

# NSWDEER SOP1

## Ground shooting of feral deer

### Background

Ground shooting of feral deer is undertaken as part of culling programs in national parks, reserves and private land. It is carried out by government vertebrate pest control officers, landholders and professional shooters. Such shooting is usually done at night from a vehicle or foot, with the aid of spotlights or thermal imaging/night vision scopes. It is best suited to accessible areas where deer numbers are low and where the impact of deer is greatest. It is also effective when used intensively as part of a coordinated program.

Shooting can be a humane method of killing feral deer when it is carried out by experienced, skilled shooters, the animal can be clearly seen and is within range, the correct firearm, ammunition and shot placement is used, and wounded animals are promptly located and killed.

This standard operating procedure (SOP) is a guide only - it does not replace or override the relevant NSW or federal legislation. 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

- Ground shooting should only be used in a strategic manner. Where deer are widely distributed, a coordinated program is required for effective control.
- Control programs are conducted in national parks, reserves and private land as part of long-term control strategies for reducing negative impacts on native flora, fauna, urban areas and agricultural enterprises.
- Although time consuming and labour intensive, a well-planned and coordinated ground shooting program is considered an effective means for reducing lower density deer populations.
- Ground shooting as a means of population control is not suitable in inaccessible or rough terrain where sighting of target animals and accurate shooting is difficult or when wounded animals cannot easily be followed up and killed, in these circumstances aerial shooting may be the preferred technique.

- Shooting of feral deer should only be performed by skilled operators who have the necessary ability and 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 can be a humane method of killing deer.
- Shooting must be done with the appropriate firearms and ammunition and in a manner that aims to cause rapid insensibility and a quick 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 or defined group of animals is dead by physical inspection before another is targeted.
- Herd flight response is a limiting factor for humane killing of deer. To keep stress to a minimum, options that can be employed are:
  - shooting on moonless nights with the aid of spotlights or thermal/night vision equipment
  - a red filter fixed over the spotlight may reduce the amount of light seen by the deer
  - rifles with sound suppressors attached that may also reduce animal disturbance and allow multiple deer to be targeted in some circumstances.
- All species apart from Sambar and Hog deer tend to be found in groups. When possible, all deer in a group should be killed before any further groups are targeted.

- Wounded deer must be located and killed as quickly and humanely as possible with a second shot, preferably directed to the head. If left, wounded animals can suffer from pain and the disabling effects of the injury (including sickness due to infection). Note that some deer can run considerable distances even when severely injured so they may be difficult to locate. Use of a thermal device significantly enhances the ability to locate carcasses.
- Female deer will often hide newly born young until they are old enough to be mobile. If lactating females are inadvertently shot, all reasonable efforts should be made to find dependent young and kill them quickly and humanely with a shot to the brain. Behavioural cues such as vocalising, travelling in a different direction or grazing away from the herd can be useful to determine if females have hidden calves/fawns nearby. This will vary depending upon the species of deer:
  - *Rusa* – calves may be born at any time of year but there is a peak in March to April.
  - *Fallow* – fawns are usually born in November or December.
  - *Red* – breeding is regular, calves are born from late November to December.
  - *Sambar* – calves may be born at any time of year but there is a peak in May and June.
  - *Chital* – breeding is not sharply defined; calves are observed in April and May and from September to November.
  - *Hog* – irregular breeding, fawns are more frequently seen between August and October.

### **Non-target animals**

- Shooting is relatively target specific and does not usually impact 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 or sound.
- Only shoot at the target animal once it has been positively identified and never shoot over the top of hills or ridges.
- 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. 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.
- Care must be taken when handling deer carcasses as they may carry diseases such as Q-fever, salmonellosis, toxoplasmosis and yersiniosis that can affect humans and other animals. Routinely wash hands and other skin surfaces contaminated with blood and other body fluids. Carcasses can be heavy, so care must be taken when lifting/dragging.

## Equipment Required

### Firearms and ammunition

- Large calibre, high powered centrefire rifles fitted with a telescopic sight must be used.
- The calibre of rifle used will depend on the size and species of deer
- The minimum firearm and ammunition requirements for the ground shooting of *small deer* (hog, fallow, chital), are:
  - calibre: .243 inches
  - bullet weight: 80 grain
  - muzzle energy: 1819 ft-lbs
- Examples of acceptable firearm and ammunition combinations with maximum shooting distances for *small deer* (hog, fallow, chital) are included in the table below:

Cartridge	Bullet weight (gr)	Muzzle velocity (ft/sec)	Muzzle energy (ft-lbs)	Maximum distance (metres)
.243	80	3200	1819	200
25-06 Rem	90	3350	2243	200
.308 Win	150	2820	2649	200

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

- The minimum firearm and ammunition requirements for the ground shooting of *large deer* (red, rusa, and sambar) are:
  - calibre: .308 inches
  - bullet weight: 150 grain
  - muzzle energy: 2649 ft-lbs

- Examples of acceptable firearm and ammunition combinations with maximum shooting distances for *large deer* (red, rusa, sambar and wapiti) are included in the table below:

Cartridge	Bullet weight (gr)	Muzzle velocity (ft/sec)	Muzzle energy (ft-lbs)	Maximum distance (metres)
.308 Winchester	150	2820	2649	200
.300 Win Mag	150	3275	3572	200

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

- Ammunition must expand and should be heavily constructed, controlled expansion or bonded core projectiles.
- An appropriate sound suppressor fitted to the rifle (where allowed by a special permit) may assist in certain situations.
- Shotguns are NOT recommended for use on deer. If they must be used in an emergency situation, rifled slugs are to be used as ammunition.
- 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 12-volt spotlight
  - thermal/night vision monocular and scopes
  - spotlight fitted with red filter.
- Lockable firearm box.
- Lockable ammunition box.
- Personal protective equipment (hearing and eye protection).
- First Aid kit.
- Appropriate maps identifying access trails and land tenure.
- Communication devices (e.g., 2-way radios / mobile or satellite phones) are recommended for safety reasons.

## Procedures

- Deer must NOT be shot from a moving vehicle as this can significantly detract from the shooters' accuracy.
- It is recommended that during daylight hours shooters familiarise themselves with the shooting zone and the terrain they are to cover at night. Take note of potential hazards or risks and also any landmarks that may help with navigation.
- Be aware that the spotlight only illuminates a small portion of the danger zone and only a fraction of the projectile's range. If possible, a thermal device should always be used to assess any potential risks before a shot is fired.
- Ensure you are in a firm, safe and stable position before taking a shot.

### 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 humane death.
- A deer should only be shot at when:
  - it is stationary and 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.
- Ensure there are no other deer behind the target animal that may be wounded by the shot passing through the target.
- Although deer are comparatively large animals, the vital areas targeted for clean killing 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.
- Where specialist equipment such as thermal and/or night vision equipment is used for control programs, shooters must be familiar and competent with the operation and use of equipment prior to operations being undertaken.
- 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 greater blood vessels. This can be achieved by one of the following methods (see also Figure 1).

### Head Shots

#### *Frontal position (front view)*

- This is the preferred method for fawns/calves. The firearm is aimed at the middle of the forehead at the crossing point of two imaginary lines drawn from the eyes to the tops of the opposite ears. The bullet should be directed horizontally into the skull. In stags this point is found between, and sometimes just behind, the antlers.

### *Temporal position (side view)*

- This method is preferred for mature/older animals. The firearm should be aimed at the side of the head so that the bullet enters the skull at a point midway between the eye and the base of the ear on the same side of the head.

### *Rear of the head*

- This method is preferred for mature/older animals that cannot be approached from the side. The firearm should be aimed at the back of the head at a point just behind the base of the antlers and directed towards the animals' muzzle.

## **Chest Shots**

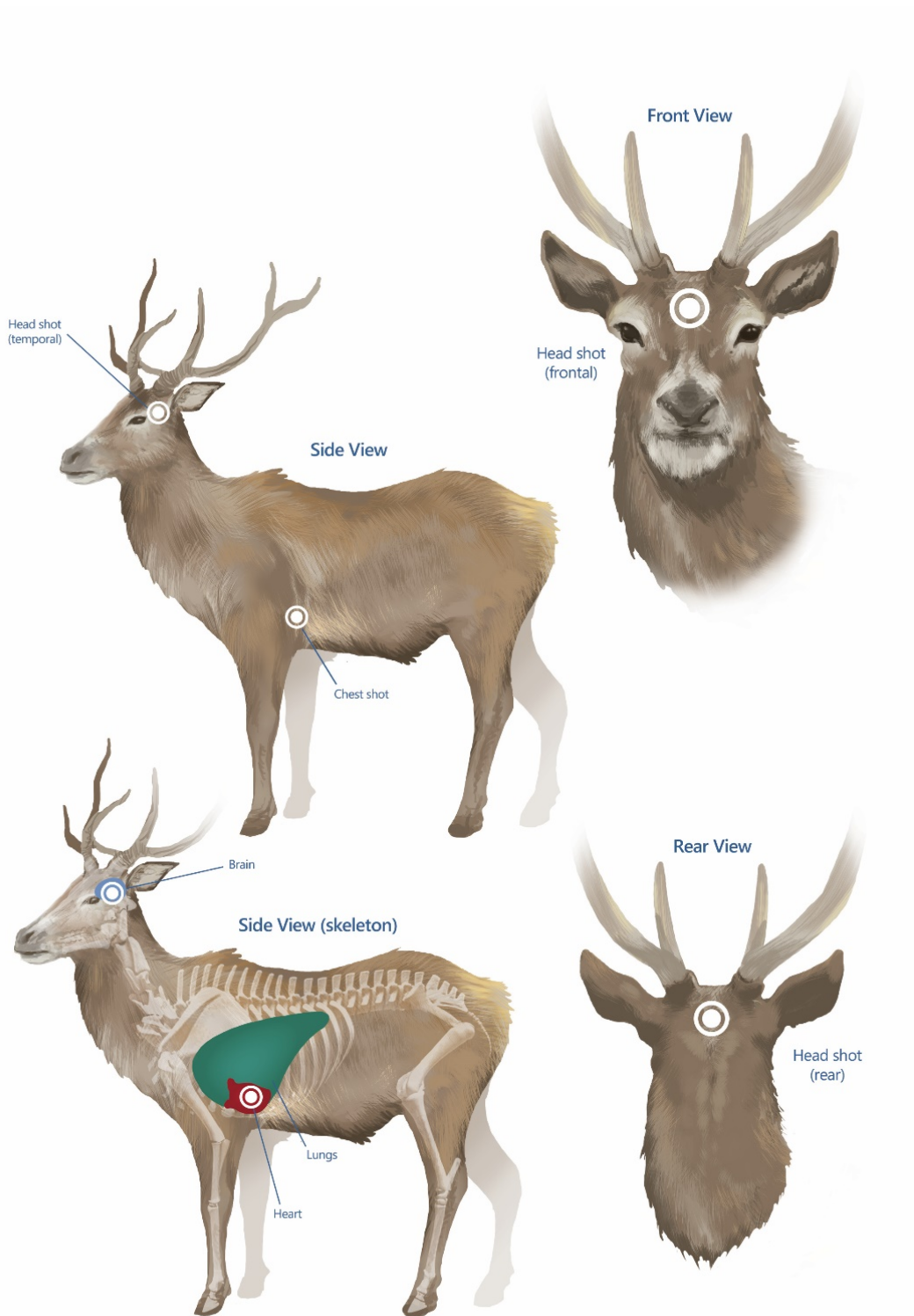
### *Side view*

- The firearm is aimed horizontally at the centre of a line encircling the minimum girth of the animal's chest, immediately behind the forelegs. The shot should be taken slightly to the rear of the shoulder blade (scapula). This angle is taken because the scapula provides partial protection of the heart from a direct side-on shot.

### *Front view*

- The firearm is aimed horizontally at the point midway between the forelegs and immediately below the base of the throat. Frontal chest shots should only be taken when the animal is in the head high position.
- Shooting of individuals should stop when the flight response of the herd limits further accurate shooting.
- Where possible fawns/calves and juveniles should be shot before shooting mature deer.
- The target animals in a group should be checked to ensure they are dead before moving on to the next group of animals. *Always approach the animal from the dorsal (or spinal) side to prevent injury from the involuntary kicking legs.* Death of shot animals can be confirmed by observing a combination of the following:
  - no heartbeat
  - no breathing
  - no corneal reflex (no blinking when the eyeball is touched)
  - no response to a painful stimulus (e.g., a pinch of the ear tip).
- If death cannot be verified, a second shot to the head should be taken immediately.
- If the carcasses are to be donated or sold for secondary use e.g., for feeding large carnivores at zoos, wildlife parks etc., they should be exsanguinated or 'bled-out' (carotid arteries and jugular veins cut) as soon as possible following shooting.

Figure 1: Shot placement for ground shooting of feral deer.



**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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