

POSSUM CONTROL – HANDLAYING PHOSPHORUS PASTE (CONTROLLED SUBSTANCES LICENCE REQUIRED)

BAIT

- Use phosphorus at 9.5 g/kg i.e. [Phosphorised Possum Paste Double Strength](#). The paste should contain a lure (i.e. cinnamon, orange).
- Only freshly manufactured bait should be used. Do not store for more than 8 months [1]. This ensures high bait palatability, which has a direct influence on success.

BAIT APPLICATION

- Lay out on grids by GPS or, in rough terrain, place on ridges and spurs with additional lines located on 100 m contours using an altimeter. Inaccurate location of lines will cause gaps in coverage where pockets of high possum numbers can persist.
- Place 10 - 20 g of non-toxic prefeed paste every 3-5m along transects no more than 150m apart in forest habitats. The aim is to have a lethal dose in every bait, so possums only need to find one bait to be killed.
- Additional baits should be placed in possum preferred habitat. Average home range of male possums is 1.9ha and females is 1.3 ha [2].
- The paste can be laid on upturned earth-spits (for easy relocation) on pastoral land or at marked baiting points in forest.
- Pre-feed for 4 days: prefeeding increases possum kills as it reduces wariness (neophobia) of possums to toxic bait [3,4] and reduces the risk of bait aversion developing [5,6]. Prefeeding may need to be extended during wet weather which reduces possum activity on the forest floor [7,8].
- At end of the pre-feeding, remove/destroy the non-toxic paste and, at sites where prefeed was eaten, replace with 15 g of phosphorus paste. Toxic bait can be presented on earth spits on pastoral land or in small bait stations (e.g. KK) in forest. Presenting pre-feed and toxic bait simultaneously must be avoided as it can result in possums being sub-lethally poisoned and becoming bait shy.
- Where non-toxic paste has been eaten from consecutive baiting points, lay additional toxic baits to ensure sufficient bait is available where possums are present.
- Do not leave the toxic bait out for more than 4 days [1]. Phosphorus baits rapidly dehydrate in hot dry weather and may ignite spontaneously.
- At the end of the operation all uneaten phosphorus paste must be buried to remove the hazard and prevent sub-lethal dosing of possums from weathered bait.

SUSTAINING POSSUM 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.
- Pre- and post-operational monitoring is essential to determine the effectiveness of the operation. A comparison of pre- and post- data gives the most robust estimate of the kill result. Post- data cannot reliably be compared between operations.
- Reinvansion of possums into controlled areas can be reduced by using natural boundaries e.g. waterways and pasture, and buffer zones of at least 3km wide [9].
- Alternating bait types, toxins, lures and techniques are important in ongoing control programmes. Continuous use of a single pesticide use is not recommended.

- Phosphorus paste is best used when controlling medium/low possum populations rather than high population numbers.

LIMITATIONS

- The method is labour intensive.
- Labour costs increase in difficult terrain.
- There is no knowledge of the impacts of phosphorus paste on native non-target animals in forest ecosystems.
- Phosphorus presents a risk to dogs if they eat bait or carcasses [10], and birds if they eat carcasses [11].
- Phosphorus paste should not be used at dry sites or in hot, dry weather. Phosphorus baits rapidly dehydrate and may ignite spontaneously.
- Efficacy is not proven in non-pastoral habitat.
- Phosphorus is highly toxic to humans which may lead to restrictions on use in highly public areas.

REFERENCES

1. Henderson RJ, Morgan DR, Eason CT (1999) Manual of Best Practice for Ground Control of Possums (Version 1.0). Lincoln: Landcare Research. LC9899/84. 82 p.
2. Cowan PE, Clout M (2000) Possum on the move: activity patterns, home ranges, and dispersal. In: Montague TL, editor. The Brushtail Possum: Biology, impact and management of an introduced marsupial. Lincoln: Manaaki Whenua Press.
3. Henderson RJ, Frampton CM (1999) Avoiding Bait Shyness in Possums by Improved Bait Standards. Lincoln: Landcare Research. LC9899/60. 54 p.
4. Nugent G, Turner J, Warburton B (2009) Sustained recall of bait acceptability in captive brushtail possums (*Trichosurus vulpecula*). New Zealand Journal of Zoology 36: 473-478. doi: 10.1080/03014223.2009.9651479.
5. Ross JG, Hickling GJ, Morgan DR, Eason CT (2000) The role of non-toxic prefeed and postfeed in the development and maintenance of 1080 bait shyness in captive brushtail possums. Wildlife Research 27: 69-74. doi: 10.1071/WR98029
6. Moss ZN, O'Connor CE, Hickling GJ (1998) Implications of prefeeding for the development of bait aversions in brushtail possums (*Trichosurus vulpecula*). Wildlife Research 25: 133-138. doi: 10.1071/WR97018
7. Ward GD (1978) Habitat use and home-range of radio-tagged possums in New Zealand lowland forest. In: Montgomery GG, editor. The Ecology of Arboreal Folivores. Washington D.C.: Smithsonian Institute Press. pp. 267-287.
8. MacLennan DG (1984) The feeding behaviour and activity patterns of the brushtailed possum in an open eucalypt woodland in southeast Queensland. In: Smith AP, Hume ID, editors. Possums and Gliders. Sydney: Australian Mammal Society. pp. 151-161.
9. Cowan PE (2000) Factors affecting possum reinfestation--implications for management. Wellington: Department of Conservation. 144. 23 p.
10. Gumbrell RC, Bentley GR (1995) Secondary phosphorus poisoning in dogs. New Zealand Veterinary Journal 43: 25 - 26. doi:
11. Sparling DW, Federoff NE (1997) Secondary poisoning of kestrels by white phosphorus. Ecotoxicology 6: 239 - 247. doi: