



NSWFOX SOP3

Ground shooting of foxes

Background

The introduced European red fox (*Vulpes vulpes*) has a significant impact on native fauna and agricultural production. Shooting of foxes is undertaken by government vertebrate pest control officers, landholders and professional or experienced amateur shooters. Although shooting may reduce the local number of foxes or problem animals, it is labour intensive and is not effective as a general fox control method. Aerial shooting is not effective due to their cryptic, nocturnal behaviour. Ground shooting is usually done at night from a vehicle with the aid of a spotlight (or thermal detection device) but can also be conducted during the day. Fox drives ('battues') using a line of beaters to flush foxes into a line of guns are occasionally used in rural areas. Shooting is a humane method of killing foxes 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 co-ordinated program designed to achieve sustained effective control.
- Shooting is often used prior to lambing season and as an adjunct to other control methods. It is time-consuming and labour intensive and therefore an inefficient method for large-scale fox control in Australia.
- Although shooting can result in a localised reduction in fox numbers, it is ineffective in significantly reducing fox populations, particularly over the longer-term. Young, inexperienced foxes, which are easily lured into the shooters range, are more likely to be killed by shooting. To compensate for this bias, the breeding and survival of remaining animals is enhanced. Also, dispersal of foxes from the area decreases whilst the rate of fox immigration from other areas increases.

- Shooting is not suitable where dense cover is available for foxes or in the vicinity of human habitation.
- Shooting of foxes 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

- The 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 foxes. On the other hand, if inexpertly carried out, shooting can result in wounding that may cause considerable pain and suffering.
- Shooting must be conducted with the appropriate firearms and ammunition and in a manner that aims to cause immediate insensibility and painless death.
- When shooting an animal, it must be clearly visible and able to be killed with a single shot due to the difficulty of follow-up shots from the ground, particularly in difficult terrain. A solid rest or support should be utilised to ensure accurate shot placement.
- Only head (brain) or chest (heart-lung) shots must be used. A well-placed shot to the head to destroy the brain will result in instantaneous insensibility and a quicker death compared to a well-placed shot to the chest. Chest shots to destroy the heart can present challenges for accurate placement and may not always result in rapid death. For this reason, under ideal conditions, head shots are preferred over chest shots, however in some situations (e.g., where close approach is not possible; the head is obstructed or cannot be targeted; the animal is already wounded; or a second 'follow-up' shot can be quickly taken), because the chest is a larger target, a chest shot may be the most suitable option. Shooting at other parts of the body is unacceptable.
- Correctly placed head shots cause brain function to cease and insensibility will be immediate. Death from a shot to the chest is due to massive tissue damage and haemorrhage from major blood vessels. Insensibility will occur sometime after, from a few seconds to a minute or more. If a shot stops the heart functioning, the animal will lose consciousness very rapidly.
- The shooter must be certain that each animal is dead before another is targeted.
- Wounded foxes 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 escape and suffer from pain and the disabling effects of the injury.
- If lactating vixens are shot, reasonable efforts should be made to find dependent cubs and kill them quickly and humanely by either shooting (with a single shot to the brain) or by fumigation of the den with carbon monoxide (refer to NSWFOX SOP4 *Fumigation of fox dens with carbon monoxide*).

Non-target animals

- Shooting is relatively target specific and does not usually impact on other species. However, there is always 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 and never shoot over the top of hills or ridges as other animals or people 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 sensitive livestock e.g., horses, farmed 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. All people 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.
- Care must be taken when handling fox carcasses as they may carry diseases such as hydatidosis and sarcoptic mange that can affect humans and other animals. A fox with obvious mange should only be handled while wearing gloves. Routinely wash hands after handling all fox carcasses.

Equipment required

Firearms and ammunition

- Centrefire 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, is flat shooting and accurate out to around 80 metres.

- The minimum firearm and ammunition requirements for the ground shooting of foxes 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 bullets 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 be used at closer ranges, up to 20 metres from the target animal.
- The accuracy and precision of firearms and shooters 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.
- Thermal scope or thermal detection device with 640 x 480 resolution and 50mm lens, where possible.
- Fox whistle (for making artificial rabbit distress calls), if desired.
- First aid kit.
- Lockable firearm box.
- Lockable ammunition box.
- Personal protective equipment (hearing and eye protection).
- Communication devices (2 way/mobile etc.) are recommended for safety reasons.

Procedures

Shooting at night

- Most shooting of foxes is done at night from a vehicle with the aid of a spotlight or thermal device. This method relies on the ability of the shooter to approach the animal until it is within shooting range. Some shooters try and lure animals into range by using whistles that produce artificial rabbit distress calls.
- Foxes must NOT be shot from a moving vehicle as this can significantly detract from the shooters' accuracy.
- Ensure you are in a firm, safe and stable position before taking a shot.
- Spotlights and thermal devices should be used to identify hazards.
- 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.
- 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, foxes have an extremely bright eye reflection or shine ranging from pale yellow in juveniles to a golden yellow in mature foxes.
- If you are using a spotlight and have identified a fox, do not fire unless you are sure it will be killed. Foxes learn very quickly and if previously frightened may not face a light again. Also, when using fox whistles be sure to get a successful shot so that the fox will not learn to associate whistles with danger.

Shooting in the day

- Foxes are mostly active at night and at dawn and dusk, so shooting during the day is less effective than shooting at night with a spotlight or thermal device.
- Daylight drives or 'battues' are sometimes effective and are common in some rural areas. These involve the use of unarmed beaters, often with dogs, to drive foxes into a line of people waiting with firearms. Many foxes, including wary adults, can be taken by this method but it requires the use of many people and only small areas can be covered.
- If dogs are used during battues to flush foxes out from vegetation or dens, they must be adequately controlled to prevent them from attacking foxes. Dogs should only be trained to drive foxes from cover, not to capture or attack them. For further information on the use of dogs refer to [GEN002 Safety and welfare of working dogs used in pest animal control](#).
- Fox drives or battues are not selective, so there is a risk of encountering other animals, including pet cats, which can be mistaken for a fox and shot. Also, if dogs are used, they may pursue and sometimes catch non-target animals. Capture of foxes 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 with a single shot is important to achieve an immediate and, therefore, humane death.
- A fox 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 vital areas targeted for clean killing of foxes are small. Shooters should be highly skilled and experienced at shooting and be able to accurately judge distance, wind direction and speed and have a thorough knowledge of the firearm and ammunition being used.
- 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 a point midway between the level of the eyes and the base of the ears, but slightly off to one side so as to miss the bony ridge that runs down the middle of the skull. The aim should be slightly across the centreline of the skull and towards the spine.

Temporal position (side view)

- The firearm is aimed horizontally at the side of the head at a point midway between the eye and the base of the ear.

Chest Shot

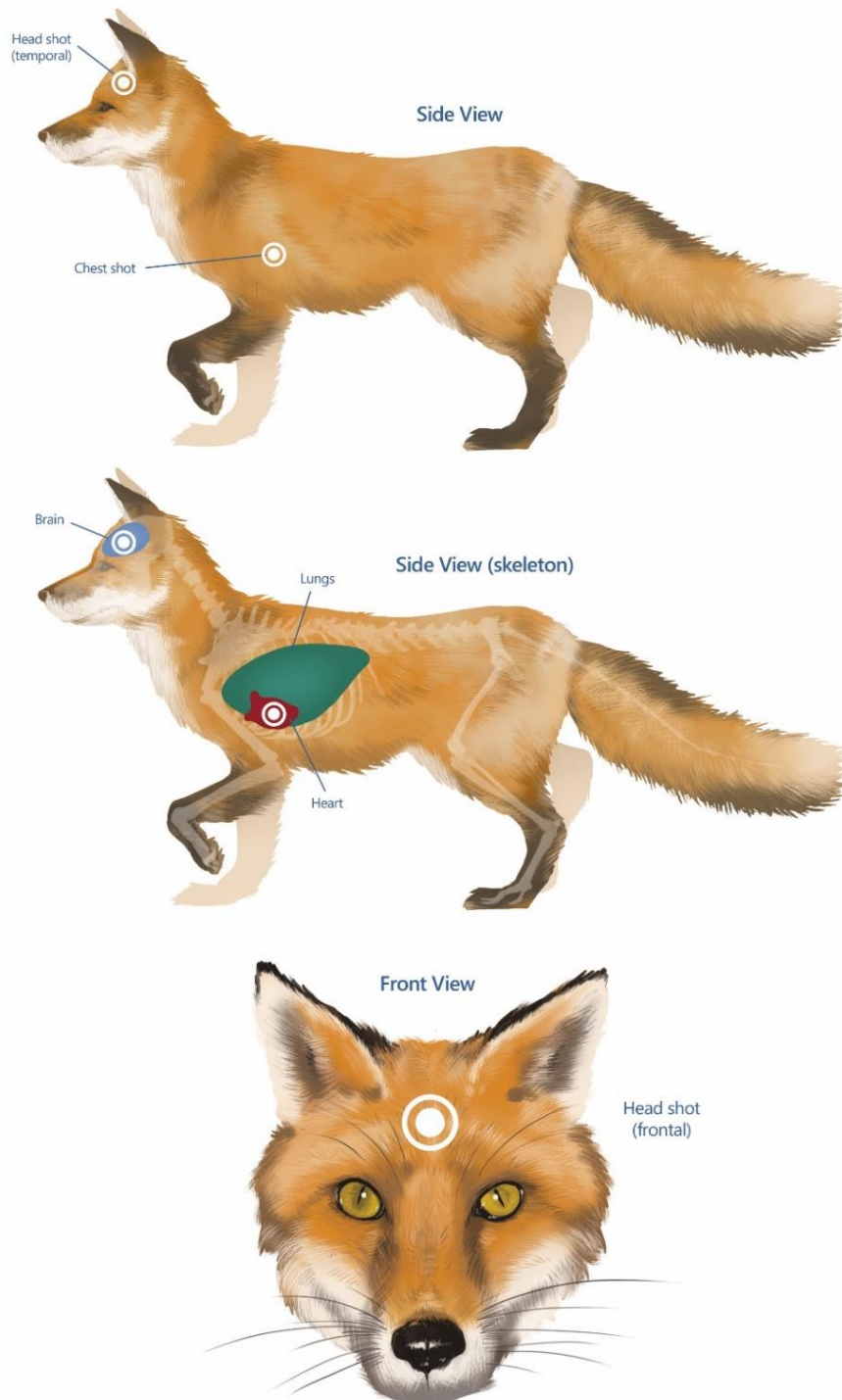
Side view

- The animal is shot from the side so that the bullet enters the chest at a point behind the foreleg slightly above and immediately behind the elbow joint.
- 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 physically checked to ensure it is dead before moving on to the next animal.

- Death of shot animals should always be confirmed by observing a combination of 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 foxes



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.

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