Kangaroo Island Feral Cat Eradication Program

1080 FAQs

Purpose of this document

This document has been drafted in response to questions raised at a community meeting on 21 September 2018 in regards to the potential use of 1080 (sodium fluoroacetate) on Kangaroo Island for the eradication of feral cats.

The questions are presented in the order in which they were recorded on the whiteboard and with minimal changes to language.

To find out more about the Kangaroo Island NRM Board's Feral Cat Eradication Program (KI FCEP), please visit https://www.naturalresources.sa.gov.au/kangarooisland/plants-and-animals/pest-animals/Kangaroo-Island-Feral-Cat-Eradication-Program

1. How many times is a cat likely to be sprayed by a Felixer™ Grooming Trap?

When a cat is detected by the in-built sensors in the Felixer™ Grooming Trap the device ejects one dose of toxic gel onto the flank of the animal. This 'surprise attack' is sufficient to deter the cat from approaching the Felixer™ Grooming Traps again.

The results up to December 2018 of non-toxic trials of Felixer™ Grooming Trap on Kangaroo Island and elsewhere demonstrated that most cats are observed walking past the Felixer™ Grooming Traps only once on any given night.

For a demonstration of how the Felixer™ Grooming Trap works, please watch the following video: https://www.youtube.com/watch?v=AnpJBI_502U

2. How is the KI Feral Cat Eradication Program funded, and is there continuity in the funding?

The Kangaroo Island Board is the owner of the program. The Department for Environment and Water regionally delivers the program on behalf of the board.

The Feral Cat Eradication Program is funded largely by the Australian Government (AG) through its National Landcare Program. Phase 1 of the program received $520,000 from the AG Department of Energy and Environment.

Additional investment, including project management came from the South Australian Department for Environment and Water, the KI NRM Board, PIRSA, AgKI and private sponsors. The Australian Government has also invested a further $336,000 for the start of Phase 2 and recently announced an additional $2 million for Phase 2 of the program, which is the eradication of feral cats from the Dudley Peninsula.

3. How will 1080 be used?

In Phase 2 of the program, 1080 will be used in the Felixer™ Grooming Trap and also in toxic baits.

Toxic trials with the Felixer™ Grooming Traps will commence in early 2019 at a small site on the Dudley Peninsula. The site has been selected with permission from the landholder, and neighbours have been notified. The Felixer™ Grooming Trap will be deployed in areas with a low likelihood of public access and will be signposted to warn members of the public of the danger.

There are strict regulations governing the use of 1080 baits, including signage and notification requirements, and mandatory buffer distances to dwellings, waterways, property boundaries, gateways and public roads.

The public will be notified in advance of any planned use of toxic baits for feral cats, and clear signage will be erected.

4. What is the RSPCA's opinion on the use of 1080?

The RSPCA describe their view of 1080 on their website as follows:

"RSPCA Australia recognises the need to control introduced species, such as the fox, to reduce both environmental and agricultural impacts. However, we argue that the control methods used should be as humane as possible. The available evidence on the effect of 1080 on affected species indicates that it is not a humane poison. The RSPCA has campaigned over many years for further research into alternatives to 1080 so that it can be phased out and replaced with more humane alternatives. In 2016, a new type of lethal bait containing para-aminopropiophenone (PAPP) was approved for use for wild dog and fox control. Further work is being undertaken for the use of PAPP against feral cats. While 1080 continues to be used, RSPCA Australia advocates that any baiting programs are carried out in accordance with the codes of practice (COPs) and standard operating procedures (SOPs) produced by the NSW Department of Primary Industries and funded by the Australian Government."

The RSPCA provides oversight, feedback and advice to the Program on Kangaroo Island through representation on the Feral Cat Steering Committee.

5. Has the current Phase 1 project conducted peer-reviewed research?

Yes, the control trials and behavioural research conducted under Phase 1 of the program are currently being peer-reviewed by island eradication experts. The final technical report will be published on the NRKI website at the end of January 2019.

6. Have different control options been compared and rated?

Yes, a variety of control tools were trialled during Phase 1 and comparative results will be published in the technical report. Furthermore, a University of Adelaide Honours project has compared the cost-effectiveness of a range of control options, and a social geography PhD study is investigating the feasibility and community acceptability of various control options in different locations across the island.

7. Is 1080 humane/safe/residual?

Humaneness

The 'humaneness' of a pest animal control method refers to the overall welfare impact that the method has on an individual animal, both before and during death. A model for assessing the relative humaneness of a variety of methods used to control pest animal species has been developed under the Australian Animal Welfare Strategy. Humaneness assessments for feral cat control methods can be found here:

http://www.pestsmart.org.au/animal-welfare/humaneness-assessment/feral-cat//

Currently, the only toxin registered for use in feral cat control projects in South Australia is 1080.

When ingested and metabolised by carnivores such as cats, 1080 causes central nervous system malfunction and usually results in respiratory failure. Because 1080 disrupts two major neurotransmitter pathways and reduces the ability to feel pain in the spinal cord, it has been argued that animals are unlikely to feel pain after ingesting1080.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) has conducted an extensive review of 1080, which can be accessed on their website: https://apvma.gov.au/node/12716.

The review concluded that 1080 is the most ethical, humane and target-specific pesticide for controlling introduced invasive species in Australia.

Safety

In Australia, access to 1080 is highly restricted and its use is highly regulated. It is a restricted Schedule 7 chemical product and can only be purchased and used by persons authorised under state or territory laws. Only authorised and properly trained operators are permitted to handle 1080 and prepare baits. Each Australian state and territory has strict regulations for the manufacturing, labelling, handling, storage, supply, use, retrieval and disposal of 1080 baits.

The concentrations of 1080 used for vertebrate pest management are extremely low and not lethal to humans. For a 90-kg adult human to be poisoned, they would need to eat 9.5 kg of poisoned meat in one meal (equivalent to almost 40 baits). A 30 kg child would need to find and eat at least 13 Eradicat® cat baits to receive a lethal dose of 1080 (Peacock 2018) or 500 kg of meat from a sheep that had forcibly eaten toxic baits within the previous 2.5 hours (Eason et al 1994).

Trials of the Felixer™ grooming traps have shown it is not activated by children (or adults) moving past the device.

1080 baiting programs are intensively managed. Before 1080 baiting occurs, pest animal managers need to consider lethal poison dosage, pest specific poison carrier palatability, pest specific bait size, time of year and seasonal conditions when used, where and how the bait is placed, buried or tethered, the density of baits placed and when they must be retrieved. The Australian Pesticides and Veterinary Medicines Authority Review commended the responsible manner in which 1080 is regulated and used throughout Australia.

Residual

1080 is highly soluble and biodegradable. This means it breaks down in water, soil and carcasses over the course of a few days (the exact length of time depends on ambient temperature and rainfall) and has limited impact on the environment. Unlike some poisons, 1080 does not accumulate in the food chain nor does it keep on killing. If 1080 is sprayed on the ground or is present in baits which are not eaten or break open, naturally occurring bacteria and fungi found in soil, water and bait materials readily break down the toxin. 1080 therefore does not cause a build-up of toxic residues in soil, water or plants.

8. How accurate are the Felixer™ Grooming Traps in distinguishing target from non-target species?

During trials undertaken in Phase 1 of the program, Felixer™ Grooming Traps successfully identified feral cats as their target species in 73% of encounters between cats and Felixer™ Grooming Traps.

The traps can only correctly detect cats as targets if the animal walks perpendicular to the trap. The 27% of cats that weren't recognised as a target by the Felixer™ Grooming Traps were walking diagonally towards, or away from, the trap. This ensures the Felixer™ Grooming Traps will only identify a cat as a target if it is walking past the trap in such a manner that the grooming trap is able to accurately administer the toxic gel to an appropriate part of the body (the flank).

During Phase 1 trials dogs, poultry and kangaroos were occasionally mistaken as targets (false positives) between 10 and 25% of the time. The dogs that were identified as targets were small domestic pets; all working dogs were correctly identified as non-target animals.

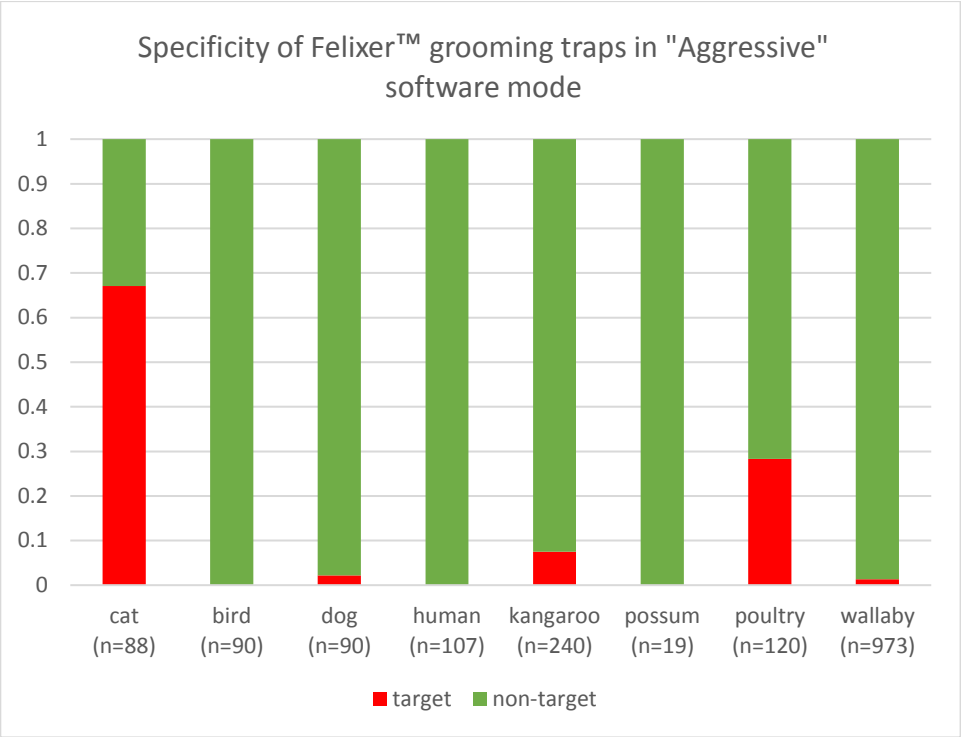
Threatened species (KI Echidna, Rosenberg's goanna) were correctly identified as non-target species 100% of the time.

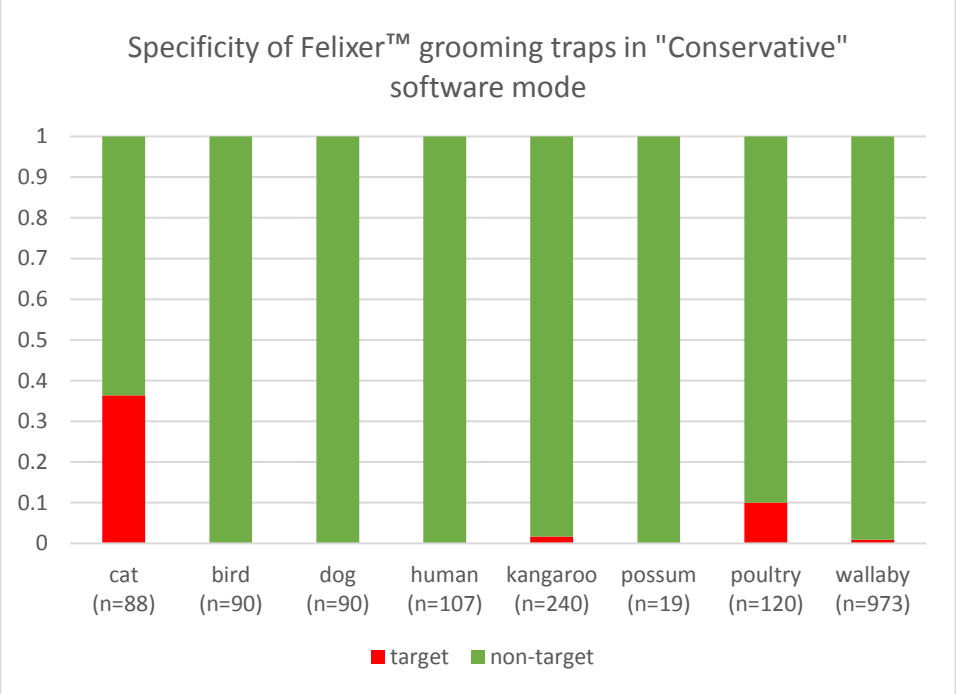
Neither brush-tailed possums nor humans were ever identified as false positives by the Felixer™ Grooming Traps.

Further extensive testing of the Felixer™ Grooming Traps in photo-only mode as part of the *Felixer vs Felis project* has enable refinements to the Felixer™ software. Depending on the location and the prevalence of encounters with non-target species, the Felixer™ Grooming Traps can now be deployed in either "aggressive" or "conservative" mode.

Currently, from a sample of over 2500 detections, false positive identifications of wallabies have been reduced from 10% to less than 3%. All other false positive detection rates have also declined.

The graphs below illustrate the specificity of the Felixer™ Grooming Traps using the updated software modifications for a subset of data to November 2018.





9. What research has been done on the sensitivity of KI wildlife to 1080?

Two Kangaroo Island species have been tested for their tolerance to 1080. Kangaroo Island western grey kangaroos were found to be very tolerant such that a 30-kilogram kangaroo would need to eat two kilograms of Eradicat® meat baits (approximately 133 baits) in a short period of time for a lethal effect. Kangaroo Island Tammar wallabies were found to be reasonably sensitive and one Eradicat® bait could exceed their tolerance.

However as the baits are meat-based and wallabies are herbivorous, it is highly unlikely that they would consume them. During testing of non-toxic Eradicat® baits in phase 1 of the FCEP, kangaroos and wallabies encountered baits on 250 occasions and did not consume the bait on any of these occasions.

The tolerances of different species of Australia fauna have previously been determined through extensive testing and these are documented in the papers listed in the references section. Birds, amphibians and reptiles have all been shown to have a high tolerance to 1080 compared with mammals (McIlroy 1986). Southern brown bandicoots were tested for their sensitivity to 1080 by McIlroy (1983) and found to have a high tolerance level.

10. What are the off-target or secondary poisoning impacts of 1080?

Many Australian native animals are resistant to 1080 because over 30 Australian native plants naturally produce sodium fluoroacetate, which is identical to synthetically manufactured 1080. It is also used in a way that minimises the opportunity for wildlife to encounter a bait or eat it. Baits made specifically for cats (i.e. Eradicat® baits) are meat based in composition and are therefore extremely unlikely to be taken by herbivorous animals. Eradicat® baits also contain the specific amount of toxin needed for a lethal dose for cats, but many native animals would need a significantly higher dose than that contained in one Eradicat® bait.

1080 baits can kill domestic and working dogs if they eat a lethal dose, therefore it is imperative they are restrained from roaming freely, and/or muzzled if and when working, and owners heed warning signs when baiting is occurring.

Previous research has found that when rabbits were poisoned with 1080, the biggest threat of secondary poisoning was to non-native species such as cats, foxes and dogs as they have not developed a tolerance for 1080 as many native species have (McIlroy and Gifford 1992).

The threat of secondary poisoning is dependent upon which parts of a poisoned carcass are consumed (McIlroy and Gifford 1992) and how many carcasses are consumed within a short period of time. The stomach and stomach contents of a poisoned carcass contain the highest concentration of residual 1080, rather than the muscle meat (McIlroy and Gifford 1992). Many native species that would be likely to consume carrion (*e.g.* wedge-tailed eagles, ravens, goannas) have a relatively high tolerance to 1080 (McIlroy 1984).

There are restrictions on where 1080 (in either Eradicat® baits or in Felixer™ grooming traps) can be used, and there are minimum distances that are required to be kept between houses and baits containing 1080. These regulations are in place to minimise human contact with 1080 and reduce the likelihood of people encountering baits.

11. Is the FCEP a control or eradication program?

The program aims to completely remove feral cats from KI not just control them so that they persist in low numbers. Phase 2 will be designed to eradicate feral cats from the Dudley Peninsula and Phase 3 will aim to eradicate them from the remainder of the island.

12. How will the use of 1080 affect the Island's image?

It is not envisaged that the use of 1080 will have a negative impact the Island's image. On the contrary, the plan to eradicate feral cats from the Island is already attracting a lot of positive attention both nationally and internationally.

The benefits of feral cat eradication for conservation of the Island's threatened and endemic fauna will be immense and far outweigh any short-term detrimental effects.

The application of 1080 will be regulated, targeted and strictly controlled. The permit conditions for the use of 1080 are far more restrictive than those applied to most other toxins freely available for commercial agricultural or domestic use. Feedback from the community demonstrates that the majority of islanders support the use of 1080 in an appropriate and controlled manner to complement the other methods used to eradicate feral cats.

13. How long does it take cats to die after ingesting 1080?

In a study by Eason and Frampton (1991) it was shown that all cats that received a dose of 1 mg of 1080 died within 24 hours of consuming the bait. Standard Eradicat® baits contain 4.5 mg of 1080, and the toxic gel used in the Felixer™ Grooming Traps contains 12 mg. These doses ensure that cats succumb very quickly to the toxin. Symptoms usually appear within three hours of bait ingestion with death occurring 2-10 hours later.

14. Is the FGT a research tool or a management tool?

Currently, the Felixer™ Grooming Traps are being operated under an Australian Pesticides and Veterinary Medicines Authority (APVMA) research permit held by the developer, Ecological Horizons. When trials are completed, NRKI will apply to use them as a management tool.

15. Will cat carcasses be retrieved?

During trials of the Felixer™ Grooming Traps in toxic mode, feral cats will be fitted with GPS collars so that target animals can be tracked, located and retrieved. Field staff will make every effort to retrieve feral cats that consume toxic baits.

16. Where can Felixer™ Grooming Traps be used?

Conditions attached to the current APVMA permit specify where Felixer™ Grooming Traps can be deployed and restrictions in proximity to dwellings or watercourses.

Current conditions allow the use of Felixer™ Grooming Traps on five parcels of private land on the Dudley Peninsula and a number of Kangaroo Island Conservation Parks including Simpson Conservation Park and Dudley Conservation Park.

17. Is 1080 approved for use in Australia?

Yes, 1080 has been registered for use in all states for the control of feral species (*e.g*. foxes).

18. What is the impact of 1080 on livestock?

Grazing livestock are known to be susceptible to poisoning by sodium fluoroacetate (1080) (McIlroy 1986). In areas of south-western Australia, where local native plants naturally produce or 1080, there are historical accounts of livestock deaths as a result of ingesting these plants (Peacock et al 2011).

There is little likelihood of livestock encountering 1080 as the method of delivery of the compound would be through either a toxic gel spray onto the flank of an animal positively identified as a feral cat, or by ingestion of a toxic sausage meat bait that is extremely unlikely to be eaten by herbivorous livestock. Previous research found that if livestock (sheep or goats) were forced to ingest a sub-lethal dose of 1080, it was rapidly metabolised and no traces remained in the animal after a few days (Eason et al. 1994).

19. What are the alternative toxins to 1080?

There is one other compound that may become available for feral cat control.

Para-aminopropiophenone or PAPP is the toxin used in the experimental CURIOSITY® cat bait.

PAPP works by converting normal haemoglobin in red blood cells to methaemoglobin, which cannot carry oxygen to the heart muscles and brain. Affected animals become lethargic and sleepy then lose consciousness and die due to lack of oxygen supply to the brain and heart. The time from bait ingestion to first symptoms is generally around 30 minutes, and death usually occurs within one to two hours.

PAPP is not currently registered for use in feral cat control programs by the Australian Pharmaceutical and Veterinary Medicines Authority. PAPP is known to be highly toxic to some native animals, particularly goannas, however research into its off-target effects is limited (Peacock 2018).

21. What do other countries use if they are not allowed to use 1080?

Almost every example of vertebrate pest management world-wide uses a suite of different methods for controlling pests. These include destruction by trapping and shooting, biological controls such as the introduction of natural predators or parasites, and chemical controls such as toxic baits. Alternative toxins used include cyanide, strychnine, arsenic, and anticoagulants such as warfarin, bromadiolone and brodifacoum. These compounds generate lethal outcomes through different mechanisms, have variable half-lives, secondary impacts, and duration between ingestion and death.

22. Who approves the use of 1080?

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is the Australian Government statutory agency responsible for the management and regulation of all agricultural and veterinary chemical products in Australia, including1080.

23. Clarify what the current *Felixer vs Felis* project is seeking to achieve

The current project is undertaking more extensive field trials of the Felixer™ Grooming Traps across a range of habitat types to improve their effectiveness and target specificity, and determine at what rate they can remove feral cats. The project is also engaging private landowners in the deployment of Felixer™ Grooming Traps on their properties.

Landowners will be trained to verify Felixer™ Grooming Traps mortalities through radio-tracking and to analyse images from grooming trap and motion activated cameras to record target and non-target encounters. The current trials also seek to identify the time to death and distance travelled after a feral cat is targeted by the Felixer™ Grooming Traps in order to appropriately plan the eradication of feral cats from the Dudley peninsula.

Contact persons at NRKI

For all enquiries about the Feral Cat Eradication Program please contact the NRKI front desk on (08) 8553 4444 or email kinrc@sa.gov.au

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1080 public presentation by David Peacock, September 2018

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