Safe ground-based pest control in kea habitat

Kea Conservation Trust

Best Practice Standard -1.0

Contact: info@keaconservation.co.nz

Photo: Mark Martini. Female kea caught in a leg hold trap on the West Coast.

Contents

1.0 Purpose
2.0 Background
3.0 Scope
4.0 Kea risk factors
5.0 Kea habitat
6.0 Pest control methods (types and deployment) – issues and solutions
  6.1 Table 1 - Trap types and baiting methods used in kea habitat and recommendation for safe use
  6.2 Images of kea proofing measures
  6.3 Images of kea accessing traps/baits
7.0 Reporting kea injuries/deaths due to interference with pest control devices
8.0 Safety review and research of pest control and kea proofing methods
9.0 References
10.0 Acknowledgements
11.0 References
12.0 Appendix
  12.1 Reporting form – dead kea
  12.2 Contacts
  12.3 Pest control suppliers
  12.4 Additional observations to brainstorm

1.0 Purpose

The purpose of this document is to reduce injury or death of kea (*Nestor notabilis*) by identifying which pest control devices are and are not safe for use within kea habitat. This document falls under Aim 2 of the Strategic Plan for Kea Conservation (Orr-Walker et al, 2015), which states a requirement to 'actively manage the population for conservation' and more specifically 5.2.1 to identify and quantify threats and their management. One of the eight threats currently identified under this section are unsafe pest control devices.

2.0 Background

Kea are ground nesters. As such they are vulnerable to predation by introduced predators, particularly stoats and possums, during their breeding period. Results of research on kea productivity shows low nesting success (c.5%) during stoat plague years (following beech and/or rimu mast events) in areas without pest control, versus high nesting success (c.75%) in areas with effective pest control (Kemp et al, 2018). Kea are also ground feeders, and adults of both sexes may be ambushed by stoats and feral cats while foraging. Pest control may also improve adult survival and therefore improve population health. However, the benefit of using pest control may be offset when unsafe pest control devices are deployed, resulting in the unintentional by-kill or injury of kea.

There is a large body of experience and knowledge built up over many years of what pest control devices are risky for kea as well as methods of minimising these risks. However this information is not currently collated or easily accessible for individuals or groups to utilise. This SOP seeks to develop such a resource which can be built on as new information becomes available.

3.0 Scope

This document will identify i) trap types and ground-based baiting methods which are high risk to kea and, ii) trap/bait types and setting methods which minimise risk to or interference by kea. It also provides a means to report kea injuries or deaths caused by pest control devices to enable on-going knowledge building and provides information on pest control suppliers and contacts.

The scope of this document does not include research into kea friendly pest control methods, however this work will be carried out as part of the Strategic Plan for Kea Conservation and results entered into this document as information becomes available.

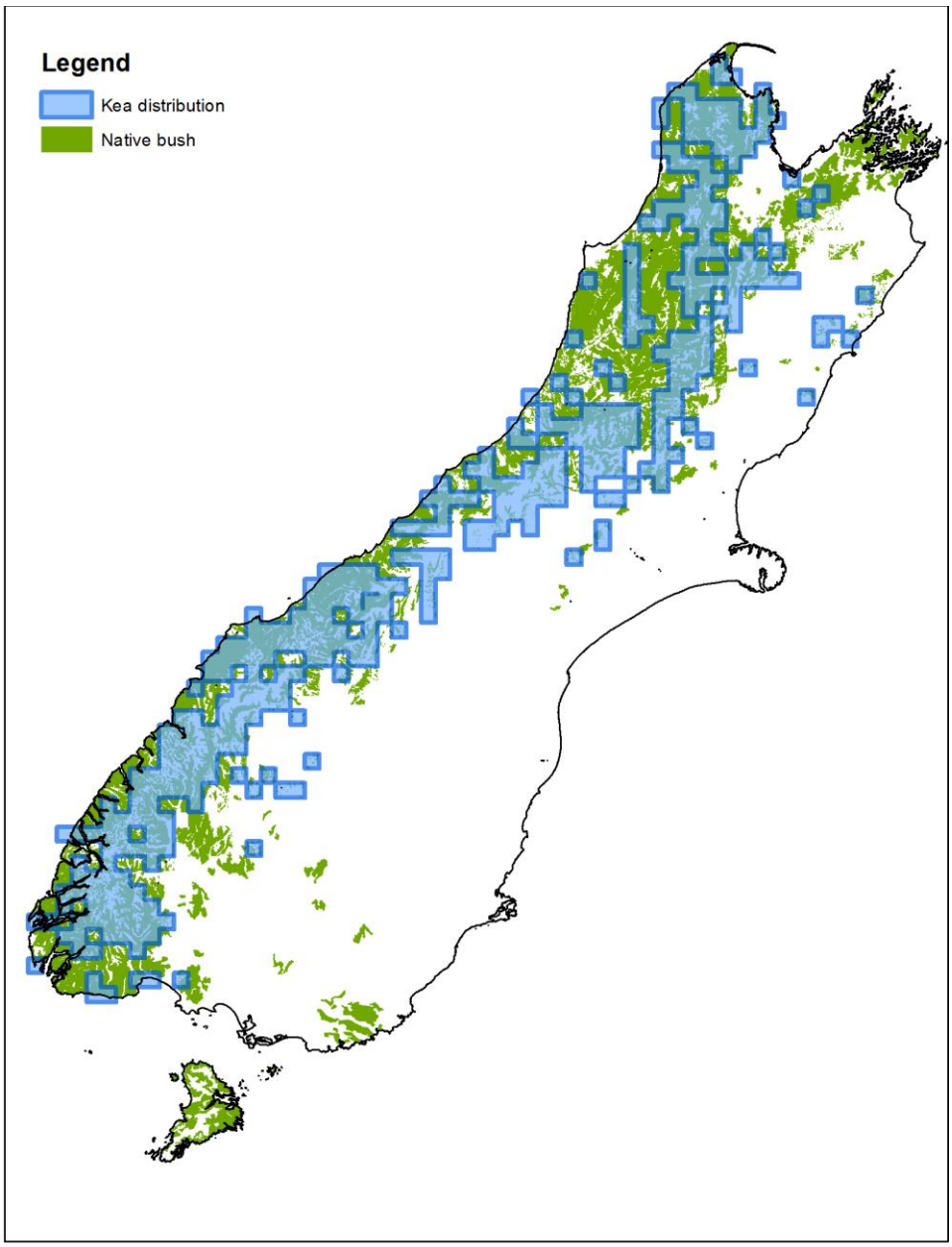
4.0 Kea risk factors

Unfortunately, there are no clear risk factors or mitigation measures that can be identified to reduce the risk to kea for devices that we categorise as 'unsafe'. Kea are vulnerable year-round and from sea-level to the alpine zone. Our strategic aim is to conserve kea across the entire 2014 species range, as such risk should not be downplayed because kea are considered either 'rare' or 'common' in the area.

For a pest control tool to be used in kea habitat, it needs 1) to be kea-safe (kea are effectively excluded), or 2) demonstrably deliver more benefit than cost to the kea population (very hard to quantify for ground based methods), or 3) be absolutely required for the benefit of another endangered species.

5.0 Kea Habitat

The NZ Bird Atlas (Robertson 2007) shows that the kea population is sparsely spread across its range of approximately 3.5 million hectares from Waitutu in the far south, to Kahurangi in the northwest (Figure1). Although associated with the spine of the Southern Alps, kea are far ranging, and are present to sea level on the southern, western and northern coasts of the South Island, extending across the alpine tops of the main divide through to the eastern foothills of the Alps. Their most eastern range is the Kaikoura Mountains. Kea utilise pine forests and farmland adjacent to forested areas as well as indigenous habitats, including forest, scrub, alpine herb fields, wetlands and braided riverbeds. The only areas in the South Island where kea are unlikely to be found are on eastern lowland grasslands which are distantly removed from forested areas and in isolated forests from which kea went extinct decades ago such as the Catlins and the Marlborough Sounds.



6.0 Pest control methods (types and deployment) – issues and solutions

This section details which pest control devices impact on kea, why kea are vulnerable to them and how to minimise kea interference.

6.1 Table 1. Trap types and baiting methods used in kea habitat and recommendation for safe use

*indicates tools used for fur recovery. To reduce risk and increase benefits to kea:

- use sporadically
- use only for three consecutive days per year in any given hectare
- be sure to visit the device every day, especially leghold traps
- Record and report captures, including extent of injury.

**indicates tools used only for conservation or Tuberculosis (Tb) management purposes. To reduce risk and increase benefits to kea:

- use only in pulses rather than permanently set. E.g. 'Use only once per year a one month pulse, otherwise deactivate.
- use in stoat trapped areas (rather than in non-trapped areas)
- Record and report captures, including extent of injury.

Pest control type	Category	Target species	Details	Safety recommendations
Victor leg hold traps*	Leg-hold trap	Possum	Injury and deaths recorded. Triggered by 500g , kea is 750-1100g).	Trigger weight increased to >1.3kg (kea weigh up to 1.1kg) and (ideally), solenoid lock to be added to prevent triggering during the day (Morriss and Warburton, 2012).Do not use for possum monitoring in kea habitat (forest and alpine). Utilise alternatives (i.e. wax tags).
DOC 150/200	Kill trap	Stoat, ferret	Deaths recorded (at least 11 to date). Kea able to access the traps by removing screws/nails holding down the lid. Also known to interfere with the trap (rolling over, setting off the trap by poking sticks through front opening). Pulling off front mesh. Potential for heavy metal poisoning from ingesting treated timber (data deficient).	Secure lid with 65mm galvanised/st/steel screws (not nails or short screws). Placing metal brackets around fasteners to prevent kea tearing wood away from around it (and ingesting toxic treated timber). Placing solid stainless steel grills on the ends of trap boxes and using side entrances. Staking the trap boxes with 10mm re-bar (refer appendix for suppliers and photos).
Sentinel**	Kill trap	Possum, feral cat	Death recorded January 2015 – Kepler Mountains.	Do not use in kea habitat unless absolutely necessary for another threatened species. Use in pulses only when required.
Warrior**	Kill trap	Possum	Deaths recorded.	Do not use in kea habitat.

Victor stoat trap	Kill trap	Stoat, rat	No known deaths.	Set in kea proof cover.
Timms traps	Kill trap	Feral cat	Deaths recorded. Easily accessible and attractive to kea.	Do not use for possum control in kea habitat. Use for cat control only in the absence of alternatives and use only in target pulses.
Feratox*	Poison	Possum	Interference by kea recorded. No confirmed deaths but likely a high risk to kea as easily accessible.	Use only in a kea proof bait station.
Cyanide paste*	Poison	Possum	No reports of kea deaths, however potentially high risk (to investigate).	Use only in kea proof bait station.
Bait bags stapled to trees	Poison	Possum, rats	Likely deaths but none recorded – wouldn't expect to find them.	Do not use in kea habitat.
Philproof bait station	Bait station	Rats	Kea deaths recorded.	Use only with kea baffle. This precludes their use for possum control.
KiwiCare Gel stations	Bait station		Kea beak marks have been observed in these. Wouldn't expect to find dead kea as they would likely wander off and die away from the station.	Do not use in kea habitat.
A12**	Kill trap	Possum	No kea deaths recorded however currently data deficient.	Record and report kills, including extent of injury.
A24	Kill trap	Stoat, rats	No kea deaths recorded however kea recorded on camera inserting their heads in the traps.	Use only with parrot excluder to reduce potential for kea access. Record and report kills and injuries.
Trapinator	Kill trap	Possum	Kea deaths reported Jan 2018. In captive trials kea have been shown to easily access trapinators (Rutlidge pers comm).	Do not use in kea habitat unless absolutely necessary for another threatened species. Use in pulses only when required.
Trap lures			Concerns raised that some lures being used may be attracting kea to interact with kill traps. For example peanut butter in captive trials has been found to be a preferred treat for kea, who will find inventive ways to access it (Schiestl pers comm). In other studies peanut butter was found to be highly attractive to birds (including parrots) and may result in non-target mortality (Lane et al, 2010).	Any lures used should be specific to the target species (e.g. Goodnature possum lure etc). Human foods should not be used in kea habitat (in particular peanut butter) particularly in areas where they are habituated to people and are likely to have been exposed to human foods.

6.2 Images of kea proofing measures

DOC150/200 Trap boxes

Kea damage around top screw

Galv bracket to protect timber around top screw

SS mesh to stop kea inserting sticks into trap. Side access only

Goodnature Trap A24

(with parrot excluder)

6.3 Images of kea accessing traps/bait stations

A kea with its head inside a Goodnature A24 (with no parrot excluder) 2017.

A kea killed in a Fenn trap.

7.0 Reporting kea injury/death from pest control devices

To ensure pest control methods used in kea habitat are of minimal risk to kea, it is important that any injury to, or death of kea, are recorded. This will ensure that information that may save kea lives can be added to this document as it becomes available.

It is acknowledged there may be a reluctance by individuals and groups to come forward to report kea injury or deaths as part of their trapping efforts. As such it is vital to encourage and support reporting and to follow up with provision of support and advice to reduce any further risks to kea. A campaign should be developed to support this desired outcome.

8.0 Safety review

Annual review of pest control methods and impact on kea should be undertaken. In addition to this, users of traps should be encouraged to log the type and number of traps /baits used in kea habitat and results (numbers of kea injuries/deaths per annum/kea interference).

9.0 Summary

There is clearly a shortage of kea-safe pest control devices, particularly for targeting possums and cats. Active encouragement of tool development is required, and all reasonable assistance should be given to developers to hasten testing of new devices.

This document identifies problems with a number of traps used as ground based pest control tools, leaving a restricted number of options in kea habitat. This may appear to contradict the acceptance of ongoing aerial 1080 use in kea habitat by the KCT and DOC. The reason why aerial 1080 can still be used is that the benefits of predator control have been measured in detail and demonstrably outweigh the costs. An advantage of aerial 1080 over ground based tools is that it is ephemeral in the environment, not lasting long enough for kea to fully explore the baits. Ground based devices, conversely, may be present for months, or even year-round, giving more time to inflict costs to the kea population. It is also very rare that ground-based tools are used on a sufficiently large scale as to allow quantification of predator control benefits to kea.

Organisations involved in large-scale deployments (>5,000 ha) of ground-based predator control methods are encouraged to engage research on risk to kea.

10.0 Acknowledgements

Thank you to the following people who have contributed to the development of this document; Josh Kemp, Chris Birmingham (DOC Te Anau) and Reuben Lane and to all contributors, researchers and captive holders who continue to send information in to enable this document to be updated and current.

11.0 References

Kemp, J.R*, Mosen, C.C, Elliott, G.P, and Hunter, C.M (2018). Effects of the aerial application of 1080 to control pest mammals on kea reproductive success. Biodiversity Group, Department of Conservation, Private Bag 5, Nelson 7010, New Zealand. Available at https://newzealandecology.org/nzje/3341.pdf

Lane, V.R, Miller, K.V, Castleberry, S.B, Miller, D.A, Wigley, T.B (2010). Methods to reduce avian bycatch in small mammal studies using snap traps. Journal of Wildlife Management 74(3):595-599; DOI: 10.2193/2009-195.

Orr-Walker, T *, Kemp, J, Adams, NJ, Roberts, LG, (2016). Strategic Plan for Kea Conservation. Available at https://www.keaconservation.co.nz/wp-content/uploads/2016/10/A-strategic-plan-for-kea-conservation-FINAL-allcomments.pdf

Schiestl pers com, January 2019. http://www.animalconcepts.eu/styled/page/martinaschiestl.html

12.0 Appendix

12.1 Reporting form – dead kea

Please complete all details (one form for each kea) and email to info@keaconservation.co.nz

Date of death (where possible) **or recovery of body** (day/mth/yr)	
Location description (eg found in carpark, on side of road, in creek, caught in trap etc)	
Location area (eg Fox Glacier)	
Region (eg West Coast)	
Probable cause of death	
Post mortem report available? *(attach if Yes)*	
Description of state of carcass (any obvious breaks, is bird wet, presence of blood, faeces etc)	
Band details of recovered kea (if any)	
Transmitter details (if any)	
Who recovered body? (member of the public, DOC staff member etc (name and contact details for follow up)	
Where is body stored?	
Contact details of person entering information into this form (name, email, organisation)	
Unique identifier (post mortem band number) *(office use only)*	

12.2 Contacts

Name	Contact details	Affiliation	Location	Expertise
Tamsin Orr-Walker	info@keaconservation.co.nz	KCT	Queenstown	General info on this document and Strategic Plan
Josh Kemp	jkemp@doc.govt.nz	DOC	Nelson	Pest control, kea
Chris Birmingham	cbirmingham@doc.govt.nz 03 249 0200	DOC	Te Anau	
Peter McMurtrie	pmcmurtrie@doc.govt.nz 03 249 0200	DOC	Te Anau	Kea proofing DOC 150/200's Fiordland Islands
Andrew Smart	asmart@doc.govt.nz 03 249 0200	DOC	Te Anau	Kea proofing DOC 150/200 Northern Fiordland

12.3 Pest control suppliers

Name	Contact details	Device	Specifics
Fielden Metalworks	23 Columbia Ave, PO Box 16450, Hornby, ChCh. Ph. 03 3490000	DOC 200 (stoat box)	Suppliers of stainless steel grills for DOC 150 and 200 traps
Wood Logic	Cnr Caswell Road & Snodgrass Drive, Te Anau Ph: 03 249 7868. billanddaphne@xtra.co.nz	DOC 200 (stoat box)	Make traps with the stainless ends and side entrances.
Haines Pallets	111 Hutt Park Rd, Seaview, Wellington. Ph. 04 568 6898. haines.pallets@xtra.co.nz	DOC 200 (stoat box)	Make traps with the stainless ends and side entrances.
Goodnature Traps	8 Horner Street, Newtown, Wellington 6021. Ph. 04 389 1025. hello@goodnature.co.nz	A12s and A24's	Supply parrot excluders for resetting traps.

12.4 Additional observations to brainstorm

Reuben Lane

-There is no cyanide (feratox or regular paste or micro encapsulated paste) that I've ever seen that would be remotely kea proof. The standard stations have a little gravity lid and some of the fancier ones have an added magnet which is supposed to stop rats but not possums. I can't see either being any protection for kea. In fact a dolop of green cyanide paste on its own would attract far less attention than a bait station!

- Also the Sentinel kill traps and similar for possums need to be used with the cowling that goes over the top, and even then would offer much less protection for kea than needed. It would be good to come up with some kind of heavy duty trap cover that attaches to the side of a tree and is too long for the birds to reach up into while they are still holding on to the tree with their little feet. Imagine a piece of 5 or 6" diameter pvc pipe around 2/3 the body length of a possum fixed to the opening of a Timms trap then the whole thing nailed to a tree with the hole pointing down, so a possum can wiggle up into it while holding itself up by gripping the tree with its back legs.

- The fewer traps you have and the closer they are to the nest the more you have to up your game to make the trap more attractive than the live bait of kea chicks. A shitty old hen egg in a randomly placed trap box probably would not cut it. My approach would likely be to scout for well used animal trails around the nest site and place stoat traps along these, and use attractive scent based lures, as well as visual lures, to maximize the traps footprint. Possums can be taken out buy just identifying the marker trees along their trails and the feed trees they have in their territories (ie broadleaf, simplex, rata etc) and placing your traps there.

SOP no.	Effective Date	Significant Changes	Previous SOP no.
Version 1	April 2016	Original document	n/a
V2	May 2017	Images added and table of contacts updated	V1
V3	June 2017	Section 5.3 (images) added and Table 5.1 updated (Goodnature information)	V2
V4	Jan 2018	Table 5.1 and section 5.3 (images) updated.	V3
V5	April 2018	Revision of Table 5.1 (leg hold traps) and section 5.3 (images – 1 deleted)	V4
V6	October 2018	Revision of Table 5.1 (Goodnature information) and section 5.3 (images updated). Reference section added.	V5
V7	November 2018	Revision of Table 5.1 (information on lures).	V6
V8	January 2019	Revision of Table 5.1 (information on lures) and references. Review of document and minor changes throughout.	V7