

Stoat Traps for Landcare Groups

Bruce Warburton

Landcare Research
PO Box 40, Lincoln 7640
New Zealand

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Northland Regional Council
Private Bag 9021
Whangarei

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Reviewed by:

Approved for release by:

Dave Morgan
Scientist
Landcare Research

Phil Cowan
Science Leader
Pest Control Technologies

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1. Introduction

Northland Regional Council supports the pest management initiatives of many private Landcare groups throughout its region that implement various vertebrate pest control programmes focussing on possums, rodents, and mustelids. The effectiveness of these groups to control species such as stoats is often limited by the lack of easy-to-use tools, so the council, through Envirolink funding, requested Landcare Research to provide advice on traps that might provide low-cost, easy-to-use options for trapping stoats.

2. Background

Although many community groups are involved in controlling vertebrate pests, the members of these groups often do not have expertise or formal training in the use of all the pest control methods that are potentially available. For example:

- members do not have the required licences to use poisons
- members do not have the strength to set some of the available traps
- members have personal ethical constraints, e.g. on how they choose to kill animals, or about applying pesticides to the environment
- groups do not have adequate levels of operational funding.

Controlling stoats has proved to be challenging for some of these groups, because current trapping requires the use of large wooden boxes and the setting of either Fenn traps or traps recently developed by the Department of Conservation¹. Although these trapping systems are effective for trapping stoats they are not user-friendly, so the council would like to identify alternative systems that are relatively cheap, easy to use, and effective.

Because Fenn traps were shown to be incapable of killing stoats quickly or consistently, the Department of Conservation funded a trial to assess the effectiveness of Victor snap traps in killing stoats (Warburton & Poutu 2002). These traps, although designed for capturing rats, were found to be effective in capturing and killing short-tailed weasel (*Mustela erminea*) in Canada (Canadian Trapper 1999). Although the short-tailed weasel is the same species as the stoat, it is significantly smaller (females 28–85 g; males 70–206 g; Fagerstone 1987) than stoats in New Zealand (females weigh on average 200 g and males 300–350 g; King 1990). When tested, the Victor snap trap failed to kill all 10 out of a sample of 10 stoats. The National Animal Welfare Advisory Committee guideline (NAWAC 2003) requires mortality of 10/10 before a trap can be considered as having satisfactory killing performance. Nevertheless, the traps did show some potential for delivering quick kills (albeit not consistently), and because they are relatively cheap and easy to use, there is merit in trying to modify them in order to improve their performance.

¹ The DOC 150, 200 and 250 have passed the NAWAC trap performance requirements for stoats.

This report reviews the results of these earlier trials and identifies modifications that should be made to improve trap-efficacy to the standard required by the NAWAC trap-testing guidelines.

3. Objective

To provide advice on the potential of using snap traps for killing stoats.

4. Review Findings

Warburton & Poutu (2002) tested two types of Victor snap traps against stoats: the Victor professional (with a yellow plastic treadle-plate) and the standard Victor rat trap (with a metal bait-trigger). Triggers were modified (i.e. most of the yellow plastic treadle in the Victor professional trap was removed), and a safety pin attached for securing a meat bait (Fig. 1). Initial trials showed that some stoats were struck too far back on the neck or shoulders. Thus the final design tested was the Victor rat trap with a metal trigger and the safety pin secured near the edge of the bait holder (Fig. 1). The final trigger modifications resulted in the meat baits being placed 30–35 mm in from the closed position of the striking bar.



Fig. 1 Two types of Victor rat traps with modified triggers and safety pins attached for securing meat bait. Note the distance between the safety pin (bait) and striking bar is significantly less in the right-hand trap.

Traps were set vertically on poles approximately 25 cm above ground. The traps were fitted with plastic covers (funnels) to ensure animals entered from the front of the trap, to maximise the probability of a successful strike (Fig. 2). The covers were an integral part of the traps and were shown to be effective in Canadian tests against short-tailed weasels. The vertical set was selected after discussion with Peter Shaw (DOC Opotiki).



Fig. 2 Victor professional snap trap with plastic cover.

The tests results using a Victor trap set in this way showed three adult males of average weight (200–300 g) were killed rapidly, and therefore humanely, by the striking bar delivering a lethal blow to the cranium (Fig. 3), but one adult male weighing 410 g, although stunned, recovered and managed to escape (Table 1).



Fig. 3 Stoat captured and killed in a Victor snap trap with plastic cover.

Table 1. Outcomes of Victor snap traps set with a safety pin attached to the metal trigger

Weight (g)	Sex	Strike location	Time to end of Palpebral reflex (secs)	Time to heart stopping (mins)	Notes
229	Male	Skull, between ears and eyes	0:30	3:00	Pulled out of trap after about 2 sec. Fractured skull
257	Male	Skull, between ears and eyes	0:45	3:05	Fractured skull
292	Male	Skull, just forward of ears	0:39	4:07	Fractured skull
410	Male	Head	-	-	Escape, animal stunned but recovered after 3 min

The rapid loss of palpebral (blinking) reflex following cranial fracture (Fig 4) indicate that unconsciousness would have been close to instantaneous, and consequently these traps have some potential to be further modified as effective, but low-cost stoat traps.

**Figure 4.** Cranial fracture in an adult male stoat caused by the striking bar of a Victor snap trap.

An alternative snap trap to the Victor that could be used for stoats is the Snap-E rat trap. A similar bait cover to that used on the Victor traps can be attached to ensure that the animal is guided into the trap so that the striking bar delivers its force consistently to the correct region of the cranium (Fig. 5). This trap is very easy and safe to set with no requirement for fingers to be placed within the closing arc of the striking bar. The trap applies a greater clamping force when closed than the Victor trap, but because the striking bar only rotates through 90 degrees when triggered, the impact momentum is likely to be less than that delivered by the Victor trap.



Fig. 5 Snap-E rat trap set with a bait cover.

The price of the Victor Professional (\$3 to \$5) and the Snap-E (\$6.50 to \$8) traps (price depends on quantity bought) is low compared to other kill traps (\$20 to \$30), and consequently such low-cost traps will enable some Landcare groups to maximise the number of traps they can obtain with limited funds. Both trap types are available from Pest Management Services (<http://www.nopests.co.nz/>).

To minimise the risk to non-target species (especially birds) and interference from possums, both snap traps can be set in waxed cardboard or coreflute boxes, or under a wire-mesh cover (Fig 6). The entrance hole should be c. 40mm in diameter, which has been found to be optimal for stoats (Brown 2001).

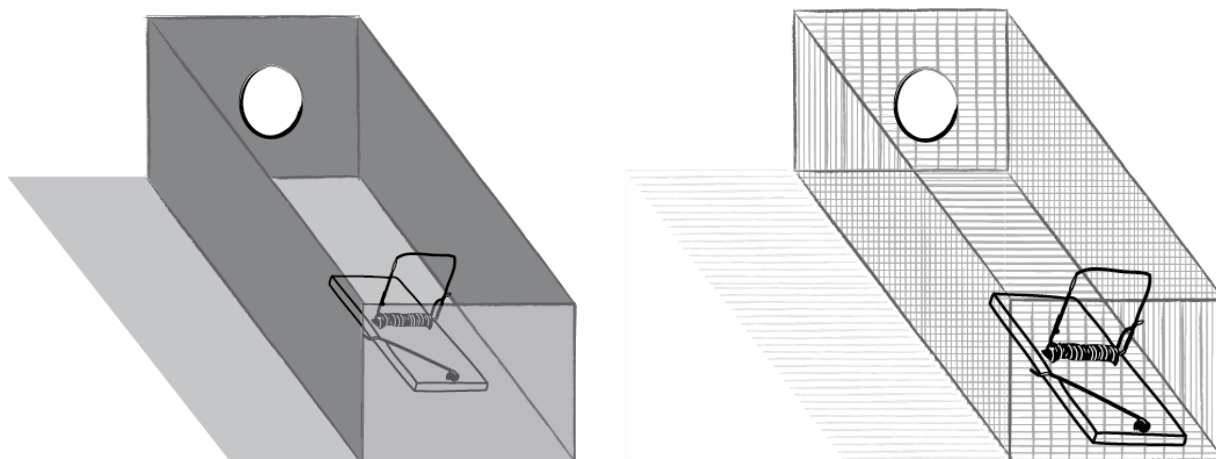


Fig 6. Snap traps set in a cardboard and wire-mesh box to minimise risk to non-target species.

5. Conclusions

- Snap rat traps have the potential to kill small to medium-sized stoats very quickly.
- Neither the Victor trap nor the Snap-E trap currently satisfy the NAWAC kill trap performance requirements.
- The Snap-E rat trap has greater clamping force than the Victor trap and therefore may be effective against larger stoats. However, its impact momentum is likely to be less than the Victor because the striking bar only travels through 90 degrees before impact, in contrast to the Victor's striking bar that travels through 180 degrees before impact.
- Both traps could be fitted with stronger springs, but the effect this has on trap functioning would need to be tested. Additionally, the angle of the striking and setting bar of the Snap-E trap, which is currently set at 90-degrees, could be decreased to deliver a higher impact momentum.
- At a cost of \$5 to \$8 per trap, these traps could be used as multiple capture systems. Since a purpose-built multiple-capture system is likely to cost in excess of \$100/unit, 10–12 snap traps could be bought for this price and set at a single location to achieve multiple captures. Since stoats are known to feed on carrion (G. Nugent pers. comm.), this may prove to be a very effective trapping strategy.
- Both snap trap designs are easy to use and pose little risk to users.

6. Recommendations

- Both Victor and Snap-E traps should be further developed to determine their potential as quick-kill stoat traps.
- Modifications should include:
 - stronger springs for both traps
 - change in angle of the striking and setting bar of the Snap-E trap
 - addition of a locking tab to prevent the striking bar being lifted once closed.
- Modified traps need to be tested to assess whether they meet the NAWAC guideline for humaneness.
- To maximise efficiency, field trials should be designed to compare the cost-effectiveness of using single and multiple traps at different grid-spacings.

7. Acknowledgements

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8. References

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