



## **Pen testing of the kill efficacy of the SA2 Kat trap when used for capturing feral cats**





# **Pen testing of the kill efficacy of the SA2 Kat trap when used for capturing feral cats**

**Grant Morriss**

*Landcare Research*

*Prepared for:*

## **Northland Regional Council**

36 Water Street  
Private Bag 9021  
WHĀNGĀREI 0148  
New Zealand

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*Landcare Research, Gerald Street, PO Box 69040, Lincoln 7640, New Zealand,  
Ph +64 3 321 9999, Fax +64 3 321 9998, [www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)*

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*Reviewed by:*

*Approved for release by:*

Bruce Warburton  
Senior Scientist  
Landcare Research

Daniel Tompkins  
Portfolio Leader – Managing Invasives  
Landcare Research

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## Summary

### Project and client

- Landcare Research, Lincoln, assessed the killing performance of the SA2 Kat trap for capturing feral cats, for Northland Regional Council, during February–April 2017.

### Objective

- To test the killing efficacy of the SA2 Kat trap when capturing feral cats, using the National Animal Welfare Advisory Committee (NAWAC) trap-testing guideline.

### Methods

- This work was carried out with approval of the Landcare Research Animal Ethics Committee (AEC 15/12/01).
- The manufacturer provided new, modified SA2 Kat traps to test their killing performance on wild-caught feral cats. Cats were penned individually and the trap tested in a free-approach test. Once the cat was struck by the trap, the time to loss of palpebral (blinking) reflex was measured to determine whether the trap rendered the captured animal irreversibly unconscious within 3 minutes. For the trap to pass the NAWAC trap-testing guidelines, 10 of 10 cats needed to be rendered irreversibly unconscious within 3 minutes.

### Results

- Ten of ten cats were killed successfully.

### Conclusions

- The SA2 Kat trap passed the NAWAC trap-testing guideline when tested on cats.
- This style of trap could also be adapted for use on possums, and possums could be a significant non-target species when the trap is used for targeting cats. A different trigger depth and trap size may be needed to target possums specifically.

### Recommendations

- If Northland Regional Council wish to use kill traps for targeting feral cats that have passed the NAWAC trap-testing guideline, they should support the use of the SA2 Kat trap.
- When promoting the use of the SA2 Kat trap by community groups and/or other agencies, Northland Regional Council should provide setting and baiting instructions as per those used for the NAWAC test.
- The SA2 Kat trap or a similar design should be submitted for NAWAC testing on possums.



## 1 Introduction

Landcare Research, Lincoln, assessed the killing performance of the SA2 Kat trap for capturing feral cats, for Northland Regional Council, during February–April 2017.

## 2 Objective

- To test the killing efficacy of the SA2 Kat trap when capturing feral cats, using the National Animal Welfare Advisory Committee (NAWAC) trap-testing guideline.

## 3 Methods

The client provided six new, modified SA2 Kat traps to test their killing performance on wild-caught feral cats. The original trap design had previously been trialled on cats but failed the NAWAC trap-testing guideline (Morriss 2016). The current design differs in that a stronger spring was installed (40% increase in clamping force); the trigger depth was increased to 90 mm (the previous maximum depth tested was 85 mm); and the angle of the front top edge of the trap was increased to better grip the top of a cat's neck when it is caught.

Cats were acclimatised to captivity in outdoor pens for at least 2 weeks before being transferred to observation pens for the trap testing. Cats were penned individually and the trap was tested in a free-approach test. In each observation pen a trap was set at the top of a leaning board c. 1 m above the ground (Fig. 1). The trap was baited with chicken mince on the floor of the trap, and two small smears of mince were placed on the leaning board to encourage cats to walk up the board towards the trap. Once set, the base of the trap trigger was 90 mm in from the mouth of the trap.



**Figure 1** SA2 Kat kill trap set at the top of a leaning board. Trap shown unset.

When a cat was struck by the trap, the time to loss of palpebral (blinking) reflex was measured to determine whether the trap rendered the captured animal irreversibly unconscious within 3 minutes. For the trap to pass the NAWAC trap-testing guideline (2011), 10 of 10 cats needed to be rendered irreversibly unconscious within 3 minutes.

All captures were videoed using a digital video system (GeoVision DVR) with infrared illumination. Testing was carried out during the first 3 hours of darkness. Video footage was reviewed using GeoVision EZView software.

This work was carried out with approval of the Landcare Research Animal Ethics Committee (AEC 15/12/01).

To assess how well the SA2 Kat trap killed feral cats compared to other traps that had passed the NAWAC trap-testing guideline, the times of irreversible unconsciousness recorded for cats caught with each trap type were graphed and compared using one-way analysis of variance (ANOVA).

## **4 Results**

### **4.1 Pen trials**

Ten of ten cats tested were rendered irreversibly unconscious within the 3-minute threshold (Table 1). Nine of the ten cats were unconscious when first assessed (i.e. when the observer first gained access to the captured cat). This recorded time was probably longer than the actual time they first became unconscious because it was difficult to access the trapped cats' eyes and assess their palpebral response due to the killing bar pinning the trapped cat's head against the roof of the trap.

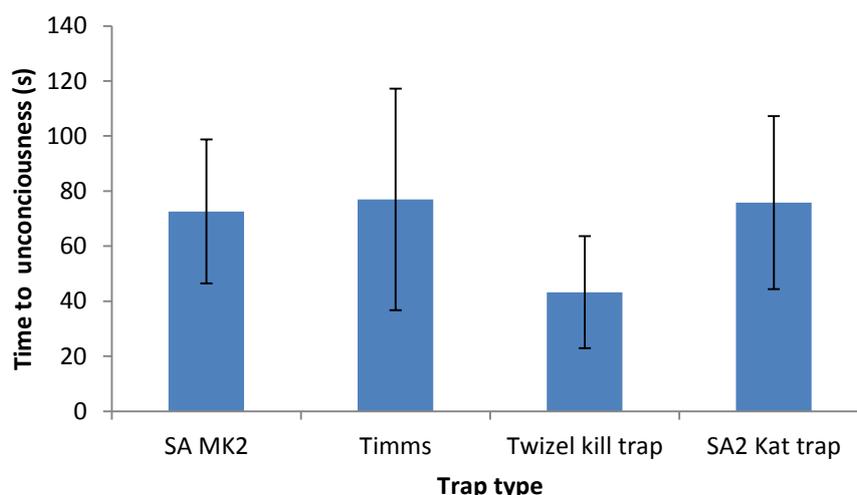
The tenth cat tested was slower to become unconscious. Initially its airway was not fully occluded perhaps because it had first used its front paw to try to access the bait in the trap and had its head slightly angled when the trap fired. Later struggling levelled its orientation and full occlusion occurred.

**Table 1** Outcome of the test using the SA2 Kat kill trap for capturing cats

Date	Weight (kg)	Sex	Loss of palpebral reflex (min:s)	Heart stop (min:s)	Strike location	Notes
19/03/2017	2.29	M	<1:10	3:52	Neck	Sat on top of trap before capture. Time to unconsciousness was probably shorter but difficult to access eye.
20/03/2017	2.40	F	<1:05	3:16	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
22/03/2017	1.50	F	<1:11	4:38	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
23/03/2017	2.77	F	<1:05	4:24	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
24/03/2017	2.77	F	<1:00	4:30	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
24/03/2017	1.49	F	<0:57	5:13	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
25/03/2017	1.81	M	<1:10	3:58	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
26/03/2017	1.64	M	<1:30	4:59	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
27/03/2017	3.80	M	<0:50	4:38	Neck	Time to unconsciousness was probably shorter but difficult to access eye.
28/03/2017	2.92	F	2:40	4:47	Neck	Used paw to access bait in trap before being caught by the neck. Initial vocalisation and gasps before repositioning and full airway occlusion.

## 4.2 Kill trap comparison

The mean time of irreversible unconsciousness in cats trialled with four kill trap designs that had passed the NAWAC trap-testing guideline varied from 43.3 to 77 seconds ( $n = 10$  for each trap type; Fig. 2). There was weak evidence of a difference ( $F_{3,36} = 2.77$ ,  $P = 0.055$ ) in the time of irreversible unconsciousness between all four trap types. The Standard Error bars of all four overlap indicating no real difference between trap types.



**Figure 2** Mean time (s) to irreversible unconsciousness ( $\pm$  SE) in cats caught during NAWAC trap testing by Landcare Research, Lincoln. Only trap types that passed the NAWAC trap-testing guideline for cats are shown.

## 5 Conclusions

The SA2 Kat kill trap passed the NAWAC trap-testing guideline when tested on feral cats. Modifying the trap from the one previously tested meant that cats were held more firmly and unable to pull out once caught. All cats were caught by the neck, which resulted in rapid unconsciousness due to occlusion of their airway and carotid arteries.

This style of trap could also be used or adapted for capturing possums, and because possums are likely to be a major non-target species captured it would be justified to test this trap with possums. It is not known whether possums would be captured correctly and rendered irreversibly unconscious within the 3-minute threshold with the trap configured for trapping cats, but the manufacturer suggests they can be killed consistently (Steve Allan, pers. comm.). Otherwise, a different trigger depth and trap size may be required for specifically targeting possums.

The times to irreversible unconscious recorded with the different cat trap designs that have passed the NAWAC guideline were similar because they all kill by airway and carotid artery occlusion. Traps that cause major skull fractures have the potential to kill more rapidly, but there are no traps with that killing method that have passed the NAWAC guideline for cats.

## **6 Recommendations**

- If Northland Regional Council wish to use kill traps for targeting feral cats that have passed the NAWAC trap-testing guideline, they should support the use of the SA2 Kat trap.
- When promoting the use of the SA2 Kat trap by community groups and/or other agencies, Northland Regional Council should provide setting and baiting instructions as per those used for the NAWAC test.
- The SA2 Kat trap or a similar design should be submitted for NAWAC testing on possums.

## **7 Acknowledgements**

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## **8 References**

Morriss G 2016. Pen testing of the kill efficacy of the SA2 trap when used for capturing feral cats. Landcare Research Contract Report LC2480 for Northland Regional Council. 4 p.

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