

NSWRAB SOP7

Ground shooting of rabbits

Background

The introduced European rabbit (*Oryctolagus cuniculus*) has a significant impact on agricultural production and the environment. Shooting of rabbits is undertaken by government vertebrate pest control officers, landholders and professional or experienced amateur shooters. Although shooting may be useful when rabbit numbers are already low, it is labour intensive and is not effective as a general rabbit control method. Shooting is usually done at night with the aid of a spotlight but can also be conducted during the day.

Shooting is a humane method of destroying rabbits when; it is carried out by experienced, skilled and responsible shooters; the animal can be clearly seen and is within range; and, the correct firearm, ammunition and shot placement is used.

This standard operating procedure (SOP) is a guide only; it does not replace or override the relevant legislation that applies in NSW. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual SOPs should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

Application

- Shooting should only be used in a strategic manner as part of a coordinated program designed to achieve sustained effective control.
- Shooting is sometimes used as an adjunct to other control methods. However, it is not considered to be effective for broadacre control.
- Shooting may have limited use in controlling light rabbit infestations, but it is ineffective in significantly reducing rabbit populations or even maintaining them at low levels.
- It is most suited to areas with little cover. Shooting should be concentrated in rabbit feeding areas, normally indicated by shortly cropped grass with rabbit scratchings and droppings.
- Ineffective shooting may produce rabbits that are 'shy' of both guns and spotlights; therefore, several months should pass before any further shooting operations are undertaken. Thermal devices can be used in place of spotlights to overcome this issue.
- Shooting in the vicinity of human habitation requires a risk assessment process and may require additional equipment such as thermal devices and silencers (when permitted).

- Shooting of rabbits should only be performed by skilled operators who have the necessary experience with firearms and who hold the appropriate licences and accreditation.
- Storage and transportation of firearms and ammunition must comply with relevant legislative requirements (See [Firearms Act 1996](#), [Firearms Regulation 2017](#)).

Animal welfare implications

Target animals

- Humaneness of shooting as a control technique depends almost entirely on the skill and judgement of the shooter. If properly carried out, it is one of the most humane methods of destroying rabbits. On the other hand, if inexpertly carried out, shooting can result in wounding that may cause considerable pain and suffering.
- Shooting must be conducted in a manner that aims to cause immediate insensibility and painless death. The appropriate firearms and ammunition must always be used.
- When shooting an animal, it must be clearly visible and able to be killed with a single shot. A solid rest or support should be utilised to ensure accurate shot placement.
- Head (brain) or chest (heart-lung) shots must be used. Shooting at other parts of the body is unacceptable.
- The shooter must be certain that each animal is dead before another is targeted.
- Wounded rabbits must be located and dispatched as quickly and humanely as possible with a second shot, preferably directed to the head. If left, wounded animals can suffer from the disabling effects of the injury, from sickness due to infection of the wound, and from pain created by the wound.
- If lactating rabbits are shot, reasonable efforts should be made to find dependent kittens and kill them quickly and humanely.

Non-target animals

- Shooting is relatively target specific and does not usually impact on other species. However, there is a risk of injuring or killing non-target animals, including livestock, if shots are taken at movement, colour, shape, sound or, when spotlighting, eye reflection ('eye shine').
- Only shoot at the target animal once it has been positively identified. Also, never shoot over the top of hills or ridges as other animals may be out of sight beyond the hill in line with the fall of shot.
- Shooting should be used with caution around lambing paddocks as it may disturb the lambing flock and cause mismothering. Also avoid paddocks containing horses or deer. They are easily frightened by spotlights and gunshots and may injure themselves by running into fences and other obstacles.

Workplace health and safety considerations

- Firearms are hazardous. Everyone should stand well behind the shooter when an animal is being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Shooting from a vehicle is potentially dangerous. An agreed safety procedure between the shooter and others in the vehicle must be in place to ensure that people do not enter the field of fire or disturb the taking of a shot.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.
- Firearms must be securely stored in a compartment that meets state legal requirements. Ammunition must be stored in a locked container separate from firearms.
- The shooter and others in the immediate vicinity should wear adequate hearing protection to prevent irreversible hearing damage, and safety glasses to protect eyes from gases, metal fragments and other particles.
- Warm, comfortable clothing and stout footwear is recommended, especially when shooting at night.

Equipment required

Firearms and ammunition

- Centre-fire rifles are preferred since they provide the advantage of a flatter trajectory and higher projectile energy; however, the .17HMR rimfire is also suitable as it delivers enough energy at the target for smaller animals, is flat shooting and accurate out to at least 80 metres.
- The minimum firearm and ammunition requirements for the ground shooting of rabbits are:
 - calibre: .172 inches
 - bullet weight: 17 grain
 - muzzle energy: 245 ft-lbs.

- Examples of acceptable firearm and ammunition combinations with maximum shooting distances are included in the table below:

Cartridge	Bullet weight (gr)	Muzzle velocity (ft/sec)	Muzzle energy (ft-lbs)	Maximum distance (metres)
.17HMR	17	2550	245	80
.22 Hornet	45	2665	710	100
.222 Rem	50	3345	1242	200
.223	55	3240	1282	200
.22/250	55	3680	1654	200

Source: <https://press.hornady.com/assets/pctumbs/tmp/1410995911-2019-Standard-Ballistics-Chart.pdf>

- Rifle ammunition must be of an expanding type designed to deform in a predictable manner, e.g., hollow point, soft-point, polymer tip.
- 12-gauge shotguns with heavy shot sizes of No. 2, SSG, BB or AAA can also be used at closer ranges, up to 20 metres from the target animal.
- The accuracy and precision of firearms should be tested against inanimate targets prior to the commencement of any shooting operation.

Other equipment

- If shooting at night, a handheld spotlight, or a helmet or headband mounted spotlight or thermal device.
- First aid kit.
- Lockable firearm box.
- Lockable ammunition box.

Procedures

Shooting at night

- Most shooting of rabbits is done at night with the aid of a spotlight to locate them while they are feeding or are away from cover. This method relies on the ability of the shooter to approach the animal until it is in shooting range.
- It is recommended that during daylight hours shooters familiarise themselves with the terrain they are to cover. Take note of potential hazards and also any landmarks that may help with navigation.
- Rabbits must NOT be shot from a moving vehicle or other moving platform as this can significantly detract from the shooters' accuracy. Ensure you are in a firm, safe and stable position before taking a shot.

- Shooting over the top of hills or ridges produces unacceptable risk. Be aware that the spotlight only illuminates a small portion of the danger zone and only a fraction of the projectile's range.
- When illuminated by the spotlight, rabbits have a pink/red eye shine.

Shooting in the day

- Rabbit activity is mainly nocturnal or crepuscular, so shooting during the day is less effective than shooting at night with a spotlight or thermal device.
- If dogs are used to flush rabbits out from warrens or vegetation, they must be adequately controlled to prevent them from attacking rabbits. Dogs should only be trained to drive rabbits from cover, not to capture or attack them. For further information on the use of dogs refer to [GEN002 The care and management of dogs used for pest animal control](#).
- Daylight drives are not selective, so there is a risk of encountering other animals, including pet cats, which can be mistaken for a rabbit and shot. Capture of rabbits or non-target species by dogs is unacceptable on animal welfare grounds.

Target animal and shot placement

- The objective is to fire at the closest range practicable in order to reduce the risk of non-lethal wounding. Accuracy is important to achieve a humane death. One shot should ensure instantaneous loss of consciousness and rapid death without resumption of consciousness.
- A rabbit should only be shot at when:
 - it can be clearly seen and recognised
 - it is within the effective range of the firearm and ammunition being used
 - a humane kill is probable. If in doubt, do NOT shoot.
- The shooter must aim either at the head, to destroy the major centres at the back of the brain near the spinal cord or, at the chest, to destroy the heart, lungs and great blood vessels. This can be achieved by one of the following methods (see also Figure 1).

Head Shot (this is the preferred shot placement)

Frontal position (front view)

- The firearm is aimed at the centre of the head between the eyes.

Temporal (side view)

- The firearm is aimed at a point between the eye and the base of the ear directed towards the opposite eye.

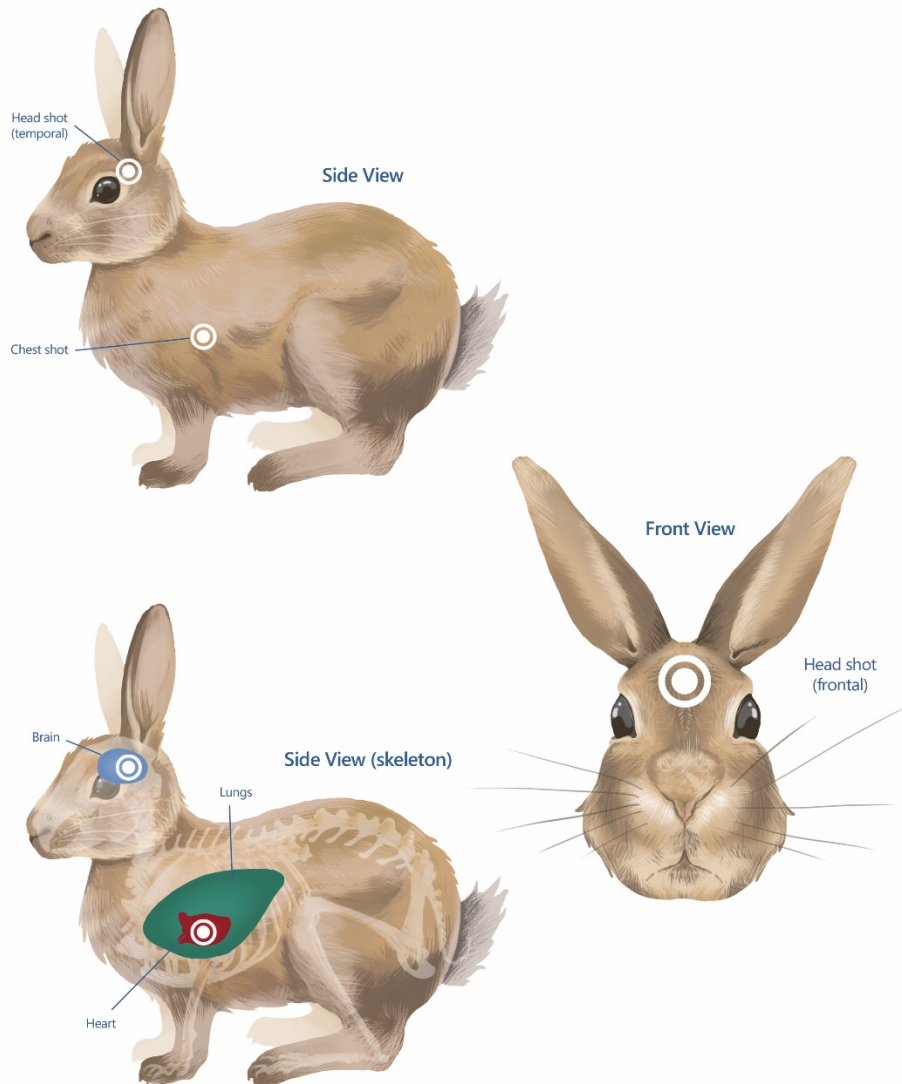
Chest Shot

Side view

- The firearm is aimed horizontally slightly to the rear of the shoulder.

- When using a rifle, the target animal must be stationary and within a range that permits accurate placement of the shot. Shots to the head are preferred over chest shots.
- When using a shotgun, the target animal may be stationary or mobile, but must be no more than 20 metres from the shooter. The pattern of shot should be centred on the head or chest. It is essential that the distance to the target animal is accurately judged. To achieve adequate penetration of shot, the animal must be in range. It is recommended that shooters practice estimating distances before a shooting operation.
- The target animal should be checked to ensure it is dead before moving on to the next animal. Death of shot animals should always be confirmed by observing the following:
 - no heartbeat
 - no breathing
 - no corneal reflex (no blinking when eyeball is touched)
 - no response to a toe pinch (a firm squeeze of the pad or large toe).
- If death cannot be verified, a second shot to the head should be taken immediately.

Figure 1: Shot placement for rabbits



Note that shooting an animal from above or below the horizontal level as depicted here will influence the direction of the bullet through the body. Adjustment to the point of aim on the external surface of the body may need to be made to ensure that the angled bullet path causes extensive (and therefore fatal) damage to the main organs in the target areas.

References

- Aebischer N., Wheatley C. & Rose H. (2014). Factors associated with shooting accuracy and wounding rate of four managed wild deer species in the UK, based on anonymous field records from deer stalkers. *Plos One*, 9: e109698
- American Veterinary Medical Association (AVMA). (2020). *AVMA guidelines for the euthanasia of animals: 2020 edition*. American Veterinary Medical Association. Available at: <https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>
- Anon. (2016). *Code of Practice for Night Shooting*. British Association for Shooting and Conservation, Wrexham. Available at: <https://basc.org.uk/codes-of-practice/night-shooting/>
- Anon. (undated). *Rabbit control options*. Environment Bay of Plenty, NZ , Whakatane. Available at: <https://www.boprc.govt.nz/media/395489/rabbit-control-options-a4-booklet-web-.pdf>
- Bengsen, A.J., Forsyth, D.M., Harris, S., Latham, A.D., McLeod, S.R., and Pople, A. (2020). A systematic review of ground-based shooting to control overabundant mammal populations. *Wildlife Research*, 47: 197-207.
- Gregory, N. (2004). *Physiology and behaviour of animal suffering*. Oxford, UK: Blackwell
- Hampton, J. O., Forsyth, D. M., Mackenzie, D., & Stuart, I. (2015). A simple quantitative method for assessing animal welfare outcomes in terrestrial wildlife shooting: the European rabbit as a case study. *Animal Welfare*, 24(3), 307-17.
- Smith G (1999). *A Guide to Hunting and Shooting in Australia*. Regency Publishing, South Australia.
- Williams, K., Parer, I., Coman, B., Burley, J. & Braysher, M. (1995). *Managing Vertebrate Pests: Rabbits*. Australian Government Publishing Service, Canberra.