NATSOP-DEER002

NATIONAL STANDARD OPERATING PROCEDURE: GROUND SHOOTING FOR FERAL AND WILD DEER

Endorsed by the Environment and Invasives Committee 31 January 2023

Reference as:

Terrestrial Vertebrate Working Group. 2023. National Standard Operating Procedure: Ground Shooting for Feral and Wild Deer. Australia.

Available for download at **pestsmart.org.au/toolkits/feral-deer/**

Associated documents (referred to as associated COP and SOPs) relating to the National Standard Operating Procedure: Aerial Shooting of Feral and Wild Deer, include:

- National Code of Practice for the Effective and Humane Management of Feral and Wild Deer
- National Standard Operating Procedure: Ground Shooting for Feral and Wild Deer
- National Standard Operating Procedure: Trapping for Feral and Wild Deer.

This document outlines best practice guidelines for the effective and humane management of feral and wild deer in Australia.

The Code of Practice (COP) outlines humane control strategies and their implementation while standard operating procedures (SOPs) describe control techniques, their application, and strategies to minimise any harmful impacts.

The national COP and SOPs comprise model guidelines that set minimum animal welfare standards. They do not override COPs and SOPs in jurisdictions where these documents have been developed, prior to or after the endorsement of these documents, to address specific management issues or to comply with relevant legislation. For example, the national-level COP and SOP for the management of feral and wild deer are not relevant in New South Wales, which currently has both state-level COP and SOPs in place (Sharp *et al*. 2022).

This SOP along with associated COP and SOPs will be reviewed by the Terrestrial Vertebrate Working Group (TVWG) within 12 months of when they were endorsed, to manage any potential risks to operations throughout the country.

Jurisdictions conducting operations for feral and wild deer control are encouraged to submit reports to the TVWG secretariat for discussion at either the 12 monthly review, or sooner if there are urgent matters that need to be raised. The reports should include:

- whether the national COP and SOPs were implemented in their jurisdiction
- whether the national COP and SOPs were effective
- apparent mistakes or oversights in the national COP and SOPs
- unintended consequences or adverse events that occurred when implementing the national COP and SOPs
- new techniques or modifications to existing techniques as a result of research or registration

These reports will form the basis of reviews by the TVWG.

This revision of the COP for feral deer management builds on the extensive work conducted by NSW over several years (see Sharp et al. 2022), which provided the springboard for expansion to a national approach. Guidance, input and reviews were provided by the multi-jurisdictional membership of the TVWG. Consultation and input was also provided by the RSPCA, veterinary experts, contractors, and operational and policy government staff.

This document has been endorsed by the Environment and Invasives Committee.

CONTENTS

PREFACE

This standard operating procedure (SOP) should be read in conjunction with the overarching Code of Practice for the Effective and Humane Management of Feral and Wild Deer, to ensure that the most appropriate pest control techniques are selected and deployed in combination with other techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

This SOP builds on the extensive work conducted by NSW over several years (see Sharp *et al.* 2022), which provided the springboard for expansion to a national approach. This national SOP and the associated COP and SOPs provide the most relevant and up-to-date information to support best practice approach to feral deer management for all regions.

This SOP and the associated COP and SOPs also cover the activities of recreational or sporting shooters in some jurisdictions, but not in others, as specified by jurisdictional legislation. This SOP also recognises that differences exist among jurisdictions in their approaches to managing feral deer. For example, access to suppressors for firearms varies among jurisdictions. Variations and modifications to pest control techniques among jurisdictions will be reflected in jurisdiction-specific COP and SOPs, which take precedence over the national versions.

BACKGROUND

Ground shooting of feral deer is undertaken as part of shooting programs in national parks, reserves, and private lands. It is conducted by vertebrate pest control officers including government staff, landholders, volunteer pest control shooters, and professional contractors. Ground shooting of feral deer may be done at night from a vehicle or on foot, with the aid of spotlights or thermal imaging/night vision scopes. It is best suited to accessible areas where feral deer numbers are low and where the impact of deer is greatest. Ground shooting is most effective when used as part of a coordinated program.

Ground shooting is a humane method of killing feral deer when it is carried out:

- by experienced and skilled shooters
- when the animal can be clearly seen and is within range of the firearm
- with the use of an appropriate firearm, with appropriate ammunition
- with a shot placed at either the head or chest
- such that wounded animals are promptly located and killed.

The use of suppressors/sound moderators can be beneficial to a ground shooting program because they enable more deer to be culled from a mob. They also protect the hearing of the shooter. The use of suppressors/sound moderators must comply with jurisdictional requirements.

Recent ground shooting activities in urban and peri urban areas have used tranquilising darts with satellite tracking capacity to sedate and locate feral deer for effective removal. When a feral deer is immobilised by chemical sedation, a captive bolt may be used for euthanasia in urban areas where firearm restrictions apply. The use of sedatives or tranquilising darts must be undertaken under veterinary instruction or an appropriately qualified person.

Ground shooting of feral deer can also be undertaken to euthanise feral deer that have been trapped, following relevant legislation (see SOP: Trapping for feral and wild deer).

APPLICATION

- Ground shooting may be used where deer are widely distributed.
- Coordinated ground shooting across large spatial scales and adjoining many properties is required for effective pest animal control.
- Pest control programs are conducted as part of long-term pest control strategies for reducing negative impacts on the environment, primary industries, and public safety.
- A well-planned and coordinated ground shooting program is considered an effective means for reducing deer populations of low densities.
- Ground shooting is less suitable in inaccessible terrain where sighting of target animals, accurate shooting, and the ability to track and kill a wounded animal is difficult. In these situations aerial shooting may be the preferred technique to control feral deer.
- Shooting of feral deer should only is to be performed by skilled operators who have the necessary ability and experience with firearms and who hold the appropriate licences and accreditation.
- Storage, transportation, and use of firearms and ammunition must comply with the relevant legislative requirements and departmental policies.
- The use of tranquilising dart guns with trackers, followed by euthanasia by captive bolt, can be used in urban and peri-urban areas, where traditional firearms cannot be used.

ANIMAL WELFARE CONCERNS

Impact on feral deer

- Ground shooting can be conducted with a high level of humaneness by skilled shooters.
- Shooting must be conducted in a manner which maximises its effect, causing rapid death. This outcome requires appropriate use of firearms and ammunition.
- Only head (brain) or chest (heart-lung) shots are to be used.
- A chest shot causes tissue damage and death from haemorrhaging of major blood vessels. If the shot stops the heart functioning, the animal will rapidly lose consciousness.
- Correctly placed head shots cause brain functions to cease, and insensibility is immediate.
- A target animal is only shot when:
    - it is clearly visible and recognised
    - it is within effective range of shooter and the firearm and ammunition being used
    - a humane kill is probable.
- If an animal is wounded, a second shot, preferably to the head, must be taken to ensure it is killed quickly and humanely.
- If an animal is wounded and cannot be found to deliver a subsequent shot, all reasonable effort must follow to find and kill the injured animal quickly and humanely.
- Each shot animal or defined group of shot animals must be considered dead by the shooter, by physical inspection, before shooting further animals.
- The cost of ammunition and number of shots fired must not deter shooters from applying the appropriate follow-up procedures.

- Herd flight response is a limiting factor for humane killing of deer. Options to keep the stress levels of feral deer at a minimum include:
    - shooting on moonless nights with the aid of spotlights or thermal/night vision equipment
    - a red filter over the spotlight to reduce the amount of light seen by the feral deer
    - attaching suppressor/sound moderator to the firearm to reduce disturbance.
- All animals in a mob should be shot before moving onto another mob.
- To minimise the animal welfare implications of leaving dependent fawns to die, where possible they should be shot first.
- If lactating females are shot, reasonable efforts should be made to find dependent young and kill them quickly and humanely.
- The use of suppressors or sound moderators, where jurisdictional legislation permits, can help to minimise disturbance to other feral deer in the area.

Impact on non-targeted animals

- Shooting is target specific and does not usually impact other species. However, a risk of injuring or killing non-target animals, including livestock, may occur if shots are taken before an animal has been positively identified.
- Ground shooting should never be undertaken over the top of hills and ridges.
- Sensitive livestock such as horses, lambing flocks, and pets may be frightened by gunshots. These animals may injure themselves by running into fences or other obstacles or mismother offspring because of disturbance. Pest programs should avoid shooting in areas where livestock occurs or organise their removal prior to the shooting program.
- The use of suppressors or sound moderators, where jurisdictional legislation permits, can help to minimise disturbance to non-target animals in the area.

HEALTH AND SAFETY CONCERNS

- 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 permitted but 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 the shot.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession, and use.
- Adequate hearing protection should be worn by the shooter and others in the vicinity.
- Safety glasses may be worn to protect the eyes from gases and metal fragments.
- When not in use, firearms must be securely stored in a compartment that meets jurisdictional requirements. Ammunition must be stored in a locked container separate from firearms.
- Care must be taken when handling feral deer carcasses because they harbour zoonotic diseases such as Q-fever, salmonellosis, toxoplasmosis, and yersiniosis, which can affect humans and other animals.
- Regularly wash hands and other skin surfaces contaminated with blood and other body fluids.
- Feral deer can be heavy, so care must be taken when lifting or dragging carcases.

- The use of suppressors/sound moderators, where jurisdictional legislation permits, can be beneficial to protect the hearing of the shooter.

EQUIPMENT REQUIRED

Firearms and ammunition

- A suitable firearm that will cause a rapid and humane death. The type of firearm is determined by the shooter and is based on the operation. Details on commonly used firearms and their application are listed in Table 1. Shooting out to a range of 300m should only be undertaken by trained and experienced shooters.
- The firearms may be fitted with an appropriate thermal scope, telescopic sight, red dot scope, or iron sights.
- Dart guns can be used to tranquilise feral deer caught in traps or in urban or peri urban areas, in situations where traditional firearms cannot be used or to minimise stress of the animal.
- Tracker darts are preferred over non-tracker darts because they ensure that the animal can be located, or if dart falls out, that dart can be retrieved.
- If a feral deer is tranquilised, a captive bolt or a suitable firearm can be used at point blank range to dispatch the animal.

Table 1 Common firearms used in ground operations to control feral deer

Situation	Species	Firearm	Ammunition
Tranquilising feral deer in traps or in urban/peri urban areas	All species	dart gun	As per instruction by a veterinary or an appropriately qualified person – appropriate for the species
Euthanasia of tranquilised feral deer (at point blank range)	All species	Captive bolt	N/A
Killing trapped or sedated animals or euthanasia at close range (< 5 m)	Small deer (hog, chital, fallow)	.22 LR or greater shotgun	40 gr 9-25 pellets
	Large deer (red, sambar, rusa)	.22 mag .222 shotgun	40 gr 50 gr 9-12 pellets
Field shooting (5-300* m)	Small deer (hog, chital, fallow)	.222 .243	50 gr 100 gr
	Large deer (red, sambar, rusa)	.270 .308	130 gr 130 gr

* Shooting out to a range of 300m should only be undertaken by trained and experienced shooters

Other equipment

- If shooting at night the following equipment may improve effectiveness, humaneness, and safety:
    - Handheld spotlight or a helmet or headband mounted 12-volt spotlight fitted with red filter
    - Thermal/night vision monocular and scopes.
- 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. mobile phones, satellite phone, 2-way radios).
- Suppressors/sound moderators where jurisdictional legislation permits.
- Detector/indicator dogs to assist in finding and/or flushing feral deer for ground shooting, where jurisdictional legislation permits.

PROCEDURES

- Deer must not be shot from a moving vehicle because it decreases the accuracy of the shooter and increases the risk of a sub-lethal shot.
- It is recommended that shooters familiarise themselves with the shooting zone and the terrain that they will cover.
- It is important to be aware that the spotlight only illuminates a small portion of the area and a fraction of the range of the firearm. A thermal device may help to identify risks before shooting.
- Find a firm, safe, and stable position before taking a shot.
- Shooting of feral deer in a mob should stop when the flight response of the herd reduces accuracy.
- Where possible fawns/calves and juveniles may be shot before shooting mature deer.
- The target animal or animals when in a mob should be checked to ensure that they are dead before moving onto another mob. Approach shot animals from the dorsal (spinal) side to prevent injury from kicking legs.
- If the feral deer are being shot with a tranquiliser dart, containing a tracking device, ensure the animal will not be able to run into danger prior to making the shot. Only one animal is to be shot with a dart and then dispatched before engaging another animal. Once darted the individual animal must be tracked from a safe distance until fully tranquilised and then euthanised as soon as safe to do so.

Target animal and shot placement

- Shooting from the closet range possible reduces the risk of non-lethal wounding. A single shot should achieve an immediate and humane death.
- A deer should only be shot 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.

- Ensure there are no other feral deer or non-target animals behind the target animal that may be wounded by the shot passing through the target.
- Deer are comparatively large animals, but the vital areas targeted for a clean kill are small. Shooters should be skilled in shot placement, be able to accurately judge distance, wind direction and speed, and have a thorough knowledge of the firearm and ammunition being used.
- If equipment such as thermal and/or night vision equipment is used, shooters must be familiar and competent with its use.
- The shooter must aim at either 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.
- If using a dart gun to tranquilise the shooter must aim for large muscles like the rump or upper leg.

Aiming points for head and chest shots are as follows (illustrated in Figure 1).

Head Shots

Frontal position (front view)

This is the preferred method for fawns/calves. It should not be used for larger adult deer due to the heavier bone structure of the front of the skull. 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.

Poll position (rear view)

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 between the base of the ears and directed towards the mouth.

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.

Chest Shot

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 and humerus provide 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.

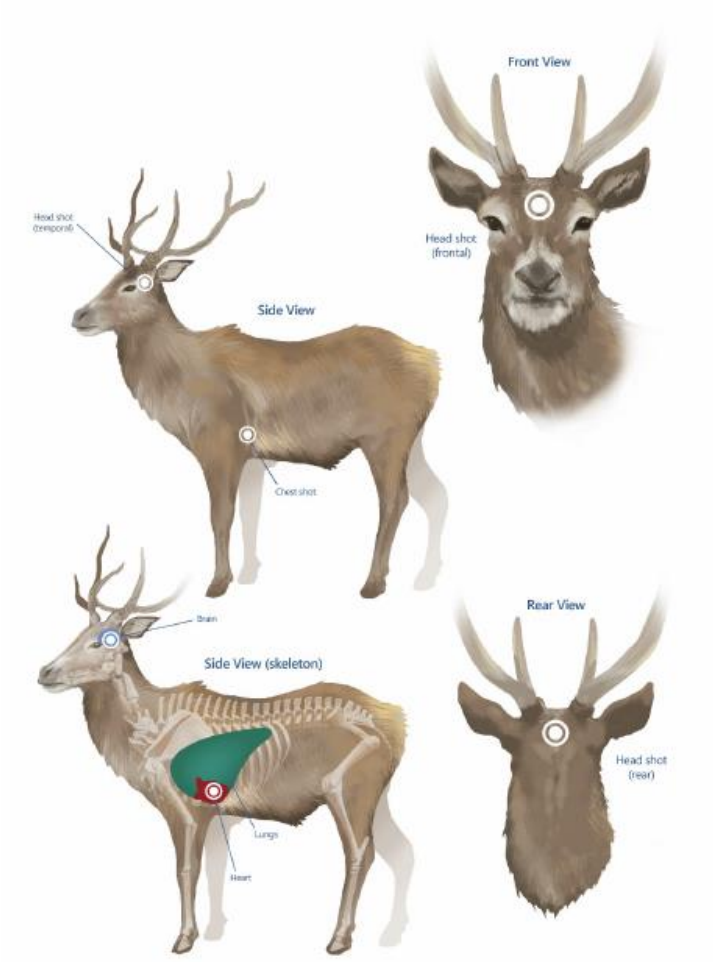

Figure 1 Shot placement for ground shooting of deer.

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 area.