Taking care of our taonga

New Zealand Government

Pest control in Egmont National Park

The impact of pests on the park

Egmont National Park is a special place, treasured by the people of Taranaki and New Zealand.

It has plants and animals found nowhere else in New Zealand, and some that are found nowhere else in the world.

The park has over 40 bird species, including the endangered North Island brown kiwi, fern bird, whio/blue duck and also tomtit, rifleman and bellbird.

There are about 650 species of native plants and a diverse range of forest types, including a remnant of coastal kohekohe forest on the Kaitake Range. This type of forest has disappeared from much of Taranaki.

These native species are heavily predated by introduced pest mammals.

The Department of Conservation actively carries out animal pest control in the park in an effort to prevent further decline or extinction of this vast array of precious native plants and animals.

The impact of pests on the park

The adverse impacts of possums and rats preying on eggs, chicks and nesting females in Egmont National Park has contributed to the decline of many bird species.

Possums have caused significant damage to our landscape by stripping palatable plant species such as mistletoe, fuschia and other native plants.

Goats eat native plants and trample large areas of vegetation, effectively stopping natural forest regeneration by eating seedlings, saplings and litter fall off the forest floor.

In New Zealand, the impact of stoats, ferrets and weasels on threatened and endangered bird species is of particular concern

Stoat, even in low numbers in the forest, are currently the major factor contributing to the continuing decline of mainland kiwi populations.

The Department of Conservation (DOC) uses all methods available for animal pest control in Egmont National Park to help protect our native flora and fauna. We have a number of "tools" in our toolbox of pest control.

The northern brown kiwi is just one of many threatened species living in Egmont National Park.

Goat control

Goat control began in the park in 1925. Since that time over 97,000 goats have been killed and goat numbers are now very low with goats scattered throughout the park. DOC runs a team of hunters in the park for around six months every year to keep goat numbers down.

Without this ongoing control goat numbers would rapidly increase with the population doubling around every 20 months.

Descriptions of the park made by chief ranger Gordon Atkinson back in 1945 give us some idea of what the park was like before goat numbers were brought under control:

"Egmont National Park is a truly ghastly spectacle. Untold thousands of large trees have been ring barked and destroyed… there are no seedlings." Reports of dead areas many hectares in size were a common theme of the time.

In contrast the vegetation today has improved greatly.

With a lower goat population the understory has recovered and young saplings and seedlings show that goats are currently having little impact on the vegetation within the park.

Without ongoing pest control the goat population within the park could double in around 20 months.

Protecting the Whio & Kiwi

Stoat control in Egmont National Park helps provide protection to threatened species particularly the whio/blue duck and North Island brown kiwi. Trap lines cover 7500ha of the park and are checked 18 times a year, with twice monthly checks in the peak period of October-March, dropping to monthly checks from April to September.

The Bank of New Zealand Kiwi Recovery programme is a collaborative venture between the Taranaki Kiwi Trust and DOC. Trapping aimed at protecting kiwi is carried out with the help of other supporters of this programme include the New Plymouth District Council and the TSB Trust. The trapping associated with the whio protection and establishing a population of the duck in Taranaki is carried out with the support of the Central North Island Blue Duck Recovery Trust.

As well as the trap network within the park, an extensive trapping programme has been established outside the park to improve protection to whio who move outside the boundary, and providing a buffer for the trapped area inside the park. These traps are maintained by the East Taranaki Environment Trust with the support of the local landowners and the NZ Biodiversity Condition Fund.

Trapping programme a success

Trapping stoats has boosted the survival rate of the local whio/blue duck population.

The trapping network has worked well with improved survival of released whio/blue duck juveniles, and fewer predated whio recorded after trapping began. In 2007/08 the whio population achieved successful breeding – only the second time this had occurred in many years in Egmont National Park. Improved survivorship and an increasing number of mature females on the mountain since trapping began are encouraging trends.

The reduction of stoat numbers has allowed DOC to release 40 vulnerable juvenile kiwi that have been hatched in sanctuaries and now returned to the park to boost the kiwi population.

The trapping may have benefits for others species – in particular the giant snail Powelliphanta 'Egmont' which is easy prey for rats and stoats.

Taking care of our taonga

Pest control in Egmont National Park

Possum Control

Possums have a huge impact on the forest canopy in Egmont National Park.

Possums have a huge impact on the forest canopy and subsequent flow on effects to the natural heritage of the park. Possums are opportunists and will also eat bird eggs, snails, invertebrates and any palatable plants such as the very rare Dactylanthus taylorii (NZ Wood rose) they come across.

Possum control in Egmont National Park has been an ongoing issue for many years. Ground trapping in the 33,000 ha park is not feasible. Due to the large area and remote rugged terrain making it difficult to get to on foot, large sections of the park would go untreated leaving many large pockets containing high possum numbers, resulting in widespread canopy loss in the park.

Bounty system fails to achieve targets

A possum bounty held in the Park from 1951 to 1961 also failed to achieve effective possum control. While possums were taken from easily accessible areas, in only one year did the possum kill exceed one possum per hectare – leaving the overall possum population unaffected. It is also not in the interest of possum hunters dependant on skins as an income, to kill all the possums.

Aerial possum control introduced

Possum population monitoring in the early 1990s showed us that their numbers were increasing while the forest condition continued to decline. A decision was made in 1993 to control possums using mostly aerial drops of 1080 laced baits.

The aim was to reduce the possum population to a level that would provide the forest canopy an opportunity to recover as much as possible. This was complemented by the Taranaki Regional Council treating a one kilometre wide buffer around the park.

Possum populations fell significantly but began to climb after a few years. Current knowledge suggests that it takes 7-10 years for a possum population to recover after control so the 1080 operation was repeated in 2002.

The "whole park" control effort was reinforced with further work at high priority sites containing endangered plants and animals that were more at risk to possum browse. In these relatively small areas possums are controlled at least once a year using hand laid cyanide-based Feratox.

Keeping the park boundary secure

DOC also does pest control work around the boundary of the park using ground control bait stations to help to maintain a secure boundary and this work complements the possum control being done by neighbouring landowners and the TRC.

Monitoring the forest

To monitor the forest condition DOC scientists look at a tree's canopy. This is called Foliar Browse Indexing (FBI). DOC uses this method in two ways in Egmont National Park – from the ground looking up at trees, and from a helicopter. The density of the tree canopy, its recovery from previous possum browsing, its level of current browsing, the amount of dead tree and the abundance of flowers and fruit are assessed and scored.

Ground FBI surveys were done in 1993/94. Since then several helicopter surveys have been completed with DOC staff visiting random sites in the park looking at around 800 trees each time.

Possum browse on a Ponga.

Monitoring possum numbers

The possum population in the park is monitored using a method called "trap catch monitoring". Lines of possum traps are set in each of the main areas of the park and are monitored for three nights. The number of possums caught per trap, per night is converted to a percentage figure which gives us an indication of the possum density in the various parts of the park.

Prior to the 2002 1080 operation possum trap catch monitoring rates were between 11% and 18%. After the treatment catch rates fell to an average 2.74%. We hope to reduce possum numbers to this level or lower with the next aerial drop.

Forest recovering

The possum control has had positive results. Prior to the 1080 drop in 1993/94 many of the canopy trees – particularly rata, kamahi and totara showed severe symptoms of die back and defoliation due to possum browse. Other species such as mahoe, fuchsia and five finger were also showing possum damage.

After the aerial 1080 drop damage was reduced dramatically until possum numbers began to increase. The 1080 aerial drop in 2002 resulted in similar figures with possum damage being reduced to minor levels.

Mountain cedar, a distinctive part of the Mountain's alpine forest, is a good example of this change. In 1994, many trees were suffering from heavy levels of possum browse and dieback. This damage, particularly direct signs of browse, dropped away after the 1080 operation. Although there was a small increase in damage prior to the 2002 operation, it dropped again, and overall tree condition has steadily improved since the 1990s.

Our target for the 2002 aerial 1080 operation was to see less than 10% of trees having very low density, damaged, canopies. No palatable species met these targets in 2001, with 20% of trees having very low foliage density in the canopy. In 2004 and 2007 only 5% of trees were in this state. We also hoped to see possum browse on less than half the trees surveyed. In 2001, more than 80% of trees showed signs of browse, but in 2004, less than 30% were affected.

A survey undertaken earlier this year found the forest is in better condition than other forests in the area that have never seen 1080 - however, possum browse was more frequent and more intense than the last survey two years ago. Browse was observed on most species but most frequent and severe on totara and mahoe.

Call to Action

Our monitoring shows us that while the forest is currently in good condition, possum numbers are increasing and we need to work quickly to keep the forest in good health. If we don't move ahead with another control operation soon possum numbers will rise and the forest will again suffer damage similar to that seen prior to 1993.

With this in mind DOC is planning another 1080 possum control operation in Egmont National Park. Operation Egmont is proposed for August/ September this year.

A possum scavenges eggs from a wood pigeon nest.
Image: Nga Manu Images.

Lifestyle block owner Phil Ramsdale has noticed a marked increase in native bird populations on his farm since the first aerial 1080 drop on Mt Taranaki/Egmont.

Bringing back the birds

When Phil Ramsdale and his family bought a 20 acre lifestyle block on the rim of Egmont National Park 17 years ago, birds were scarce, "It used to be that if you saw a pigeon or two and maybe the odd tui – you were lucky - you never saw any of the little birds."

That was before the first aerial 1080 drop over Egmont National Park in 1994, since then he has noticed a marked increase in bird populations. "Now we have flocks of wax eyes and riflemen and other little birds that we just didn't have before the 1080 drops."

Prior to the first aerial drop in 1994 Phil went to meetings and researched as much as he could about 1080. "I was concerned at the beginning – but in terms of results we have had no issues with it. While a better solution would be preferable as things go it's the best thing available at the moment."

Iwi opinion - Jamie Tuuta

Ngati Mutunga chairman Jaimie Tuuta says protecting our natural heritage from the decimation of possums is paramount.

Jamie says his initial concerns about uptake of 1080 on cultural species have been allayed. "The research done to date on puha, kuku, tuna and watercress strongly suggests that there is neglible risk of people being secondary poisoned by 1080 if they consume these species. This is, however, an area that we encourage the Department of Conservation to continue with ongoing monitoring and research."

1080 leaching into marae water bores was also a concern says Jamie – but monitoring during and after the 2002 aerial 1080 operation on Mount Taranaki showed no signs of 1080. Similar monitoring will be carried out in the proposed aerial drop.

"I am confident that ERMA has accepted the continued use of 1080 and that the Department will continue to follow strict regulations regarding its use in the environment. Until something better comes along 1080 is the most effective way we have of protecting our natural heritage."

Taking care of our taonga

Pest control in Egmont National Park

Planning for Operation Egmont

Planning is under way for the next 1080 aerial operation, which we have called Operation Egmont. The operation is proposed for August/September of this year. Cereal baits will be applied to the entire park by a helicopter using satellite navigation technology, which allows pilots to be sure of boundaries and ensure an even coverage of bait throughout the park.

It is proposed the helicopter will distribute the baits at a rate of up to 2.5kg per hectare. In previous years drops were conducted at much higher rate (1993/1994 operations were 5kg/ha and 2002 was 3 and 5 kg/ha) but research has shown that less bait is just as effective – especially if pre-feeding is carried out.

Pre-feeding involves applying non toxic bait about two weeks before the toxic baits are applied. The possums "learn" that the baits are ok to eat and are more likely to eat the toxic baits. The research shows that this type of feeding increases the effective kill of rats and secondary killing of stoats.

An advantage of 1080 is that although it is aimed at possums, it will have an impact on other introduced predators such a stoats, rats and ferrets. This helps efforts to improve populations of birds such as whio, kiwi and other native forest birds.

Talking it through

DOC staff have visited neighbouring farmers around the park to talk to them about the proposed Operation Egmont. While stock are not allowed in the park, the planned aerial operation runs along the park boundary adjoining farmland. Most farmers have been happy to talk to us as possums eat grass and pose a potential TB threat to their livelihoods. After feedback from farmers the aerial drop has been coordinated to occur after calving and we are working with farmers to minimise any possible risk to stock.

Regular meetings have been held with local iwi chairpersons, updating them on our plans and discussing any concerns they may have regarding the use of 1080. Hui have been held in both north and south Taranaki.

DOC is in the process of informing other park users of the proposed aerial drop.

Helicopters using satellite navigation make applying 1080 easier and safer.

Federated Farmers

Omata farmer and Taranaki Federated Farmers Provincial President Peter Adamski says the organisation supports the use of 1080 "It's currently the only mechanism we have to control the possum population on Mt Taranaki. We need to maintain low possum numbers to reduce the odds of possums ever coming into contact with cattle and contaminating herds with Tb Also, Taranaki farms carry out, under the supervision of TRC, on-farm control of possums with the self help program,"

Maintaining low possum numbers is important to reduce potential risk of TB contamination to stock says Taranaki Federated Farmers Provincial President Peter Adamski.

Water supplies

Public concern around 1080 health risks are generally focussed on the potential of exposure to the toxin via water.

1080 breaks down quickly in water and there is no evidence of any harmful levels of 1080 in New Zealand waterways.

To protect water supplies, DOC operations must meet stringent guidelines set by the Medical Officer of Health before an operation can go ahead. These procedures ensure that the risk of any potential hazard to human health is minimised.

During the two previous possum control operations in Egmont National Park water supplies (including bores) and streams were tested for 1080 contamination. No measurable amounts of 1080 were found despite detection being possible at 0.3 parts 1080 per billion parts water (ppb) in 1993/94 and improved to 0.1 ppb in 2003.

The Ministry of Health has set a safe drinking water level for 1080 of 3.5 ppb However, local Medical Officer's of Health, who are required to approve these operations, typically set a maximum level of 2 ppb before water supplies are considered safe. At this level a 60kg person would need to drink 2300 litres of contaminated water in one sitting to be at risk.

Most operations in New Zealand, including those in Egmont National Park have not crossed this threshold. Where this level has been exceeded the contamination has been temporary.

At the worst case contamination level recorded (4ppb) a 60Kg person would have needed to drink 31,000 litres of contaminated water in one sitting.

For the last 16 years more than 2000 water samples have been taken immediately after 1080 operations throughout New Zealand. The results revealed either zero or short lived trace levels only of 1080 – the risks, at those levels, to people were negligible.

As an added precaution DOC is liaising with local Taranaki councils to disconnect their public water supply intakes from the mountain during the 1080 operation. We are also working with neighbouring farmers to supply them with alternative domestic water supplies during the operation if they wish.

Speaking from experience

Strict controls mean there are fewer risks around the use of 1080 says East Taranaki Environment Trust chairwoman and farmer Karen Schumacher.

Karen Schumacher knows the use of aerial 1080 is an emotive topic but the chairwoman of East Taranaki Environment Trust has seen its positive results first hand.

"You can't fight emotion with logic - all you can do is speak from experience and I have seen the results of aerial 1080."

The East Taranaki Environment Trust (ETET) and the Taranaki Regional Council (TRC) aerially applied 1080 to a block of land in the Matau area back in 2005.

The primary focus of the aerial application was to save kiwi. "We researched the pros and cons of 1080," says Karen, "and, after talking to neighbouring farmers, decided to go ahead with it."

Along with kiwi the Matau area is rich with North Island robins, kereru, tui, New Zealand falcon, fern birds, white heads and other native birds.

"We went into the bush about a week after the 1080 application had occurred - we saw plenty of dead possums and feral cats - but no dead birds - in fact the bird life was amazing.

"The following spring and summer we were going into the bush and finding kiwi sign everywhere - adult kiwi and little juvenile kiwi footprints- it was cool!"

The 1080 operation had an unexpected spinoff - because there were very few possums around the fruit trees in the region had a bumper season. "Everyone was madly bottling fruit!"

Birdlife outside the 1080 area also increased, "one of the neighbouring farmers - every time she went into the garden a little North Island Robin now follows her around."

The conservation benefits of the 1080 aerial drop have been absolutely amazing says Karen "My husband went in to the area last week with a guy from the TRC - this guy was gobsmacked at the amount of kiwi sign and the healthy condition of the forest."

The 1080 drop allowed the Trust some breathing space to put in a trapping network for stoats and possums. "It knocked the pests down to such a level that we can now successfully carry out ground pest control in the area."

When 1080 was first being used in the 80s and early 90s things were going wrong says Karen - but people have come a long way since then. "ERMA has reviewed its use and very strict controls have been put in place so there are fewer risks. The reality is - when you think about it -there's elements of 1080 in my cup of tea from the tea bush- I'm drinking it every day."

Taking care of our taonga

Pest control in Egmont National Park

About 1080

1080 as a toxin

1080 is poisonous but like many other products available for use such as household cleaners, fertilisers, snail-bait and medicines its safety depends on how it is used.

1080 slows down the process by which animals obtain energy (the tricarboxylic acid cycle). It occurs within the cells and ultimately causes possums to die of heart or respiratory failure.

The comprehensive and rigorous regulations and operating procedures that govern the use of 1080 in New Zealand cover every aspect from manufacturing, packaging through to emergency management, transport, recordkeeping and handler requirements. Further guidelines placed on 1080 approved users by Environmental Risk Management Authority (ERMA) as a result of the 2007 reassessment of the use of 1080 ensure that well managed operations presents no risk to the public and continue to provide net benefits to conservation.

This exhaustive public reassessment of the use of 1080 determined that the benefits of its continued use outweighed any perceived risks.

1080 occurs naturally in many plants – every time you have a cup of tea you are drinking a very small amount of 1080 because it occurs naturally in camellia plants which tea is made from.

Do other countries use 1080?

1080 is registered for use in Australia, Canada, the United States and Israel. It is restricted in many countries because of its potential risk to their native mammals and predators. Australia uses 1080 for fox and feral pig control.

Because we have only two native land mammals (bats) in New Zealand and a huge need for large-scale pest control to reduce their impacts of possums which have no predators, we are able to use 1080 because of the low risk to non-target native species.

Does 1080 accumulate in soil?

Extensive research shows that 1080 does not accumulate in soil. The poison in 1080 - fluroacetate - is highly water soluble. This means it is easily leached into the soil by rain where it is broken down by microorganisms into nontoxic naturally occurring substances. 1080 breaks down in as little as one to two weeks in warm wet conditions, less in heavy rain.

1080 and human health

1080 is not a cumulative toxin and is naturally eliminated when consumed in sub-lethal amounts. Lethal doses must be consumed at one sitting.

No health effects have been shown for 1080 at very low dose levels. Testing and studies strongly suggest that 1080 is not a carcinogenic substance and does not mimic any hormonal activity that could pose a risk to the body's endocrine system.

Fluoroacetate, the active ingredient in 1080, is found in a number of natural products including tea. No detrimental effects of exposure to fluoroacetate via consumption of tea has been described or suggested.

However 1080 is a broad spectrum toxin and, as is the case with most mammals, people are susceptible to it. For this reason DOC provides information and signs to ensure that people do not expose themselves to the toxin when it is being used. Restrictions on hunting for meat are also used to eliminate a possible pathway by which humans may be exposed to 1080.

When ERMA reassessed and approved the continued use of 1080 in 2007, the human health effects were reviewed. Much of the recent research was commissioned specifically for this purpose. The ERMA committee had no concerns regarding human exposure with any of the evidence presented. To date, no public health issues can be attributed to the regulated use of 1080 in New Zealand.

What risks are there to native birds?

The chances of birds eating the 1080 bait is minimised by the green colour of the bait and adding cinnamon oil which have been found to be unattractive to birds. High standards of bait manufacture ensure it doesn't break into smaller pieces as it is dropped from the helicopter. There are many studies available that show that the impact of 1080 on bird populations is not high and in fact has a positive long term effect because of the control of possums, rats and stoats.

What risks are there to pets and livestock?

Some animals are more susceptible to 1080 than others - fish and amphibians have a high tolerance for the toxin, but dogs are highly susceptible. Dogs are not allowed in Egmont National Park, but as a precaution we will be giving neighbouring farmers muzzles for their dogs. We will ensure the public is well informed prior to the drop.

We have also been working with local farmers to manage their stock around the operation area.

After the operation in 2002 a severe storm resulted in flooding within the park that disturbed the poisoned carcasses of some possums. Such carcasses, swept downstream by the floods posed a risk for dogs being exercised at river mouths. As in 2002 DOC will be erecting warning signs at such places requesting dog owners to be vigilant and to stop their dogs scavenging in flood debris.

Strict regulations ensure the safe use of 1080.

What about alternatives?

1080 is never used in isolation. Ground control methods are used where feasible. This will include traps and other toxins. The steep rugged terrain on Mt Taranaki is a challenge to many people and for this reason alone, the use of aerial application reduces the risk to human life and increases the efficient control of possums in less-accessible areas.

DOC continues to undertake research to find other effective methods of pest control including refining the use of 1080.

Keeping people informed

Prior to the 1080 drop DOC will be erecting signs around entrances to Egmont National Park and in DOC huts throughout the park. We will also be inserting public notices into the regional papers.

DOC rangers will be in the park during and after the operation to remove any baits fallen on tracks and talk to park users. There will be information available at both visitor centres.

Research has shown that native bird populations such as the Fantail may benefit from aerial 1080 operations due to the secondary killing of predators such as rats and stoats.

Questions welcomed

We are aware that the use of 1080 is sometimes controversial and you may have some questions regarding its use. We have further detailed information available.

If you have any queries regarding Operation Egmont please contact:

Phil Mohi
DOC Taranaki Area Manager
Ph 759 0350
e-mail pmohi@doc.govt.nz

Thanks

Thanks to National Possum Control Agencies (NPCA) for permission to use excerpts from their publication "Questions and answers on 1080." Check out www.npca for further information.

Pukeiti blooming

It's not a situation that Pukeiti Gardens curator Andrew Brooker thought he'd come across - but the famous garden's trees are now so healthy they need constant pruning – not that he's complaining.

Andrew has worked at the garden on the edge of Egmont National Park for the past 20 years over which time there have been two 1080 aerial drops in the Park.

"Since the possums have been knocked back by pest control we are facing the problem where the trees are probably too healthy," he laughs. "We are having to cut them back because they are shading the gardens."

Cyclone Bola had just roared through the region when Andrew first arrived at Pukeiti. "There was a lot of devastation to the vegetation from that – but also from possum browse."

He recalls a possum hunter removing trailer loads of possums from the area.

After the first aerial 1080 drop in 1994 the relief to the forest was obvious, says Andrew.

"There's a lot of things we see now that just weren't around prior to the 1080 drops. We see more gigi flowers and fruit, we've been observing wood pigeons nesting in places they've never been before and a lot more tui activity."

Juvenile rimu trees are in abundance and vegetation is growing thick and fast

Andrew and his team of gardeners at Pukeiti use many methods of pest control and see 1080 as just one of them.

"I'm not saying it's the best option – but really it's the only option until something better comes along." He believes other methods, such as introducing a bounty system, wouldn't work. "The problem is too big and people wouldn't want to do themselves out of an income by killing all the possums."

As in the past DOC and the regional council are proposing to apply 1080 to the 25ha gardens by hand and aerially treat Pukeiti's remaining 335ha of rainforest.

Right: The relief to the forest was obvious after previous aerial 1080 drops on Mt Taranaki/Egmont says Pukeiti Gardens curator Andrew Brooker.