Effectiveness of three trapping systems for killing feral cats

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CONTENTS

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A B S T R A C T

Recent changes in animal welfare legislation (Animal Welfare Act 1999) have enabled the National Animal Welfare Advisory Committee to recommend the prohibition of traps that they believe are unacceptable on welfare grounds. The Department of Conservation, in its management of pest species that threaten conservation values, is one of the largest users in New Zealand of kill-traps. It is prudent, therefore, that the Department ensures that the traps it depends on perform effectively, both at capturing the target animals and at killing them quickly. Three kill-trap systems (Steve Allan Conibear-like trap, Conibear 220, and a BMI 160) were tested for their effectiveness at killing feral cats quickly. The traps were tested following the National Animal Welfare Advisory Committee draft guidelines, which require traps to render 10 out of 10 animals unconscious within 3 minutes. All three trap-systems failed to achieve this standard and did so before five cats had been tested. The results of these trials indicate that the current kill-traps used by DOC for trapping feral cats do not kill consistently or quickly. Therefore, every effort should be made to identify an alternative effective kill-trap system that field staff can use in the knowledge that the feral cats they capture are killed quickly.

Keywords: Animal welfare, feral cats, kill-traps

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1. Introduction

The Department of Conservation (DOC) control feral cats using a variety of trapping systems, but does not know how quickly these systems kill. With increasing public interest in pest control techniques and animal welfare issues, DOC needs to be sure that the trapping systems it uses kill target animals acceptably quickly. DOC commissioned Landcare Research to determine the performance of three kill-trap systems. This study was carried out between January and June 2001.

2. Background

For DOC to achieve its conservation goals of protecting endangered fauna, it must control predators in many conservation areas. One of the suite of predators targeted is the feral cat (*Felis catus*), and control of this species is carried out using a variety of traps (Veitch et al. 1992; Sim & Saunders 1997). More recently, DOC and other animal control operators have placed greater reliance on kill-traps because the recent animal welfare legislation (Animal Welfare Act 1999) allows kill-traps, unlike leg-hold traps, to be left indefinitely between checks. However, although the legislation waives the need for a daily check for kill-traps, it assumes that these traps kill captured animals quickly. This assumed requirement is known to be frequently violated (Warburton & Orchard 1996). Therefore, DOC needs to determine if the kill-trap systems it uses kill quickly and, if not, it needs to change to systems that do.

To assess whether a kill-trap system—which includes the trap, any boxes or covers used, and the way the trap is set—is acceptable in terms of its ability to kill quickly, the time to loss of the palpebral (blinking) reflex is measured. The International Organisation for Standardisation (ISO) developed a draft standard for testing traps (Jotham & Phillips 1994; Warburton 1995) and this has now been developed as a National Animal Welfare Advisory Committee (NAWAC) draft guideline. For kill-traps to be acceptable, either 10 of 10 or 13 of 15 target animals must be rendered unconscious within 3 minutes of capture. Consciousness is determined by using the palpebral (blinking) reflex, which stops when the animal has lost consciousness (Rowsell et al. 1981).

3. Objective

To determine if two kill-trap systems currently used by DOC and one alternative system used for trapping possums render feral cats unconscious within 3 minutes, by:

- Determining the time to loss of consciousness following capture in the kill-trap.

4. Methods

Wild cats were captured in cage traps, transferred to outside pens and left to acclimatise for at least 4 days before being tested. Two trap-systems were provided by DOC. The first was a small Conibear-like trap manufactured by Steve Allan (SA Conibear) that was set at the top of a leaning board (Fig. 1).

Figure 1. The SA Conibear kill-trap set in a metal bracket as supplied by DOC. A small pile of mince or tinned cat food is placed on top of the bracket (not shown), and when the cat feeds on the bait, the top of the cat's head triggers the trap.

The second trap tested was a Conibear 220 set inside a large wooden box that prevents kiwi from accessing the traps (Fig. 2). This trap system was set with a piece of rabbit meat or fish attached to the trap's wire trigger. The third system tested was the BMI 160 trap set in the same wooden boxes as the Conibear 220 and baited with fish. The SA Conibear and Conibear 220 traps used in our trials were initially set by DOC staff to ensure their setting followed that used in the field.

Figure 2. A Conibear 220 placed in a kiwi-safe box. Normally a trap is set at both ends, and the cat enters the trap via the turret on the top of the box.

The protocol used for testing the traps was based on the National Animal Welfare Advisory Committee (NAWAC) draft guidelines. A sample of 10 cats was selected for testing each trap system. The guidelines require 10 of 10 animals to be rendered unconscious within 3 minutes of capture for a trap to pass the test, so the trap was judged to have failed if a cat was still conscious after 3 minutes (and had to be euthanased). However, because there is a relatively high probability of getting one failure by chance, the testing was continued with other cats until a second failure was obtained. At this stage the test was stopped. This gave us: (1) greater confidence that the trap was ineffective, and (2) allowed us to better identify the factors that might be contributing to the traps' poor performance.

Each test animal was observed from inside an observation hut, and when a cat triggered the trap the observer quickly got into position to monitor the palpebral (blinking) reflex by gently touching and/or blowing air onto the corner of the eye. The time to loss of the palpebral reflex and the time for the heart to stop beating were recorded. If a captured animal was still conscious after 5 minutes, it was euthanased with an intracardiac injection of pentobarbitone.

This work was carried out with approval from the Landcare Research Animal Ethics Committee (AEC Approval 99/1/1).

5. Results

All three trap-types failed the test, having at least one captured cat still conscious after 3 minutes.

5.1 SA CONIBEAR (Table 1)

The SA Conibear rendered the first cat captured unconscious in 30 seconds, but the following two cats remaining conscious for at least 5 minutes. All three cats were struck and held across the neck.

TABLE 1. THE TIMES TO LOSS OF PALPEBRAL REFLEX AND TO CESSATION OF A HEART BEAT FOR FERAL CATS CAPTURED IN SA CONIBEAR TRAPS.

DATE	WEIGHT (kg)	SEX	STRIKE LOCATION	PALPEBRAL REFLEX	HEART STOP	NOTES
29 Jan 01	2.92	Female	Neck	30 s	2 min 50 s	
01 Feb 01	–	–	–	–	–	Sprung, no capture
01 Feb 01	2.27	Female	Neck	> 5 min	–	Euthanased
03 Feb 01	2.25	Male	Neck	> 5 min	–	Euthanased

5.2 CONIBEAR 220 (Table 2)

The first three tests of the Conibear 220 trap resulted in cats triggering the traps but avoiding capture (no injuries resulted). The trap's trigger was then modified (bent further out from the far side of the trap to ensure the animal was further through the trap when the trap was triggered. The following two cats tested were struck across the head and rendered unconscious within 3 minutes. The third and fifth cats were struck across the neck, but were still conscious at 5 minutes and were euthanased. The fourth cat tested was struck across the neck and rendered unconscious in 1 minute, 19 seconds.

TABLE 2. THE TIMES TO LOSS OF PALPEBRAL REFLEX AND TO CESSATION OF A HEART BEAT FOR FERAL CATS CAPTURED IN CONIBEAR 220 TRAPS.

DATE	WEIGHT (kg)	SEX	STRIKE LOCATION	PALPEBRAL REFLEX	HEART STOP	NOTES
2 Feb 01	–	–	–	–	–	Sprung, no capture
10 Feb 01	–	–	–	–	–	Sprung, no capture
26 Feb 01	–	–	–	–	–	Sprung, no capture
28 Feb 01	3.27	Male	Head, forward of ears	2 min 26 s	5 min 17 s	
3 Mar 01	2.80	Female	Head, across ears	1 min 52 s	4 min 40 s	
5 Mar 01	1.70	Male	Neck	> 5 min	–	Euthanased
6 Mar 01	1.57	Male	Neck	1 min 19 s	5 min 1 s	
27 Jun 01	4.5	Male	Neck	> 5 min	–	Euthanased. Neck rotated 45° in trap

5.3 BMI 160 (Table 3)

The first cat tested with the BMI 160 trap managed to spring the trap and avoid capture (no injury resulted). The following three feral cats were then captured with strikes across the neck. However, only the first was rendered unconscious within 3 minutes.

TABLE 3. THE TIMES TO LOSS OF PALPEBRAL REFLEX AND TO CESSATION OF A HEART BEAT FOR FERAL CATS CAPTURED IN BMI 160 TRAPS.

DATE	WEIGHT (kg)	SEX	STRIKE LOCATION	PALPEBRAL REFLEX	HEART STOP	NOTES
10 May 01	–	–	–	–	–	Sprung, no capture
17 May 01	1.92	Female	Neck	51 s	4 min 12 s	
21 May 01	1.83	Male	Neck	> 5 min	–	Euthanased
22 May 01	1.82	Female	Neck	> 5 min	–	Euthanased

6. Conclusions

All three trap models tested failed to meet the NAWAC draft guidelines (i.e. failed to render 10 out of 10 animals unconscious within 3 minutes). The Conibear 220 and BMI 160 traps when first tested failed to capture the feral cats even though the cats triggered the traps. This indicates that the traps' effectiveness at capturing and striking an animal on a vital location is very dependent on how they are set. Therefore, even if these traps had been able to capture and kill effectively in a trial with penned animals, there is a high risk that, when used in the field by a variety of trapper operators, they would not result in a quick kill.

The strike locations on the cats captured in the SA Conibear and BMI 160 were all across the neck. However, the Conibear 220 struck two cats across the head. These head strikes resulted in effective kills and this may indicate that head strikes are more effective at killing cats than neck strikes. However, if head strikes were targeted, it is likely that there would be more misses and/or ineffective strikes on the face, resulting in injuries to, but not killing, captured cats.

Some of the cats used were relatively small, i.e. less than 2 kg (especially those captured in the BMI traps), and the gap between the trap jaws when closed on these cats was less than 20 mm. At this spacing most traps have lost a significant amount of their clamping force and it is possible that they do not then clamp necks sufficiently to occlude the carotid arteries (Morriss et al. 2000).

The results of these trials indicate that the current kill-traps used by DOC for trapping feral cats do not kill consistently or sufficiently quickly enough to be considered humane. DOC should attempt to identify, as soon as possible, an alternative effective kill-trap system that field staff can use with confidence that the feral cats they capture are being killed quickly. This action will also ensure that DOC is using traps that meet the NAWAC guidelines for kill traps.

7. Recommendations

- SA Conibear, Conibear 220, and BMI 160 traps should not be used for trapping feral cats.
- DOC should identify a kill-trap for feral cats that applies a significant clamping force when the trap jaws are at an opening of 10–15 mm.
- Further trials should be carried out to identify a kill-trap for capturing cats that meets the NAWAC trap-testing guidelines.

8. Acknowledgements

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10. Addendum

Subsequent to the work described in this report, a modified SA Conibear trap set at the top of a ramp was tested by the authors following the National Animal Welfare Advisory Committee draft guidelines. The trap system passed the test and can be accepted as being an effective kill-trap system for feral cats. This subsequent work was carried out for Northland Conservancy, and the following report on it can be obtained from the conservancy or Landcare Research.

Warburton, B.; Poutu, N. 2001: The killing effectiveness of a modified Steve Allen Conibear trapping system for capturing feral cats. Unpublished report prepared by Landcare Research for Northland Conservancy, Department of Conservation, Whangarei.