dinner cruises. “We’d like to see gondola rides up the mountains too” he said.

OTHER RESOURCES AND INFORMATION

A variety of brochures, fact sheets, videos and a park handbook are available from the Visitor Centre at Rotoiti or Information Centres and DOC offices in Nelson and Marlborough.

"A day at Lake Rotoiti" - A full education kit has been produced for students at the year 8 and 9 level.


LINK: Pelorus Bridge Super Site.
• Activities relating to patterns in mature forest.
• Sound log.