

## **RAT CONTROL – HAND BROADCAST 1080 PELLETS (with optional [deer repellent](#))**

### **(CONTROLLED SUBSTANCES LICENCE REQUIRED)**

Rat control using 1080 pellets is often carried out with the intention of simultaneously controlling possums. This has been recognised in the advice presented below.

#### ***Timing of operations***

- Bait acceptance is significantly higher in winter and spring [1], however, high kills have been achieved in all seasons [2].
- August-September operations, just prior to the breeding season, will maximise the benefit to native birds.
- Aerial 1080 is useful for reducing rat abundance for the duration of one bird-breeding season only [3].
- Rat populations recover within 3-5 months after the operation [4,5].

#### ***Bait***

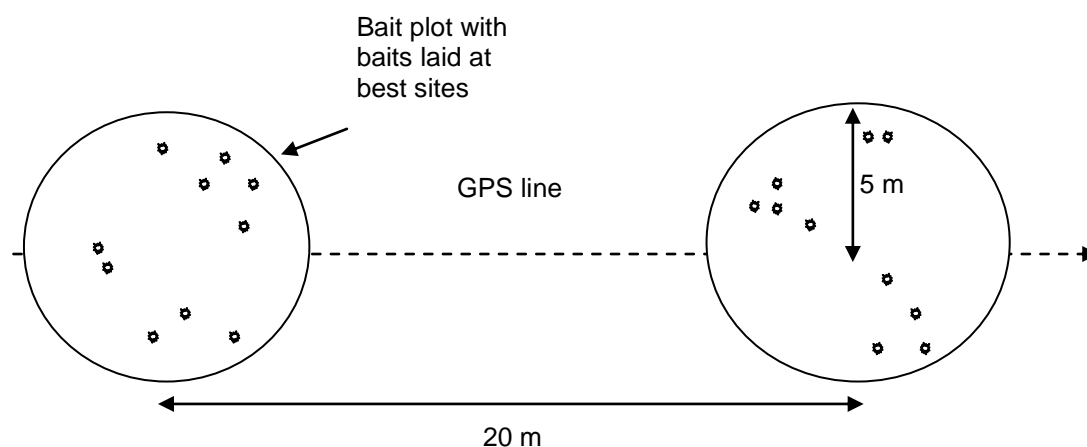
- While both “0.08% 1080 Rodent Pellets” and “0.15% 1080 Pellets” (Animal Control Products) are both effective at controlling rats [2], 0.15% 1080 pellets are recommended to prevent sub-lethal poisoning and bait shyness in non-target pests (possums).
- Two bait formulations are available: RS5, and No. 7. Generally, RS5 is favoured where a shorter exposure period required and where there is limited chance of rain or ground moisture ruining the bait on the first night. In wet forest and where a longer exposure period is sought, the No.7 bait is generally chosen.
- Baits should be ordered with [EPRO deer repellent](#) where it is necessary to minimise the by-kill of deer. Prefeed baits should also be treated with the repellent.
- Where possums are also being targeted, 20-mm baits (mean wt. ~ 12 g) should be used to reduce the likelihood of sublethally-dosing possums which is also likely to cause bait-shyness in survivors [6].
- Lure (i.e. cinnamon, orange) concentrations on baits should be 0.3% wt/wt (also referred to as double lure). The primary purpose is to mask the odour of 1080 to possums [7]. Lower concentrations of lure dissipate in storage and may result in reduced kills and bait shyness [8]. Higher lure concentrations (> 0.5%) may reduce the palatability of baits [9]. Although not experimentally investigated, it is likely that ‘lures’ may function in a similar manner for rats too as they are known to be highly attuned to the presence of toxins in baits [10].
- Green dye is included in bait as a bird-deterrent. Together with improved bait quality (i.e. greatly reduced fragmentation), this has reduced the risk to most bird species studied [11,12]. Risk assessment procedures [13] have been developed, and deterrent bait

additives are being developed for some species that may be put at risk during 1080 operations, such as kea [14].

- Bait must be handled with care. Loading and unloading bags of bait should be supervised to ensure correct handling during transportation and bait is not physically damaged. Pallets of bait must not be stacked directly on top of each other. Crushed bags can produce many small pieces of bait < 0.5 g (crumbs) that may increase the hazard to non-target species[15].
- Bait must be stored in a suitable building (i.e. secure, dry, well ventilated, with a concrete floor) with no direct sunlight on stored bait. Shrink wrap around pallets should be removed to prevent the bait sweating. Correctly stored baits will remain adequately toxic and palatable (to possums: rats not tested) for 12 months [8].

### ***Bait application***

- The following method is based on research trials that showed it to be as cost-effective as aerial-1080 poisoning for possum and rat control on flat, dissected terrain [16,17]. This was achieved by carrying out prefeeding aurally, then following GPS-logs of flight paths to hand lay 1080 baits. Pre-feeding with non-toxic baits increases the average rat kill [18] by reducing rats' wariness (neophobia) to toxic bait and increasing the likelihood that possums will subsequently discover toxic baits.
- Aerially prefeed the site along GPS-defined flight paths 100 m apart using 10-mm cereal pellets. This saves on cost (of bait and aerial sowing) while achieving the aims of prefeeding. The small 10 mm baits give the advantage of more baits on the ground and, hence, increased rate of encounter by rats.
- Adjust sowing equipment to deliver the bait in a swath of 60 m and at a rate of 1.7 kg/100m of flight-path. This will produce an area-wide (i.e. over the entire area, not just the baited swaths) distribution of bait of 1 kg/ha.
- Using the same GPS-defined flight paths as used for aerial prefeeding, lay toxic baits at around 5-7 days after prefeed bait has all been removed (usually 2-3 days). Follow the lines and record baiting points at 20 m intervals as waypoints.
- It is preferable to use 20 mm baits for toxic baiting to maximise possum kill where they are being targeted, and to avoid inducing bait shyness in the possum population[6].
- At each baiting point, lay 10 toxic 12-g pellet baits. The 1080 baits are laid by placing them at 'best' sites (i.e. runs, open ground, or alongside bark bitten trees etc) within an approximate radius of 5 m at each baiting point:



- Toxic bait should be hand-laid onto dry ground and applied during a fine weather window of at least 3 nights.

### Limitations

- Labour costs increase in difficult terrain and with size of area.
- Handlaying operations are highly weather dependant making the exact timing of the operation unpredictable.
- Community views on 1080 can vary, effective consultation is required.
- This technique is incompatible with other conservation work that use dogs, e.g. goat hunting, threatened species and predator work.
- Toxic carcasses can wash out of operational area posing risks to dogs.
- Incorrect use of 1080 baits can cause poison-shyness in rats [10,19,20] and bait-shyness in possums [6,21] that may last for the lifetime of individual animals.

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