

STOAT CONTROL – KILL-TRAPPING

TECHNIQUE

Trap station layout

- Trap lines should follow habitat perimeter, ridges, tracks, roads, altitudinal contours and waterways. These features seem to result in a better catch of stoats [1,2] and make trap-checking easier.
- For broad-scale control, trap lines no further than 800 m - 1 km apart and trap stations placed up to 200m [3] apart on the lines should be used. A typical intensive trapping operation (Moehau kiwi recovery zone) has traps spaced 100 metres apart. Trap spacing should be established as precisely as possible using compass and hip chain.
- Trap lines will protect a strip approximately 400m either side of the line [4]. Traps set 200 m apart should ensure that female stoats are put at risk of being caught [5]. There should be at least one trap station within each stoat's home range [6]. While most stoats have large (40-256ha), often over-lapping home ranges [7], the core range is often quite small. Where prey is superabundant home ranges can be very small [7].
- Using just a GPS to locate trap stations will result in gaps in spacings in steep terrain
- Traps should be set along both sides of large rivers and in all available habitats to ensure all stoats are placed at risk. There are indications that individual stoats will not use all available habitats.
- Traps can be set either as single or double sets. The decision to use single or double sets is a site-based decision related to the size of the area and budget. If using single set traps, the spacings between traps should be decreased to increase the trap encounter rate, or the frequency of servicing should be increased, especially where rats are getting caught in any abundance.
- A good track infrastructure is important, with each trap station numbered for ease of relocation and data collection. This reduces the risk of missing a trap during checking and allows capture data to be related to each trap site.
- Good boundaries and buffer zones should be used to reduce re-invasion. Use natural barriers e.g. large waterways where possible.

Timing of operations

- Timing is critical and depends on the species being protected and the biology of stoats and their prey at the site.
 - e.g. To protect kiwi chicks, control stoats for most of the year i.e., kiwi chicks are vulnerable until they are >1000g
 - e.g. To protect kaka, control while the females are on the nest until the chicks fledge
 - e.g. Increased control and checking of traps will be required during stoat irruptions

Effective use of traps

Trap checking regimes need to consider:

- Trap occupancy rate (of both target and non-target species),
- Field life of the bait used.

Timing of inspection regimes vary from weekly (or more frequently) during high stoat and/or rat numbers; to 6 to 12 weeks at sites/in seasons with low stoat numbers and when bait is not rotting.

- Pre-luring traps should be considered where a rapid knockdown of stoats is required.

EQUIPMENT

Trap type

Key requirements are: catch effectively, kill humanely, easy to use and maintain, light weight, portable and cost effective. Traps have been [assessed against the National Animal Welfare Advisory Committee \(NAWAC\) standard](#) for killing-performance with the following results:

DOC 150	Pass
DOC 200	Pass
DOC 250	Pass
Goodnature A24	Pass
Modified Victor Easy Set rat trap	Pass
Fenn Mk4	Fail
Fenn Mk6	Fail
Victor snap-back professional	Fail

- The traps that have passed are therefore recommended.
- If also targeting stoats and ferrets, the DOC 250 is recommended.
- If also targeting rats, the DOC 150 or 200, GoodnatureA24, and modified Victor Easy Set are recommended.
- Alternatively, the Mark 4 and Mark 6 Fenn can be used. Note: These traps have not passed the NAWAC guidelines and could be banned at a later date. If targeting stoats and ferrets Mark 4 Fenn traps should not be used as they will not effectively kill ferrets [8].

Maintenance of traps

New Traps

The DOC traps do not require initial treatment.

Fenn traps should be treated to prevent traps and chains rusting excessively. Coating should not repel stoats or attract non-targets, and be user friendly. Examples of protective coatings are:

- Dipping the traps in hot melted paraffin wax,
- Nothing (in dry conditions),
- Traps should **not** be electroplated.

Electroplating quality is highly variable. Done poorly, rust becomes worse than no treatment, occurring under the plating where follow up with other protection is difficult.

Traps in use

- Traps should meet a spring off standard of a 100-150 g weight placed on the trigger plate.
- Trigger weight will need to be lighter where weasels are also being targeted.
The mean weight of a female weasel is 57 g.
- Traps should be regularly cleaned with a wire brush to remove mould, fur and bits of dead animals. This also enables identification of animals that have escaped from an empty sprung trap.
- Un-sprung traps must be set off at regular intervals (i.e. during inspection regime) because trigger mechanisms can rust, resulting in slow set-off times which risk missed or poor captures.
- A formalised maintenance regime is important. Traps must be regularly maintained, including checking for worn pivots, weakened springs. Fenn traps require periodic re-application of the protective coating.

Tunnel/Cover

Kill traps must be set in a tunnel or under a cover. A tunnel has three functions: i) orientate the animal relative to the trap, ii) disguise and protect the trap and iii) keep out non-target species [3]. It must have the following features

- Made of solid material. Kiwi can poke their bills through tunnels made of wire mesh.
- Where weka are present the tunnels need to be long enough to prevent them accessing the traps and have a solid base. Weka are highly inquisitive, including digging under the cover to access baits.
- Tunnel width must match the trap being used. Stoats can get around Mark 4 Fenn traps without being caught when they are placed in a tunnel designed for the wider Mark 6 trap.
- Double baffles at entry end/s to restrict entry of kiwi bills and other non-target species.
- Entry holes that allow stoats to enter but restrict non-targets. Correctly positioned, the holes help make the animal step onto the trigger plate.
- ‘See through’ at either end. Stoats generally seem to prefer open tunnels to blind end tunnels [9].
- Solid anchorable design to prevent traps being disturbed by pigs and possums.
- Removable roof to give ease of access when setting/checking traps.
- Bait secured between, or beyond, the traps to prevent bait moving or being removed.

Baits

Key requirements are: high palatability, a field life aligned with frequency of field checking, doesn't attract non-targets, easy to use and cheap.

- The most effective baits may differ with location and the natural diet of stoats in the location [7]. Stoats are flexible and opportunist in their diet [7].
- Effective baits include fresh rabbit [10,11], hare, possum, salted rabbit, freeze dried rabbit [12] and fresh hen eggs (cracked or un-cracked) [1]. Fresh baits such as rabbit may be highly attractive to stoats but will need replacing at frequent intervals. Hen eggs are often the most practical bait because they are readily accessible, easy to store and handle in the field [1], and can last up to one month in cool climates [7].

Note: Hen's eggs can carry avian diseases on the surface of the shell. While the risk to native birds is believed to be low, eggs should be washed (many suppliers do this as a matter of course) before they are put in the traps. Used hens eggs should not be buried on site: they should either be removed for appropriate off-site disposal or smashed against a rock or tree away from the trap. In some particularly sensitive areas (e.g. offshore islands containing rare or endangered birds) eggs used as baits should not be disposed of in the field: rather, they should be removed for appropriate off-site disposal.

- Baits should be changed regularly (timing depends on environmental conditions) and disposed of away from the trap. Rotting baits close to traps may deter stoats.

LIMITATIONS

- There is no “window of opportunity” post control as stoat numbers quickly return to pre-control levels. Stoat re-invasion is essentially constant and rapid, necessitating ongoing control for the prevention of stoat impacts.
- Kill trapping for stoat control is labour intensive.
- Female stoats are perceived to be difficult to catch in spring, possibly because they are more likely to stay close to their den when rearing young [7].
- Individual stoats can learn to avoid traps and become resistant to capture even in intensive trapping over small areas [7].

SUSTAINING CONTROL OVER THE LONG TERM

- Monitoring conservation outcomes is essential to judge effectiveness of the control programme. Control operations are useless unless outcomes are achieved.
- [Tracking tunnels](#) should be run concurrently with the trapping operation and the data collected should be related back to any conservation outcome measures. Tracking tunnels should be sited in between traps to provide an independent measure of the trapping operation's effectiveness.
- Achieving outcomes from predator control are long term and often control must take place for 5 years+ to achieve success. Funding must be in place for long-term control.
- Stoat populations are cyclic within and between years. This can result in years when anticipated outcomes are not achieved.
- Baits may have to be alternated and/or combined over the duration of control programme. Stoats are flexible and opportunist in their diet, so a change in abundance of their normal prey can cause a rapid shift to alternative food resources [7].
- Good data collection helps operations to be more effective and efficient over the long term. What is recorded depends on what the project wants to know.
- It is important to maximise control efficiency by selecting the correct trap type, bait, layout, seasonal timing, and length of operation [7].
- Dogs trained to target stoats under DOC's national predator dog programme can be useful to check for the presence of stoats and areas that require additional traps.

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