PREDATOR FREE BAY OF PLENTY

EDUCATION RESOURCE

How to use the Predator Free BOP Education Resource

This Predator Free BOP education resource has been designed as a guide to developing lessons for your students. It will provide the context and background for creating a rat trapping programme in your school. There are very good resources available on multiple websites and we have tried to bring them altogether here to help with your lesson planning. This resource is best used online so you can access the links embedded in the document. Please let us know if you find something useful to add to the resource.

NZ LANDCARE TRUST
NGĀ MATAPOPORE WHENUA

Contents page

Protecting New Zealand's native species	2
Predators and their impacts	3
Rats!	4
Predator control solutions	7
Data and monitoring	9
What more can we do to protect NZ's environment?	10
Predator Free BOP	12
Predator Free NZ	13

This resource has been produced for Predator Free BOP by NZ Landcare Trust, with input from Envirohub and Bay Conservation Alliance and support of Bay of Plentry Regional Council, Western Bay of Plenty District Council, Tauranga City Council and Department of Conservation.

PROTECTING NEW ZEALAND'S NATIVE SPECIES

New Zealand's native species

NZ traditionally had no mammals, except for native bats. New Zealand's main animal species have always been birds, invertebrates and lizards. These animals have developed in isolation and many of these are endemic to New Zealand (do not exist anywhere else). Many of New Zealand's native birds and insects are flightless – they did not need to fly as there were few predators.

The decline of our native species

New Zealand's unique native species are in crisis, mainly due to predation from introduced species. Despite small local gains, the overall situation is getting worse. We have lost 43 species of birds in the last 800 years since human settlement. Today, 80 percent of our birds, 88 percent of our lizards and 100 percent of our frogs are threatened with extinction. In the 1970s, brown kiwi occupied 26 percent of forest area, but by the early 2000s this was down to 12 percent and we are losing two percent of the kiwi population each year. North Island kokako were found in nine percent of forests in the 1970s but now it is just two percent. Where there is regular pest control, these species are all doing well. However, most forests are not receiving regular pest control and in these areas, time is running out.

Useful links:

Find out more about saving NZ's reptiles and amphibians

Zealandia – Can we make NZ Predator Free?

Environment Southland – Enviroteach

Towards a predator free Taranaki – Predator Free school guidelines

Saving New Zealand's native birds

Whakatane Kiwi Trust education resource

DOC Video – Why NZ needs predator control

Ruud Kleinpaste's resources

A fun game – Possum picnic activity!

PREDATORS AND THEIR IMPACTS

What mammals have been introduced to New Zealand?

Mammals have been introduced to New Zealand for a variety of reasons:

- Rats and mice travelled as stowaways on waka and ships.
- Dogs arrived with Māori and Europeans as pets.
- Possums were brought in for the fur trade.
- Deer, tahr, moose, rabbits, wallabies, water fowl and chamois were brought in for hunting.
- Stoats, weasels, cats and ferrets were brought in to control rabbit numbers.
- Pigs and goats were introduced to New Zealand as food.
- Hedgehogs were introduced to remind people of their home in England and to control garden pests.
- Other birds, such as magpies, were introduced to control pastoral insect and bird pests, remind people of their homeland and for hunting purposes.

What impact do introduced predators have?

All introduced predators impact New Zealand's native animal and plant species:

- Mustelids and cats have a devastating effect on our native birdlife. They are very effective hunters and will eat native and endemic birds, their chicks and eggs, invertebrates, rodents, lizards, hedgehogs and fish.
- Possums are a serious pest animal in New Zealand and a threat to our forests and native wildlife. They eat leaves, flowers, leaf buds, fruit, eggs, birds, insects and snails.
- Mice and rats eat birds, seeds, snails, lizards, fruit, weta, eggs, chicks, larvae and flowers. The varied diet of rats and mice also makes them competitors with native wildlife for food sources. They also like to live in our homes and will chew on electrical wiring, raid cupboards and carry diseases with them.
- Feral deer and goats eat native seedlings and adult plants and contribute to erosion.
- Feral pigs dig up large areas of vegetation, eat native invertebrates, plants and birds.
- Feral deer, wallabies, goats and pigs hamper forest regeneration by browsing and trampling seedlings and saplings in the understorey. Browsing opens up the forest floor to create a habitat more suitable for possums and less suitable for natives, such as kiwi.
- Hedgehogs eat native weta, skinks, and the eggs and chicks of ground-nesting birds.
- A mast event is when plants sporadically have very high seed production. In a periodic 'mast event' of beech trees, stoat populations explode assisted by the increased food supply. Later, when the seed supplies run out, the higher numbers of predators have an even greater effect on populations of birds, weta, bats and landsnails. 2018-19 is a mast event.

Useful links:

Find out more about the pests in the Bay of Plenty

Pest Facts

Animal Pests A-Z

The impacts of pests on biodiversity

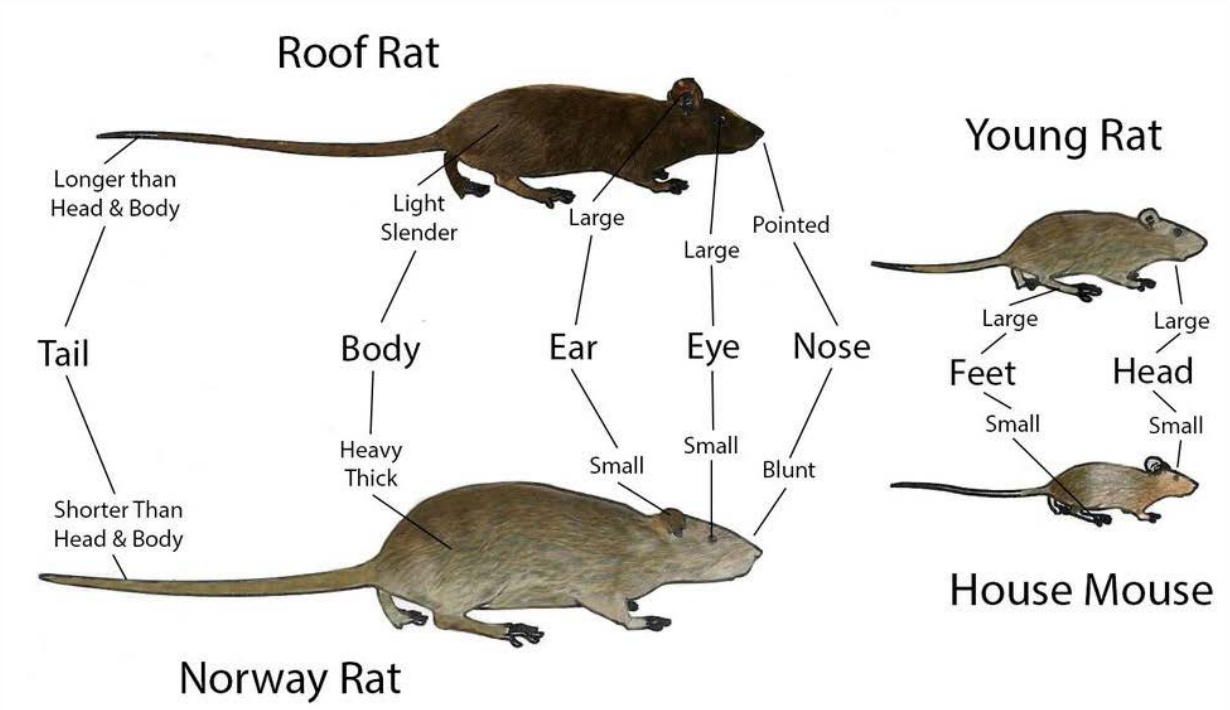
Pest slideshows and videos

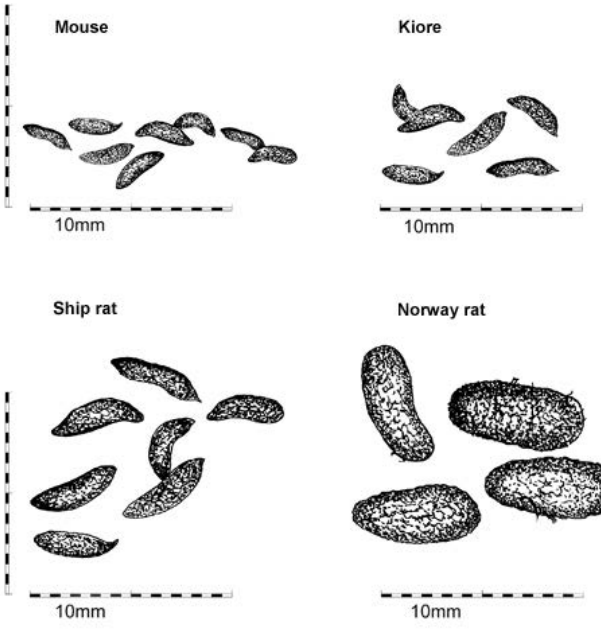
RATS!

Types of rats

Rats are a type of rodent. The main rat species in New Zealand are Ship rat, also known as Roof rat (Rattus rattus), Norway rat (Rattus norvegicus), Kiore, also know at Pacific or Polynesian rat (Rattus exulans).

(Image retrieved from: https://static1.squarespace.com/static/53437161e4b089b274b0ed46/t/53fe1997e4b0e51709f96abe/1409161625041/)





(Image retrieved from: http://www.pestdetective.org.nz/image?Type=clue&ID=499&Parent=&Clue=&Culprit=)

How do you know you have rats and where are they?

Ship rats are the most common rat in New Zealand, and are widespread in many different habitats including lowland podocarp-broadleaf forests and urban areas, particularly in gullies, near water bodies, compost and wood piles, and rubbish collection areas. They are good climbers, so they can access bird nests high in trees.

Norway rats are the larger rat species and commonly found near water sources like streams and estuaries.

Many of the pest animals in New Zealand are often hard to find. This is because many of them are nocturnal and/or reclusive, including the rat species. To find them, look for the indicators or signs they leave behind in the environment, these typically include:

1. Footprints, tracks

   Foot prints can be helpful pest animal identifiers, whether found on the ground or in tracking tunnels. Rats leave foot and tail marks in dusty areas.

2. Nests and burrows

   They will shred available materials such as ceiling insulation, cardboard, plastic and other soft items to make nests. Rats make burrows in and beneath your compost pile or rubbish bin.

3. Animal droppings or faeces (also known as scat)

   The deposits pests leave behind can help with identification of the pest. Rats can produce up to 40 droppings per night!

4. Vegetation damage

   Rats may leave evidence from feeding on fruit/nuts that are in or falling from the trees.

5. Kills signs

   Destroyed egg shells and bird or insect remains with rat bite marks. A dog or cat may bring home a dead rat carcass.

6. Smell

   Rodents leave an unpleasant musty soiled smell that is caused by acetate in their droppings and urine.

7. Sounds

   The Norway rat uses shrill squeals and whistles to socially communicate and a screaming alarm call when threatened, whereas the ship rat use high pitched squeaks for communication. They can be heard rustling in undergrowth or running through buildings, especially at night. Rats may chew through woodwork, walls and plastic to create tunnels or access food – this can be very noisy!

8. Rub marks and fur deposits

   Rats use established routes along skirting boards and walls due to their poor eyesight. Grease and dirt on their bodies leave smudges and dark marks on both objects and surfaces they repeatedly brush against. Ship rat fur is brown or black on the back and brown, white or black on the belly. Norway rats have coarse grey-brown, grey or black fur.

Tracking methods

Methods of tracking animal pests include tracking tunnels, dusting areas with flour or talc, chew cards and video monitoring.

Tracking tunnels

This technique uses a run through tunnel containing two pieces of paper or card either side of a pad coated or soaked with ink. As the rat travels through the tunnel it picks up the ink on its feet, which it transfers to the paper or card as it departs the tunnel leaving footprints behind for identification. You can also use a light dusting of flour or talc to establish if an area you suspect may have a rat infestation is active and check for fresh footprints the next day.

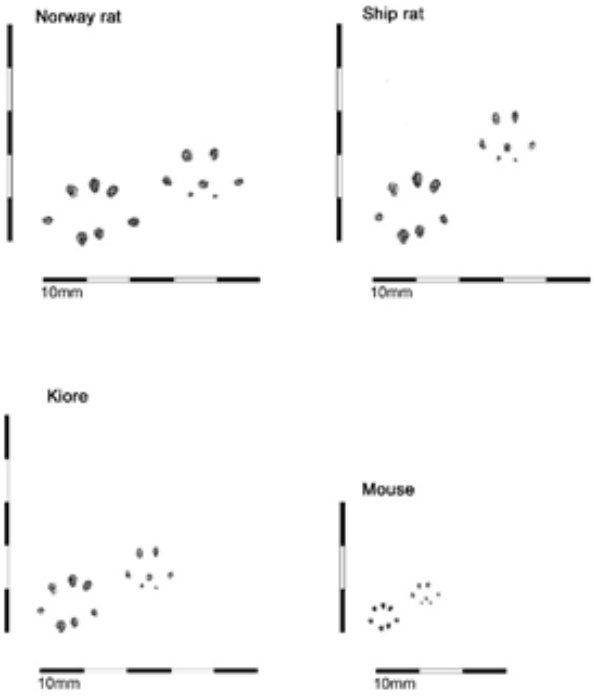
Chew cards

Chew cards are a great way to detect the presence of a range of predators including, rats, mice, stoats, cats, possums and hedgehogs. Chew cards contain tempting lures or highly palatable bait e.g. peanut butter. Chew cards can be made from corflute (same stuff as real estate signs are made from) or purchased. Place cards approximately 30cm above the ground in areas where you have seen evidence of predators i.e. along a fence line, near compost or rubbish bins, at the base of trees or wood piles. Leave cards out for a max of 7 nights when monitoring.

Reading the results

You can interpret the species which left the teeth marks behind on the surface of the chew card.

(Image retrieved from: http://www.landcare.org.nz/files/large/31/3659-c-chew__card02.jpg)



(Image retrieved from: http://www.pestdetective.org.nz/image?Type=clue&ID=508&Parent=&Clue=&Culprit=)

You can make or purchase tracking tunnels – see website resources for details.

Useful links:

How to make a tracking tunnel

Or buy a tracking tunnel here

How to make a chew card

Or buy a chew card here

Investigate animal pests in your green space

Find out which pest is what by the signs they leave

PREDATOR CONTROL SOLUTIONS

Snap traps vs. bait stations

Snap traps are easy to set and an inexpensive option. These small wooden or plastic traps are one of the most effective means of humanely killing rats.

Traps housed in a trapping tunnel provide protection for children and non-target animals like household pets. No toxic poison is used, making traps a safer option for use in urban areas and in places like schools where children are.

While trapping is generally recommended for controlling rats indoors, when the number of rats around a building or in the bush is high, you might need to use toxic baits to control the infestation.

Bait stations are enclosed equipment in which a toxic rodenticide bait (poison) is placed. The station does not trap the rat, rather it provides further protection against accidental contact or ingestion by children or non-target animals.

The poison can be transferred from one animal to another up the food chain in the process known as bioaccumulation. This can result in unintended by-kill of non-target species.

Lures

Contrary to popular belief, cheese is not the best bait to use on traps. Peanut butter can be very attractive to rats. Crunchy, unsalted is preferred. Other good options can be Nutella, milk chocolate (yes, rats love chocolate too!), nuts, dried food and meat i.e. bacon leftovers.

Placement of traps

Place traps inside the rat tunnels on a flat surface near walls, fence, house, compost bin or under cover. Rats do not travel over open areas, so avoid placing traps on open ground. If you're not getting results, try a different spot.

Check and rebait your trap regularly

Ideally check the trap daily until you're getting results and the rate goes down, then check twice a week throughout the year.

Rats don't like new things so don't be disappointed if you don't catch something straight away. It may take 2-4 weeks before the rats get used to the trap being there and will give it a go.

The reason we check the trap twice a week is so that we don't come across a decomposing rat, and have to clean it up. Also, it is important to refresh the bait twice a week as ants or slugs may eat it.

If you stop getting results, please keep it up as you never know when there will be reinvasion. We want New Zealander's to make backyard trapping a habit just like walking the dog or hanging out the washing. This way, we can get rat numbers down and keep them down.

How to dispose of a rat

If space permits, the preferred disposable method is to dig a hole and bury the rat carcass. This method ensures the rat becomes a food resource for other organisms. Another option is to put the rat in the household rubbish collection. In bush areas, caught rats can be thrown into the bush.

Report your kill

Don't forget to report your kill every time you catch something, either a mouse, rat or mustelid. Report it on the predatorfreebop.nz website, using the Log a Kill online form. This will help us monitor the progress across the Bay of Plenty.

Seasonal trends

You will see rats and mice more during different seasons. That's another reason why it is important to check and rebait your trap twice a week throughout the year.

Summer: When trees and plants produce lots of seed.

Autumn: When seed is abundant, the rat population increases rapidly and feasts on the seeds.

Winter: Stoats feed on abundant rodents.

Spring: When the seed rots or germinates, plagues of rats turn to bird eggs and nestlings.

Summer onwards: Stoat numbers explode and they also turn to birds for food.

Useful links:

Predator Free beginners guide

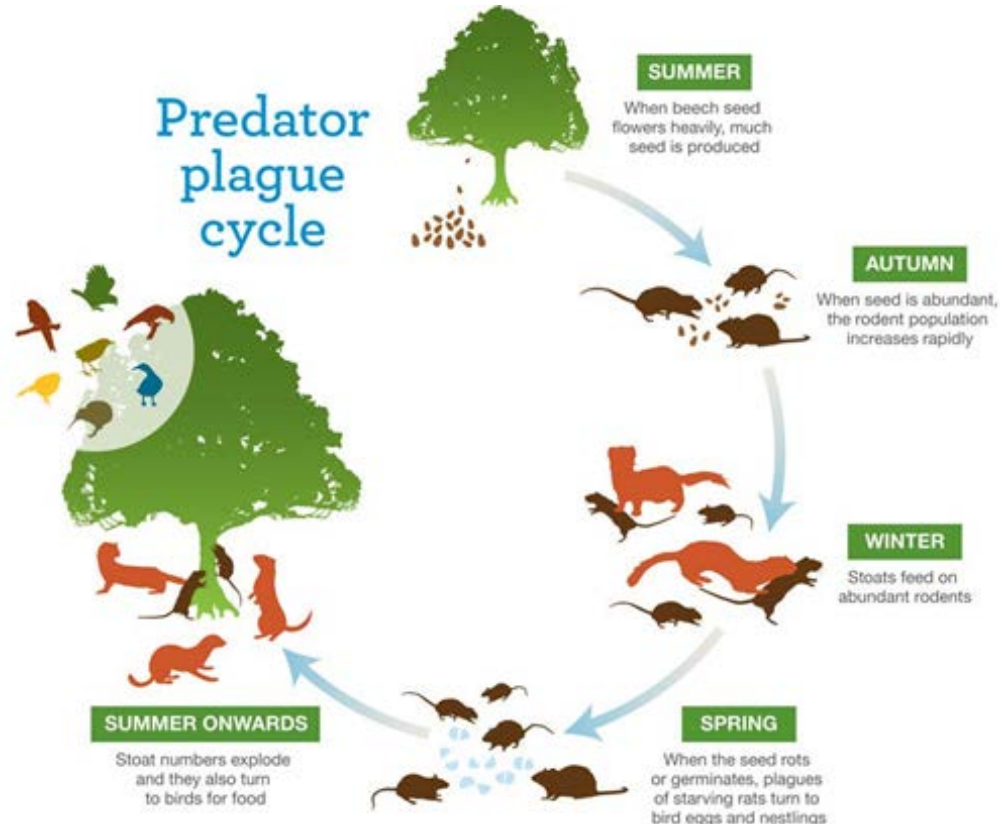
DOC backyard trapping

Useful videos on how to set a trap:

Snap E

Victor Pro

(Image retrieved from: https://www.doc.govt.nz/our-work/Tiakina-Nga-Manu/predator-plague-cycle/)



DATA AND MONITORING

How to collate data

Using a set form is a beneficial way to keep the data gathered consistently. You can then transcribe the data into a spreadsheet and perform statistical analysis looking at types of species, number of predators, number of predator caught. For example, surveys using tracking tunnels and/or chew cards could be performed seasonally and compared annually. Trapping data could be compared monthly and annually to look for trends (see example form in website resources).

Report all predator kills in the BOP at www.predatorfreebop.nz . This provides useful data about the predator population in the Bay of Plenty.

Measure the benefits of trapping

To be able to quantify the benefits of a trapping programme, it is useful to determine baseline measures.

Conducting surveys using consistent methods such as a five-minute bird count is useful (see website resources for information). Additionally, it can be useful to identify what species of insects, animal and plants you have in the area where you intend to trap for predators.

Following a period of trapping such as six months or a year, a follow up survey could be conducted and compared to the original or previous survey to look for changes and taking note of the seasonal trends for predators (see picture below).

Useful links:

Bird surveys

Invertebrate surveys and ID

Bio Blitz

Sample data collection form

Report all pest kills and trap checks in BOP

WHAT MORE CAN WE DO TO PROTECT NZ'S ENVIRONMENT?

Promote trapping to your wider community

Why not set up a local street or community group to get all your local area trapping to make sure those rat and mouse numbers go down and stay down. Check out if there is a group already in your area that you could help or visit PredatorFreeBOP.nz to get advice on how to get your neighborhood trapping.

Reminders in your school newsletter

Use your school newsletter and blogsites as a way to raise awareness and knowledge, spread Predator Free messages and encourage people to continue to set and check their traps.

Give out traps from your school

Your school is the centre of your community. You can access traps to give out from Predator Free BOP. You could use your school reception as a central point to distribute traps or you could have traps available at a school event.

Find a landcare group to support with their trapping

There are many landcare groups that would really appreciate a hand with their work. They rely on volunteers to support their environmental work and are always looking for more. Contact the Bay of Plenty Regional Council for a list of landcare groups that are near you and contact them to find out how you can help. Often their work involves ongoing predator control.

Build bird feeders and plant bird feeding plants

Lower rat numbers are going to help create a better habitat for birds and native invertebrates. There are other ways you can help bring back the birds while you are keeping predator numbers down. Building bird feeders for your school or backyard is a fun way to invite birds into your backyard. If you are looking at planting trees, why not plant species that will attract the birds and provide food for them.

Make a bird-saving cat collar

A prowling neighborhood cat can pose a problem to birds, especially when they are fledgling (learning to fly). One way to curb a cat's feasting habits is to give the birds some notice on when a cat is prowling. Making sure your cat has a bright, large collars have been shown to lower their chances of a cat catching a bird. You can make them easily with offcuts of bright material.

Run a Bioblitz

Run a school or community BioBlitz to find out what animals and invertebrates are out there so you know what you are protecting. This is a fun event where everyone involved looks for bugs and animals and tries to figure out what they are. You might even find a new species that you can name!

Link with your local environmental education programmes.

There are other environmental school programmes and resources out there that would make great additions to your Predator Free programme.

Useful links:

Link to local predator free groups

Link to landcare group list

Fun activities including making bird feeders

Attracting to birds to your garden – planting tips

Make your own cat collar (and save the birds!)

Bio Blitz – taking a snapshot of local biodiversity

Garden Bird Survey

Find out about local environment education programmes:

Wild about New Zealand

Maketu Ongatoro Wetland Society

Bay Conservation Alliance

Learning through Discovery

House of Science kits

Estuary and stream clean ups

Discovery Through Nature

Tauranga City Council education programmes

Western Bay of Plenty District council education programmes

Bay of Plenty Regional Council education programmes

PREDATOR FREE BOP

Predator Free BOP Community Groups

Predator Free BOP wants to have one in five backyards trapping and to make it everyone's new regular habit, just like putting out your compost or hanging up your washing. We are focused on getting communities up and running with leaders and trappers across Tauranga City and and the wider Bay of Plenty. To find out what communities are trapping, check out our website.

Landcare Groups doing predator control

There are many care groups that are trapping for rats and mustelids in reserve and bush areas around where we live. They are always looking for people to join their volunteer programmes. It can be really fun checking a whole line of traps and resetting them with bait. To find out more about groups you could join or support, check out the Envirohub and Bay Conservation Alliance websites.

Predator Free BOP organisations and their work

Several organisations are involved with Predator Free BOP, all of which are involved with predator control and biosecurity. Their websites have lots more information on biosecurity.

Useful links:

www.predatorfreebop.nz

Link to care groups

Predator Free Organisations:

Bay Conservation Trust

NZ Landcare Trust

Envirohub

BOP Regional Council

Tauranga City Council

Western Bay of Plenty District Council

Department of Conservation

PREDATOR FREE NZ

What is Predator Free 2050?

Predator Free 2050 is an ambitious goal to rid New Zealand of the most damaging introduced predators that threaten our nation's natural taonga. We all have a role to play in achieving this goal and we can start with some simple steps.

Predator Free NZ success stories

There are many individuals and groups in the rural and urban landscape that have started trapping with great success. Many are starting to see native birds returning where there were once only rodents, and in a short period of time. Even schools are contributing to the successes. Find out more about some of these inspiring stories and learn some tips from the growing number of expert trappers.

Predator Control Methods and Technology

There are many methods of controlling predators on a large scale. Sometimes trapping is the best method where it is easy to get to and there are trappers available. Other methods can be more useful in harder to reach places and over large patches of land. 1080 is a poison that has been used in New Zealand successfully to kill mammals, especially possums. However, many people believe that the use of 1080 should be banned. Alternative technology and trapping methods are continuously being researched in a bid to find the most effective and humane way of ridding our country of introduced predators.

Predator Control Ethics

Many people believe that killing predators is against animal rights and we should not be encouraging our communities to kill animals in order to save birds. Many people believe that animals should be allowed to co-exist without human intervention. This is a question of our 'bioethics' and a panel of experts have been looking at this as new predator control technologies are launched into the New Zealand market and the predator control 'killing' momentum grows.

Useful links:

Why Predator Free 2050

The Predator Free 2050 goal, tactics and technology

Who's involved in predator Free 2050?

Stories about predator Free 2050

Predator Free Schools

History of predator control in NZ

1080

What is 1080, and why do people oppose it?

Science and environment - 1080

Predator Free NZ latest research

Bioethics of predator control

The ethics of predator control