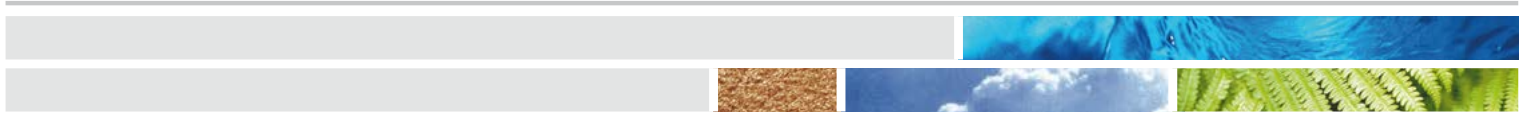


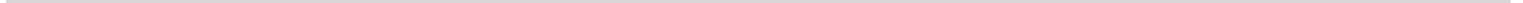
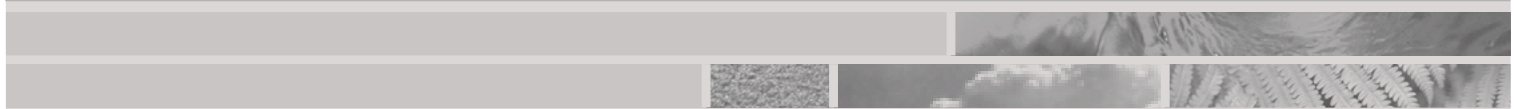
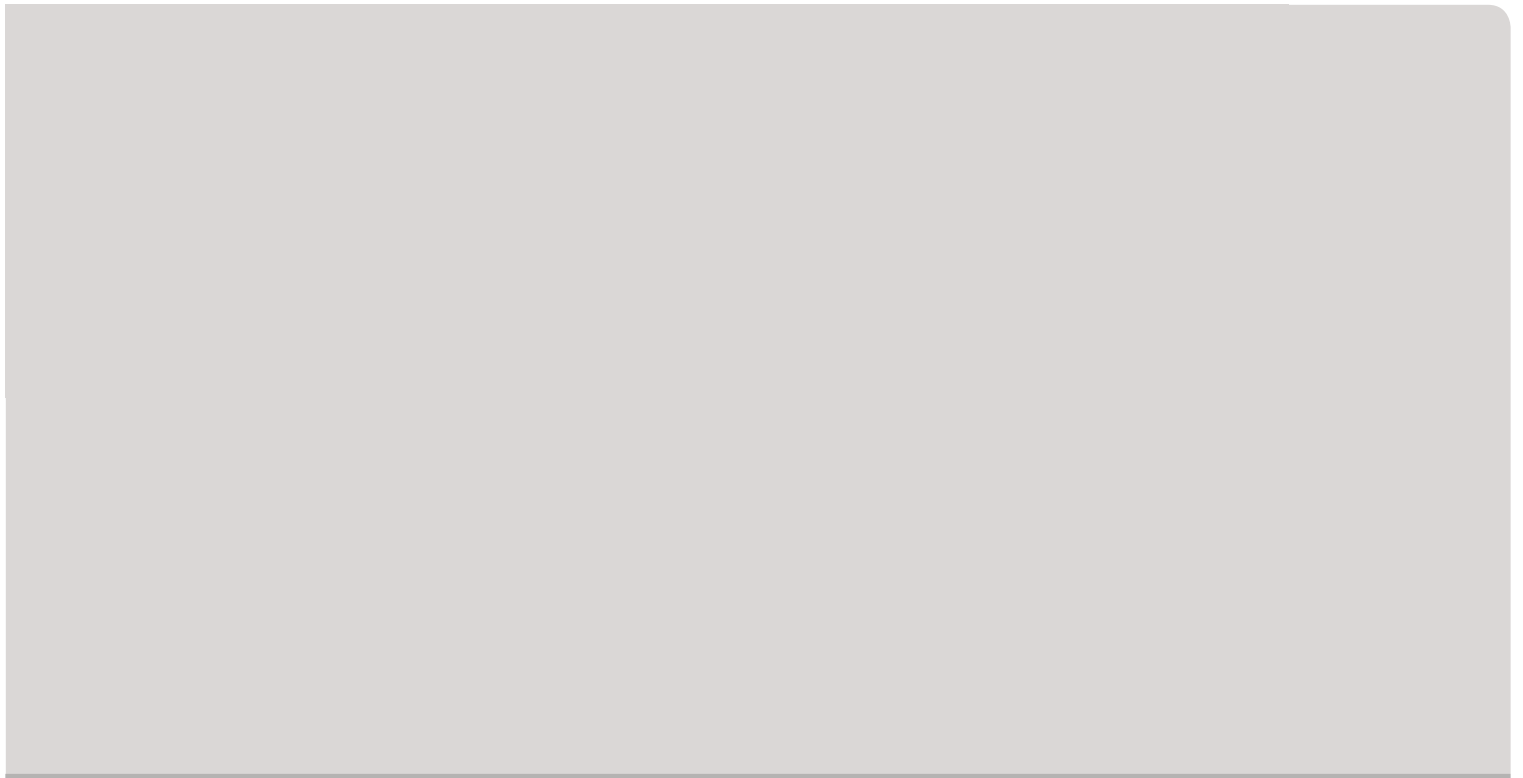


Environmental
Protection Authority
Te Mana Rauhi Taiao

Annual Report on the Aerial Use of 1080

For the year ended 31 December 2014





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Executive summary

The substance sodium monofluoroacetate, also known as 1080, is used to control animal pests including possums, rabbits, stoats, and rats. It is used for both conservation purposes and to prevent the spread of bovine tuberculosis (TB).

1080 is one of the most closely monitored hazardous substances in New Zealand. In 2007, 1080 was reassessed and controls on its aerial use were tightened.

This is the eighth annual report and the seventh since the reassessment to include data from aerial operations. The report sets out the number of operations for the 2014 calendar year, the area of land covered, any incidents that occurred during operations, and research about 1080.

The main findings of this annual report are consistent with previous years, showing that the regime is working as intended and the benefits of using 1080 are being seen while the risks are minimised.

The Environmental Protection Authority (EPA) received 58 reports of aerial 1080 operations in 2014, covering 967,012 hectares. While this is a similar number of 1080 operations to the previous year's figure, the operations covered a larger area. The difference in total area covered and number of operations is likely due to a combination of the cycle of pest control operations and the Battle for our Birds programme run by the Department of Conservation (DOC).

The DOC programme was undertaken to address an expected rodent and stoat plague driven by a significant beech mast (flowering and seeding event) during the 2013–14 summer. The masting event was predicted to affect most of New Zealand's beech forests. Operations to target rodents and suppress

stoats were carried out across large areas of beech forest, mostly in the South Island. The operations were targeted to protect at-risk populations of mōhua/yellowhead, kākāriki/parakeet, kiwi, whio/blue duck, kea, kākā, rock wren, giant land snails, and native bats.

Breaches of the Hazardous Substances and New Organisms (HSNO) Act controls occurred in six of the 58 aerial 1080 operations in 2014. This is down from eight breaches in 2013. There were two public incidents, the same number as for 2013, while the number of dog deaths increased from two to five.

Most incidents continue to be reported by operators and funding agencies rather than by members of the public or other agencies.

Background

The reassessment of 1080 for use in pest control was completed by the Environmental Risk Management Authority (ERMA) New Zealand in August 2007. ERMA concluded that the benefits of using 1080 outweighed the adverse effects, and decided to allow the continued use of 1080 with additional controls.

In reaching its decision, ERMA recognised the importance of engagement through better communication and consultation with the public, local communities, Māori, and special interest groups. The decision outlined a management regime for 1080 operations, which included the requirement for operators to report on all aerial 1080 operations. ERMA and, from 2011, the EPA would then report annually on the outcome of those operations.

This is the eighth annual report since the release of the reassessment decision. It provides information about:

- » aerial 1080 operations carried out in the 2014 calendar year
- » research carried out up to July 2015.

The Parliamentary Commissioner for the Environment concluded in her 2011¹ and 2013² reports that 1080 is the best form of pest control currently available to help protect native flora and fauna.

Organisations that use aerial application of 1080 for pest control

Control of animal pests such as possums, wallabies, rabbits, rats, and stoats is carried out using both ground control and aerial application of poisons. Ground control may include methods such as trapping, shooting, or placing various toxins in bait stations. The toxins, or vertebrate toxic agents, may include 1080.

Aerial application uses aircraft to distribute baits. Users consider its efficiency and effectiveness an advantage for pest control undertaken on rugged or remote land. Pest control operators have different reasons for using aerially applied 1080. The organisations that aerially apply 1080 are:

- » TBfree New Zealand
- » Department of Conservation
- » regional councils
- » other land managers.

TBfree New Zealand

TBfree New Zealand (TBfree, a wholly owned subsidiary of OSPRI New Zealand) is responsible for managing and implementing the National Pest Management Plan for Bovine Tuberculosis (TB Plan) in New Zealand, under the Biosecurity Act 1993.

The TB Plan was approved by the Government in 1998, then amended in 2004 and again in 2011. It provides for measures to control and eradicate TB in cattle and deer herds, and in wildlife populations that act as vectors and reservoirs for the disease. The plan operates in two ways:

- » disease control – aiming to control and contain the spread of the disease within and between cattle and deer herds, leading to eradication of TB from herds
- » vector control – aiming to control, contain, and eradicate TB from the wild animal species (in most cases possums) responsible for spreading the disease to cattle and deer.

¹ Parliamentary Commissioner for the Environment, June 2011, *Evaluating the use of 1080: Predators, poisons and silent forests*.

² Parliamentary Commissioner for the Environment, June 2013, *Update report on the original investigation, Evaluating the use of 1080: Predators, poisons and silent forests*.

TBfree uses a combination of ground control methods and aerially applied 1080 in its strategy for containing and controlling possums. In 2014, TBfree treated approximately 307,334 hectares of land using aerial application of 1080.

Department of Conservation

New Zealand has many unique species of plants and animals. Because they evolved without mammalian species being present, many are vulnerable to introduced mammalian pests. Introduced species such as possums, rats, stoats, and ferrets not only pose a serious threat to the survival of New Zealand's native species, they also threaten to destroy entire ecosystems through predation, browsing, and competition.

DOC manages approximately 8.75 million hectares of conservation land. It uses a combination of ground control methods and aerial application of 1080 to:

- » improve the health of ecosystems by reducing the impact of browsing, competition, and predation by possums, rats, and other introduced pests
- » protect threatened species from predators through direct control and secondary poisoning³
- » control rabbits.

The total area of land under DOC's sustained management for possums is about 1.042 million hectares.⁴ DOC does not report the area under sustained management for rats or stoats. In 2014, DOC treated approximately 645,356⁵ hectares for possums or rats using aerial application of 1080. This is a significant increase compared with last year, due to the Battle for our Birds programme undertaken to combat the beech mast-driven pest plague.

Battle for our Birds programme

Approximately every 15 years, beech forests throughout New Zealand flower prolifically. The heavy seed fall that results benefits pest species such as introduced rats and mice. DOC knew late in 2013 that if massive beech seeding occurred in the autumn of early 2014 as predicted, then rat and mice populations would multiply exponentially. Many of the rats and mice would survive the following winter, initiating a rodent plague that in turn would drive a plague of stoats. The following spring and summer, rats and stoats would have wide-ranging adverse effects on nesting native bird species and on species such as snails, other invertebrates, and lizards.

By mid-2014, monitoring of rat populations confirmed the imminent threat of a rat plague. In response, DOC identified areas where substantial populations of the most-threatened species existed and planned its largest-ever series of pest control operations. The operations included the use of 1080 over approximately 600,000 hectares of mainly beech forest in the South Island.

Battle for our Birds aerial 1080 operations began in August 2014, suppressing rat populations during the crucial spring and summer when nesting adult birds, eggs, and chicks were most vulnerable. Stoats were killed by feeding on poisoned rodents and/or produced fewer young because their prey species had been suppressed. When the birds had fledged and the seed source had been depleted or germinated, the rat populations no longer threatened the native species.

With better understanding of the dynamics of predator populations and continued improvements in the

³ Scavenging pests such as stoats are controlled by secondary poisoning when they feed on the dead or dying primary targets of 1080 operations (rodents and possums).

⁴ Not including the Chatham Islands and sub-Antarctic islands.

⁵ A significant proportion of the 645,356 hectares had not previously been included in the 1.042 million hectares under sustained management.

efficiency and effectiveness of operations, DOC is now planning incremental increases in the overall average area treated for small mammal pests each year. For sites where a purely possum-driven control approach was previously taken, greater frequency of treatment could optimise the results of treatment for both possums and predators.

For beech mast-driven systems (and where other species have mast events that drive pest plagues), it is expected that seeding events will occur intermittently. With the help of NIWA scientists (National Institute of Water and Atmospheric Research), DOC is well placed to accurately predict when these will happen and can take action to avoid risk to valued species. (More information is available at www.DOC.govt.nz/our-work/battle-for-our-birds/). At sites with less varied pest dynamics, the frequency of operations will be optimised to achieve the desired outcomes for pest control in the most efficient manner.

Regional councils

Under the Resource Management Act 1991, regional councils are responsible for maintaining indigenous biological diversity in their regions. They are also required to manage pests under the Biosecurity Act 1993. The councils achieve these responsibilities through:

- » local regulation (for example, regional pest management plans)
- » incentive and education schemes
- » direct (regional council-managed) control.

Where regional councils directly control animal pests, they use a combination of ground control methods and aerial application of 1080. This control reduces the impact of browsing, competition, and predation by possums, and protects threatened species from other pests.

In 2014, regional councils reported aerially applying 1080 to approximately 12,102 hectares of land.

Other land managers

Farmers and land managers such as Land Information New Zealand use a combination of aerial application of 1080 and other rabbit-control methods like shooting and ground-laid poisons to reduce the environmental effects of rabbits. These pest-control methods are used to meet the requirements of regional pest management plans or for pest control to protect crops on individual farms.

In some areas referred to as rabbit-prone land, the rabbit population is not curbed by natural mechanisms and numbers can increase quickly. An increase in numbers can cause environmental effects such as:

- » a reduction in the diversity of plant species
- » an increased risk of erosion
- » a reduction in soil quality
- » adverse effects on indigenous and other fauna when predators of rabbits such as cats and mustelids target alternative prey.⁶

Large areas of the South Island are at risk from rabbits. Approximately 380,000 hectares of land are considered extremely rabbit prone, and about 630,000 hectares are considered highly rabbit prone. Most of this land is in Otago, Canterbury, and Marlborough.⁷ In 2014, 1080 was aerially applied for rabbit control over approximately 2,220 hectares, a reduction of more than 5,000 hectares from 2013.

Land managers such as foresters also use a combination of ground control methods and aerial application of 1080 to reduce the impact of browsing by possums in indigenous and production forests.

⁶ See www.ecan.govt.nz/advice/your-land/plant-animal-pests/managing-animal-pests/pages/rabbits.aspx.

⁷ Lough, RS, 2009. *The Current State of Rabbit Management in New Zealand*. MAF Biosecurity Contract Report, Wellington.

Application information

The pest management cycle for an area under sustained management can span several years. The management cycle could see parts of the larger area treated in rotation or some parts treated more frequently than others, or years with no treatment. For example, some parts of an area under sustained management may be treated by aerial application on a five to seven-year cycle, while other parts of the area may be covered annually by ground control methods.

Similarly, an area under sustained management to minimise the consequences of mast-driven pest plagues may be treated only infrequently, but individual treatments could occur close together. The annual treatment programme varies for each agency.

Table 1 shows treatment areas for different land managers from 2008 to 2014. Apart from 2014, it shows that the area of land treated by aerial application of 1080 has been reasonably consistent since 2008, when monitoring began.

TABLE 1: Aerial 1080 treatment area

YEAR	NO OF OPERATIONS	TBFREE	DOC	REGIONAL COUNCILS	OTHER LAND MANAGERS		TOTAL AREA
				(OOO HECTARES)			
2008	75	425	107	5	14	13	564
2009	64	314	167	17	17	–	515
2010	45	254	171	5	9	–	439
2011	49	344 ¹	127	5	10	5	491
2012	48	279 ²	136	5 ³	12	–	432
2013	57	298	126	16	7	–	448
2014	58	307	645 ⁴	12	2	–	967

A dash (-) signifies that no operations were reported.

Figures are rounded to the nearest thousand hectares.

¹ Includes combined TBfree and DOC operations of 31,500 hectares.

² Includes combined TBfree and regional council operations of 27,084 hectares.

³ Includes combined council-led and DOC co-funded operations of 2,428 hectares.

⁴ Includes a joint TBfree and DOC operation of 5,629 hectares.

On average, TBfree conducts aerial 1080 operations over a considerably larger total area and aerially applies more 1080 than any other user. In most years, TBfree's aerial treatment accounts for more than half of the total land treated with aerially applied 1080.

While TBfree is generally the largest user of 1080, the amount of land to which 1080 has been aerially applied over the past five years represents only 3 percent of TBfree's total pest control area of approximately 10 million hectares. This is because a significant proportion of the TB-related pest control area is on or near farmland, with aerial 1080 used mostly in remote fringe areas.

By comparison, a significant proportion of DOC's pest control occurs in more difficult forested terrain. However, only a small proportion of DOC land is managed for small mammal pests and not all of its pest control is carried out using 1080. For this reason, the proportion of DOC land managed with aerial 1080 is also small. Before the Battle for our Birds programme, only about 9.5 percent of the total area managed by DOC was included in a sustained possum control programme that relied on aerial application of 1080.

Aerial pest control operations

Under the controls for 1080, operational managers are required to submit information after an aerial 1080 operation. The information must include:

- » who undertook the operation and why
- » the 1080 formulations used and application rates
- » the location and size of the operation
- » monitoring information, including:
 - water monitoring, if carried out in conjunction with the operation
 - species monitoring, if carried out in conjunction with the operation
- » an assessment of the operation's outcomes
- » an overview of the communication activities (consultation and notification), and outcomes from that communication
- » an overview of any incidents and complaints related to the operation, and actions resulting from those incidents and complaints
- » a map of the operational area.

Individual post-operational reports are available on the EPA website: www.epa.govt.nz.

Post-operational reports

Operation management

The EPA received reports for 58 aerial 1080 operations in the 2014 calendar year, covering approximately 967,012 hectares. Most of this area was treated by DOC (67 percent) and TBfree (32 percent). The remaining area was treated for rabbit, possum, and wallaby control by regional councils and other land managers.

The reported operations included:

- » 20 funded by TBfree
- » one jointly undertaken by DOC and TBfree
- » 30 funded by DOC
- » two funded by a regional council
- » five funded by other land managers for rabbit control.

There were a similar number of operations in 2014 as in 2013. However, in 2014 the treatment area of 967,012 hectares was significantly larger, due to DOC's Battle for our Birds programme (compared with the 448,210 hectares treated with aerially applied 1080 in 2013). TBfree's aerial 1080 operation numbers decreased from 26 in 2013, while DOC operations increased from 12 in 2013.⁸ Both organisations reported controlling a higher percentage of their total treatment areas using aerial application of 1080. This difference reflects the stage of the treatment cycle for each organisation and the Battle for our Birds programme to combat the beech mast.

⁸ The operations include a joint TBfree New Zealand and DOC operation.

Formulations and application rates of 1080

All of the aerial operations to control possums, rodents, or both, used 1080-laced cereal baits with a 1080 concentration of 1.5 grams per kilogram of bait. Cereal baits coated with deer repellent were used in 18 of the 52 possum and/or rodent control operations. Carrot baits were not used in any possum control aerial operation in 2014.

All reported rabbit control operations used carrot baits laced with 1080 at the rate of 0.2 grams per kilogram of bait. The different concentration rates of 1080 for rabbit and possum bait is due to the difference in toxin susceptibility between the species.

Bait application rates for possum and rodent control operations varied between 0.33 and 2 kilograms of bait per hectare. Rates for rabbit control varied between 10 and 30 kilograms of bait per hectare. The difference in application rates reflects the variance in pest numbers and feeding patterns between target species.

Despite the differences in toxic concentrations and application rates, the average application rate of 1080 was slightly lower than in previous years for both rabbit and possum, and/or rodent control operations. The average application rate was approximately 2.45 grams of 1080 per hectare for possum control and 4.3 grams per hectare for rabbits. Both application rates are significantly below the maximum allowable rate of 30 grams of 1080 per hectare.

Location of operations

The number of aerial 1080 operations in each region and the sectors using 1080 varies according to the purpose of the operation, topography, and land cover.

The regions with the largest number of aerial 1080 operations were the West Coast, with 11; Tasman, with nine; and Southland and Otago, with seven each. On the West Coast, which has 37 percent coverage of indigenous forest, TB is widespread in possums and aerial application of 1080 is considered a key tool in possum and rodent control programmes. In Otago, most aerial 1080 operations are for rabbit control. DOC's Battle for our Birds programme also affected regional numbers of operations for 2014.

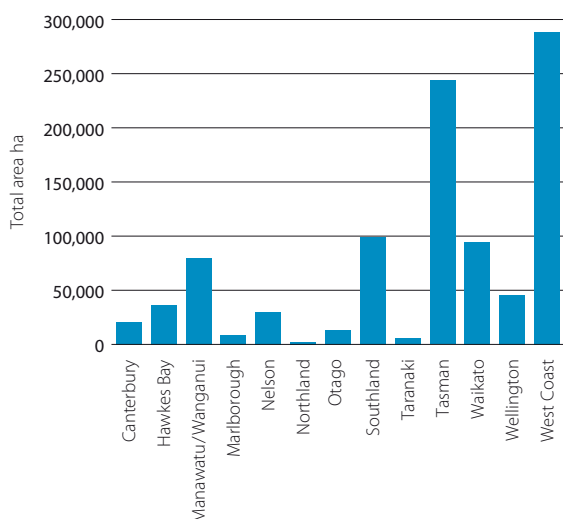
Size of operations

The total land area of 1080 aerial application in 2014 was 967,012 hectares. The average size of aerial application was 16,672 hectares, with the largest application covering just over 78,000 hectares and the smallest covering 170 hectares. This represents bigger operations than in previous years, with many DOC operations increased as part of the Battle for our Birds programme. DoC and TBfree mostly carry out aerial 1080 operations to control possums and other predators over larger tracts of land more efficiently than is possible using ground control methods.

Bigger operations can increase the time for pest numbers to rebuild, as it takes longer for pests to migrate into the heart of treated areas. The average size of aerial 1080 applications was 20,818 hectares for DOC and 15,367 hectares for TBfree. By comparison, the average size of aerial 1080 rabbit control operations by other land managers was 444 hectares.

Figure 1 shows the area of aerial application by region for all users. The largest area of application was in the West Coast, followed by Tasman.

Figure 1: Total area (hectares) of aerial 1080 applications in each region



Communication

Good communication can reduce public concern and result in fewer incidents. The EPA expects operators to carry out consultation with and to notify neighbours, affected groups, and communities to an extent that is appropriate for each operation.

Consultation with iwi/Māori

The *Aerial Applications Report* (2014) written by Ngā Kaihautū, covering the aerial application of pesticides including 1080 (as advised to the EPA), notes that potential concerns to Māori include risks to traditional food sources that are non-target species (including taonga species such as eels, inanga, watercress, pūhā) and the risks of residue and run-off into waterways. For example, the potential impacts on mahinga kai and on taonga aquatic species do not provide for the Treaty of Waitangi principle of “active protection” of taonga species.

The *Communications Guideline for Aerial 1080 Operations* (2009) states that Māori groups should be engaged as early as possible in the planning process when an aerial 1080 operation may be carried out on public land or in an area where the public may be affected by the application. Māori should also be engaged in discussions, with the aim of establishing a good relationship with relevant hapū and iwi.

In 2014, Māori stakeholders were consulted in 92 percent (49 of 53) of the aerial operations on public land. This is a slight decrease in Māori consultation compared with 2013, when 39 of 40 operations on public land (97.5 percent) specifically involved consultation with Māori. Changes as a result of consultation with Māori occurred in one operation, involving the exclusion of alpine tarns in a settlement area.

Consultation with hunting groups

Hunting groups are generally consulted when an aerial 1080 operation is to be carried out on public land where hunting could be affected. Early engagement with these groups is especially important in recreational hunting areas⁹ and where animals are commercially harvested for meat. Hunting groups were consulted in 83 percent (44 of 53) of the operations on public land in 2014. This is an increase from the rate of 63 percent reported in 2013, when 25 of 40 operations reported consultation with hunting groups.

Changes to operations as a result of consultation

Changes to operations as a result of consultation are considered an indicator of whether the consultation was effective. In 2014, 29 post-operational reports identified one or more changes to the operational plan as a result of consultation:

- » Boundary changes were reported for 24 operations.
- » Four operations with boundary changes resulting from consultation were due to the exclusion of sensitive sites (which can include areas like water catchments and places of ecological concern such as kea habitat).
- » Six operations changed the timing of the application to allow stock rotation or hunting.
- » Eleven operations changed from aerial to ground application of 1080 for parts of the operation.
- » Three operations added deer repellent.

Communications guideline for aerial 1080 operations

Operators must consult before applying for permission to use 1080, and provide evidence of consultation in their application. Before granting permission for an aerial 1080 operation, Public Health Units (PHU) assess the consultation carried against the *Communications Guideline for Aerial 1080 Operations*.¹⁰ The Ministry of Health (MoH) reports the results of these assessments to the EPA.

MoH reported that 77 of the 80 applications for permissions for aerial 1080 operations assessed against the communications guideline met the requirements in 2014. The remaining three required more consultation to meet the standard before permission was issued. No permissions were declined.

Not all of the 80 applications for 1080 operations assessed by the MoH resulted in completed operations, because of weather and other site-specific conditions.

⁹ The eight recreational hunting areas are North Pureora Conservation Park, Kaimanawa, Kaweka, Haurangi, Lake Sumner, Mt Oxford and Mt Thomas, Greenstone/Caples beside Lake Wakatipu, and Blue Mountains.

¹⁰ Available on the EPA website: www.epa.govt.nz.

Monitoring

Water monitoring

If an aerial 1080 operation is within the catchment of a drinking water supply, the local PHU may require water monitoring before intakes are reconnected. This ensures drinking water does not contain 1080 residues that breach the tolerable exposure limit (TEL) of 3.5 micrograms of 1080 per litre of water. The TEL water value is based on the Provisional Maximum Acceptable Value (PMAV) in drinking water (*Drinking-water Standards for New Zealand, 2005, MoH*). The TEL is set at a level that protects human health.

Water monitoring may also be required in other water catchments as part of environmental monitoring for resource consents or for research purposes. It may also be used to provide evidence where PHUs are investigating concerns about alleged water contamination.

Post-operational water monitoring was carried out for 23 of the aerial 1080 operations in 2014, with 106 samples taken. The tests can detect down to 0.1 micrograms of 1080 per litre of water. Of the 106 samples, only five detected 1080 above the level of detection. All five were well below the TEL.

Last year, we reported that 1080 had never been detected in water supply catchments. This statement was incorrect. As we have stated in previous reports, 1080 has been detected in water supply catchments, on two occasions at levels well below the tolerable exposure limit (TEL).

Since the reassessment in 2008, more than 530 water samples from drinking water catchments and other water bodies have been analysed for 1080. Of these samples, 15 were above the method detection limit

and all were below the human health TEL. Operators and regulatory bodies are likely to continue to test water to verify that specific operations pose no risk to water supplies.

Species monitoring

Plant and animal species are monitored to determine the need for pest control operations and the success of operations. Species monitoring is not a mandatory requirement for 1080 operations, but where monitoring is carried out operators must report the results to the EPA.

Pre-operational monitoring of pest species was carried out for 39 (67 percent) of the aerial 1080 operations undertaken in 2014. All five rabbit control operations were monitored before aerial operations, while 14 DOC operations, 19 TBfree operations, and one council operation undertook pre-operational monitoring of pest species.

Post-operational monitoring of pest species was carried out on 39 (67 percent) of the aerial 1080 operations in 2014. The operators reported meeting or partly meeting their stated target for pest control.¹¹ Six operations have ongoing monitoring.

In 17 operations, species that benefit from 1080 operations were monitored for the effects of 1080. These species included kea, kaka, tomtits, native trees, and native snails. This type of research is generally carried out over several years so that trends can be identified in populations of native species following pest control operations.

¹¹ Target results vary according to monitoring method and are included in post-operation reports on the EPA website: www.epa.govt.nz.

Incidents and public concerns

The EPA is advised of complaints, incidents, and activities associated with 1080 use in three ways:

- » the public registering concern – when an individual contacts us to express concern about a particular 1080 operation or related practice
- » incident reporting – when an operator or agency contacts us to express concern about a particular 1080 operation or related practices
- » media monitoring – when we learn through our media monitoring service about incidents or concerns reported in the news.

Incidents related to specific operations are described in post-operational reports. The reports for operations undertaken in 2014 are available on the EPA website: www.epa.govt.nz.

Since 2008, industry and enforcement practices have improved, and operators are now subject to greater accountability when conducting aerial 1080 operations. For example, the way in which permissions are granted has been improved through clearer conditions of permissions and better mapping of boundaries and exclusion zones. Industry has also developed standard operating procedures, which give clearer direction to operators about compliance requirements.

Enforcement and funding agencies have increased their resources for responding to public concerns, auditing against controls, permission conditions, and standard operating procedures. This has led to improved responses to complaints and incidents, as well as improved detection of breaches.

There has been a significant change in the way the EPA is advised of incidents and complaints. In 2008 and 2009, the majority of incidents were reported by the

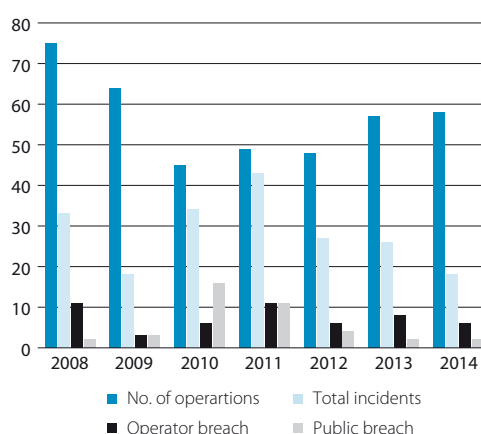
public, enforcement agencies, and media. Since that time, most complaints and incidents have been self-reported by operators.

Overview of incidents and public concerns

There were 18 incidents, objections, or concerns reported to the EPA in 2014 (see Figure 2). Most of the reported incidents and concerns were from operators and funding agencies rather than members of the public. Since 2010, there has been an overall increase in the number of operations, although it is still below the peak number in 2008. Despite the increase in operations, incidents have continued to decrease.

Incidents involving 1080 are defined as any breach of a HSNO or Resource Management Act (RMA) condition, any event resulting in an increased risk to public, worker, and environmental safety, and any event that causes significant public risk. The total number of reported incidents may include incidents that are not related to the hazardous substances legislation.

Figure 2: Incidents and public concerns reported to the EPA¹



¹ The total number of reported incidents and public concerns for specific operations may be greater than the combined breaches shown. Not all investigations revealed breaches.

The number of breaches¹² by operators remains low. There were 11 breaches reported in 2008, three in 2009, six in 2010, 12 in 2011, five in 2012, eight in 2013, and six in 2014.

All incidents reported in 2014 were investigated.

- » One incident was due to probable public interference.
- » Two incidents involved public trespass.
- » One incident involved a complaint from a fishing party who were unaware they had been flown into the operational area.
- » One incident involved a threat made to operation staff.
- » Three incidents were not related to breaches of HSNO controls.
- » Five dog deaths were due to people allowing dogs into 1080 drop zones (with one incident involving two dogs).

Operator breaches

There were six breaches of HSNO controls by operators in 2014.

- » Two breaches related to an incident where a malfunction with a Global Positional System (GPS) unit or poor satellite coverage and difficult terrain resulted in bait being applied outside the permitted area. There was no public health risk as a result of this incident.
- » One breach was due to the operator flying over an exclusion zone, but no bait was being applied at the time.
- » Two breaches were due to a failure to submit a post-operation report within the six-month deadline (under the controls of use for 1080, any person who applies or engages another person to apply 1080 by aerial application must, no later than six months after the operation, provide a written report to the EPA).
- » One breach was due to failure to notify the local PHU of an incident.

¹² A breach is a non-compliance with HSNO controls or other legal requirements.

Incident summaries

This section contains information about the aerial 1080 incidents, objections, and compliance issues reported to the EPA in 2014 (by region, north to south).

WAIKATO

There was one HSNO incident, one non-HSNO incident, and one report of by-kill.

Operation: Whareorino

Type: Non-HSNO incident

Date occurred: June 2014

Cattle broke through a fence and got into the Whareorino aerial 1080 block. After they were removed from the area, two of the cattle died. Waikato Regional Council investigated, but test results did not detect the presence of 1080 in the cattle. However, because the cattle had found their way into the 1080 operational area and other potential toxins such as tutu were ruled out, it was considered strongly likely that individual cattle had been exposed to 1080 poison. The council found that all other aspects of the operation were compliant, and neither the operator nor the owner of the cattle were at fault. No further action was taken.

Type: Operator breach of HSNO controls

Date occurred: July 2015

The operator failed to submit a post-operation report to the EPA within the six-month time limit.

HAWKE'S BAY

There was one operator breach of HSNO controls and one incident involving two dog deaths.

Operation: Waipunga

Type: Dog deaths

Date occurred: October 2014

A hunter went into Tatarakina Trust land to hunt and travelled further north into an area of DOC land where 1080 had been applied. As a result, two of his dogs died. He conceded there had been an information board / warning sign at the main entrance to the trust land at Tarawera, and he had known that 1080 work was happening on the northern boundary. The hunter had travelled into the block in darkness and didn't see the information board until he came out, after the dogs died. He said he thought the 1080 was further to the east, in the private blocks of Pohokura and Ngatapa only. Signage was still in place along SH5 at the time. No further action is required by the PHU.

Type: Operator breach of HSNO controls

Date occurred: July 2015

The operator failed to submit a post-operation report to the EPA within the six-month time limit.

WELLINGTON

There was one incident involving the death of a dog.

Operation: Aorangi

Type: Dog death

Date occurred: August 2014

A dog died because bait was outside the project application area, although within the statutory consented area. Investigation identified that bait could not have been put there by the aerial application, due to its distance from the flight path. Flight paths were also reviewed, and it was determined that there had been no over-flight. It is unlikely that the bait came from the helicopter. No further evidence could be obtained about how bait got to the location. The incident was notified to the PHU and no further action was taken.

TASMAN

There were two operator breaches of HSNO controls and one public trespass.

Operation: Te Maruia

Type: Public trespass

Date occurred: October 2014

An unauthorised person was observed on the fringe of the loading site during loading operations. The person was approached and directed to move away. Discussion revealed that he just had an interest in helicopters. No further issues occurred at the site.

Operation: Locket Range

Type: Operator breach of HSNO controls

Date occurred: July 2014

Several baits were found outside the consented boundary. The area was inspected for several days afterwards to ensure all bait was recovered. The contractor undertook an internal investigation and, as

a result of the findings, the consent authority issued a technical advisory to all aerial operators. The local PHU was notified and also undertook an investigation. A combination of poor satellite coverage and geometry, exacerbated by adverse terrain at a "critical time" appears to have been the cause of the 1080 bait being applied outside the operational area.

Operation: Oparara Kahurangi National Park

Type: Operator breach of HSNO controls

Date occurred: July 2014

A helicopter flew over an exclusion zone when flying to other parts of the block, but was not dispersing bait. The area was checked as a precaution but no bait was found.

WEST COAST

There was one complaint, one public trespass, and one non-HSNO incident.

Operation: Mokihinui

Type: Complaint

Date occurred: December 2014

A fishing party on Conservation Estate in the Mokihinui Valley encountered 1080 pellets and saw helicopters with buckets flying in the area. The party was unaware of the operation and had been helicoptered into the area for a day's fishing. It is likely that the party was within the permitted operational boundary for the Mokihinui aerial operation. However, no bait was applied over the fishing party and it left the area. Enquiries confirmed that known DOC concessionaires had been notified of the operation, but the association to which the fishing party belonged had been inadvertently left off the list of concession holders provided to TBfree. The local PHU was notified and investigated the matter, but no further action was taken.

Operation: Abby Rocks

Type: Non-HNSO incident

Date occurred: November 2014

The carcass of a kea was recovered and radio transmitters confirmed that the bird had died on the first day following the 1080 operation. The cause of death was diagnosed by a pathologist as “presumptive 1080 poisoning”. The kea was one of 21 within the treatment area that was being studied to assess the impact of such operations on kea. The remaining 20 kea within the treatment area and a further 12 kea in an adjacent non-treatment site were not affected by the operation.

Operation: Kaiata Range

Type: Public trespass

Date occurred: June 2014

Two people were concerned they had a near-miss after finding three 1080 pellets near their vehicle. The incident was notified to the PHU, which investigated the matter and found there had been clear signage in the approach to the area, both at the entrance to Maori Gully Road and within 300 metres of the entrance to the track where the incident took place. The forestry track was part of the toxic bait aerial drop zone. This area is privately owned and a permit is needed to enter. No permit had been issued to the two people involved in the incident. However, it is likely they were unaware the land was privately owned, as there was no signage to indicate this.

OTAGO

There was one operator breach of HSNO controls.

Operation: South Peak

Type: Operator breach of HSNO controls

Date occurred: June 2014

Cereal 1080 baits were misapplied outside the aerial consent boundary. The cause appears to have been GPS malfunction. The pilot was at first unaware of the issue, but once he realised the GPS had frozen he shut off the bucket. Six baits were found outside the consented area. The PHU was notified and investigated the matter. No further action was taken.

SOUTHLAND

There was one operator breach of HSNO controls, one threat, one public breach of HSNO controls, one non-HSNO incident, and two dog deaths.

Operation: Iris Burn

Type: Threat

Date occurred: August 2014

An anonymous letter was received prior to the operation, declaring war on those involved. The letter was referred to the Police.

Type: Public breach of HSNO controls

Date occurred: August 2014

Following a phone call, a 1080 bait and possum carcasses were found in areas where no bait had been laid. The matter was referred to the MoH and Police. It is likely that the bait and carcasses had been deliberately placed.

Operation: Catlins**Type:** Operator breach of HSNO controls**Date occurred:** November 2014

A member of the public found bait on the road at the beginning of the Franks Stream entrance. It was dealt with immediately by Owaka rangers. This road had been cleared of bait twice before and was within the treatment area. The PHU was satisfied with the action taken by DOC to check roads and tracks within the permitted area. However, DOC initially failed to notify the PHU about the incident, as required by the permission issued.

Operation: Cascade Hope**Type:** Non-HSNO (RMA) incident**Date occurred:** May 2014

A small spillage involving 10 kilograms of bait, entirely within the aircraft loading zone, was cleaned up by the contractor and DOC staff. Following close examination of the sowing data/map in the days following the operation, it was identified that in a few minor cases bait had been laid between 4 metres and in one case 42 metres outside the RMA boundary, but within the boundary in the permission issued by the PHU.

Operation: Hokonui Hills**Type:** Dog death**Date occurred:** May 2014

A TBfree contractor's dog ate a 1080 pellet while with the owner checking a trap line. The dog was taken for veterinary treatment, but later exhibited signs of 1080 poisoning and the owner decided to put it down. The contractor accepted fault for the dog's death.

Type: Dog death**Date occurred:** June 2014

An adjoining landowner observed a dog belonging to a third party wandering unaccompanied along an excluded road bisecting the treatment area. Aware that a 1080 operation had recently taken place, the landowner secured the dog and later observed it was showing signs of having been poisoned. The dog died shortly afterwards. The control contractor was told about the incident, and the owner of the dog was located. The dog owner (also an adjoining landowner) stated that the dog had been unsecured and had most likely followed a vehicle when it left the property earlier. It is assumed that the dog came into contact with bait and/or carcasses while roaming unaccompanied over a three-hour period. The dog owner had been notified by telephone that the operation was starting, and had observed warning signs and received dog muzzles and emetic pills delivered by the control contractor prior to the drop.

Research

In 2007, ERMA released its decision on the reassessment of 1080. It stressed the need for more research into alternative methods of pest control and sought government support to develop a research programme.

This section summarises research relating to 1080 use up to July 2015. There are three distinct areas: alternatives to the use of 1080, improvements to the use of 1080, and other research related to 1080 use.

Many of the research projects are ongoing, as collection of data over an extended period is needed to deliver well-informed conclusions. The research has been funded and/or carried out by DOC, TBfree, Connovation Ltd, Landcare Research, and the Ministry for Business, Innovation and Employment (MBIE).

Alternatives to the use of 1080

A number of projects have been conducted and concluded (with papers published) in the past few years. Research into alternative toxins has focused on extending the application of toxins already in use in New Zealand such as Cholecalciferol (Kolee), diphacinone, coumatetralyl, feratox (to include the control of Bennett's wallabies), and zinc phosphide. The research has also considered the use of new toxins like sodium nitrate, humane red blood cell toxins, and a mixture of coumatetralyl and cholecalciferol (C+C), and their possible role in reducing secondary poisoning and non-target risk.

No new research projects have been started on these topics.

Improvements in the use of 1080

Research studies in this field have sought, assessed, and developed different strategies in order to optimise cost-effectiveness in the use of 1080 baits and their

delivery methods. Work has been done to improve the targeting of pests and impacts on pest populations and their recovery after 1080 drops, to improve welfare impacts on pest species. Work has also been done on assessing and reducing impacts on non-target species, especially looking at the ecological outcomes for native birds such as kea and tomtits. While some of these projects have already been completed, with reports and papers submitted and/or published, others are still active and their completion is expected in 2016 and 2017.

New research

Commercial manufacturing of encapsulated 1080 bait

Reference: R-10723-03

Contracted by TBfree and carried out by Landcare Research.

A new project is looking to determine the feasibility and cost of commercially manufacturing cereal 1080 bait with an encapsulated additive and, if feasible, assess its efficacy against possums and rats and its acceptance and palatability.

Other 1080 research

Several projects have focused on strategic considerations such as the palatability and efficacy of baits held in storage, research into small mammal control, strategic technologies for multi-species control, and the effectiveness of alternative strategies to control bovine tuberculosis. More recent studies have centred on the fate of 1080 in soil and potential impacts on water quality, and the effects of mast for a number of ecosystems.

New research

Publication on the by-kill of birds

Reference: R-10780

Contracted by TBfree and carried out by Landcare Research

The objective of this project was to publish observational data suggesting relatively low mortality of native birds during modern aerial 1080 operations. A draft paper was submitted to the *New Zealand Journal of Ecology*. The results were presented at the Ecological Society Conference in November 2015.

Population dynamics of native wildlife and effects of 1080

Reference: R-80734

Contracted by TBfree and carried out by DOC

In this long-term study, bird and pest populations are being measured before and after two applications of aerial 1080 at three forested sites (Tararua Range, Marlborough Sounds, and South Westland). Each of the aerial 1080 sites is matched with a non-treatment site in order to:

- » quantify changes in bird abundance and in adult female survival and productivity at a pair of sites in each forest, to compare treated and untreated block
- » quantify changes in possum, rat, and stoat densities indexed by traps and tracks in treated and untreated blocks and relate to time since poisoning
- » model the potential for refinement of the scale, timing, and frequency of aerial 1080 use in order to minimise costs and maximise benefits to native species, based on the results.

100% possum kill

Reference: R-10776-01

Contracted by TBfree and carried out by Landcare Research

This project aims to provide TBfree with updated best-practice recommendations by June 2016 for aerial 1080 operations that consistently achieve 98 percent or more possum killings by:

- » determining why some possums survive 1080 baiting
- » determining whether micro-encapsulated 1080 can overcome surviving possums' failure to eat a lethal quantity of baits
- » determining whether using two applications of both pre-feed and/or toxic bait consistently achieves 98 percent or more killings
- » determining the cost-effectiveness of these options.

Efficacy of serial 1080 stoat control

Reference: R-80794

Contracted by TBfree and carried out by DOC

The main objectives of this project are to:

- » measure the by-kill of stoats in forests and alpine zones in which there are widespread mice and few or no rats at the time of a 1080 operation
- » assess the abundance of stoats in a selection of untreated forests, both with abundant rats and with abundant mice but few rats
- » measure the effect of the Battle for our Birds programme's aerial 1080 operations on the 2015 stoat plague, with respect to the abundance of rodents and the extent of the treated area.

For more information about the above research projects, see:

- » TBfree New Zealand: www.tbfree.org.nz/research-papers.aspx
 - » Department of Conservation:
www.doc.govt.nz/about-us/science-publications/
www.doc.govt.nz/our-work/managing-threats/
 - » Connovation Ltd: www.connovation.co.nz
 - » Landcare Research: <http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/vertebrate-pests>
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