

Standard Operating Procedure GOA001: Ground shooting of feral goats

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Background

Feral goats (*Capra hircus*) can cause significant environmental damage and agricultural losses and are a potential reservoir and vector of endemic and exotic diseases. Although considered pests, feral goats are also an important resource, harvested commercially, primarily for meat. Control methods include trapping, mustering, exclusion fencing, ground shooting and shooting from helicopters. Radio-collared 'Judas' goats are sometimes used to locate groups of feral goats. Refer to GOA005 *Use of Judas goats*.

Ground shooting of feral goats is undertaken by government vertebrate pest control officers, landholders and professional or experienced licensed shooters. It is best suited to accessible areas with high feral goat populations. Shooting from a helicopter is considered a more humane control method, as mobile wounded animals can be promptly located and killed. It is also a more effective method of quickly reducing feral goat populations. Refer to GOA002 *Aerial shooting of feral goats*.

Shooting can be a humane method of destroying feral goats 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.

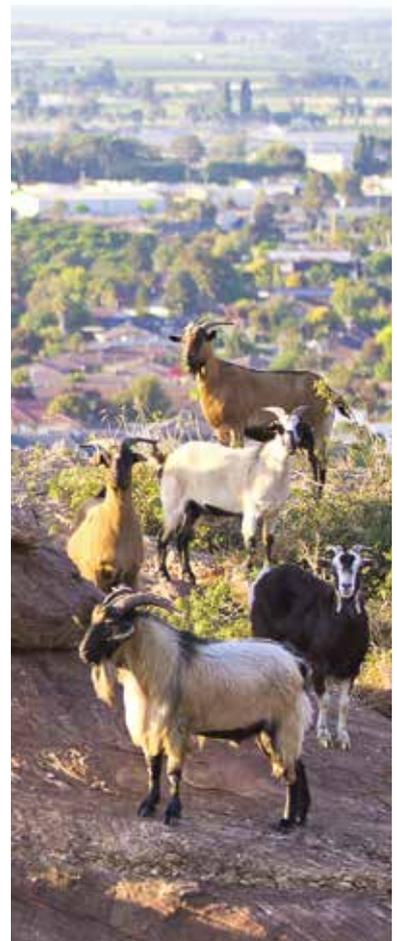
This standard operating procedure (SOP) is a guide only. It does not replace or override the legislation that applies in the relevant state or territory jurisdiction. The SOP should only be used subject to the applicable legal requirements (including OH&S) operating in the relevant jurisdiction.

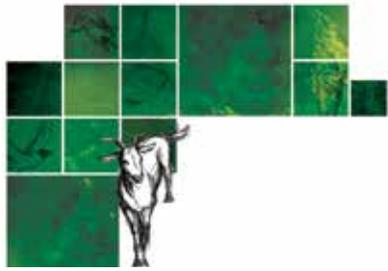
Application

- Shooting should only be used in a strategic manner as part of a coordinated program

designed to achieve sustained effective control.

- Ground shooting is mainly used in forested areas and in open pastoral areas, often as a follow-up after initial reduction of goat numbers by mustering or aerial shooting.
- Ground shooting is time consuming and labour intensive, often with low efficiency especially during moist climatic conditions. It is therefore not considered an effective method for large-scale control.
- The optimal period for ground shooting is during dry seasons or droughts, when many groups of goats are forced to congregate around areas with limited access to water and feed. The effectiveness of ground shooting becomes limited when animals have dispersed after rain and/or the number of goats becomes low.
- Ground shooting 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.
- The use of radio-collared Judas goats to locate feral herds increases the effectiveness of ground shooting control operations.
- Trained dogs are sometimes used to detect, herd or flush out feral goats prior to shooting. It is unacceptable to set a dog onto a goat with the intention of bringing it down, holding or attacking it.
- Shooting of feral goats 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.





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Animal welfare considerations

Impact on target animals

- The humaneness of shooting as a control technique depends almost entirely on the skill and judgement of the shooter. If properly done, it is one of the most humane methods of destroying feral goats. On the other hand, if done inexpertly, shooting can result in wounding that can cause considerable pain and suffering.
- Shooting must be done with the appropriate firearms and ammunition and in a manner that aims to cause immediate insensibility and painless death. Shooters should not shoot at an animal unless it is clearly visible and they are confident of killing it with a single shot.
- Only head (brain) or chest (heart/lung) shots must be used. Shots to the head are preferred over chest shots as they are more likely to cause instantaneous loss of consciousness. Chest shots do not render the animals instantaneously insensible and are likely to result in a higher incidence of wounding. Shooting at other parts of the body is unacceptable.
- The shooter must be certain that each animal is dead before another is targeted.
- Wounded goats 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 escape and suffer from pain and the disabling effects of the injury (including sickness due to infection).
- If lactating females are shot, efforts should be made to find dependent young and kill them quickly and humanely with a shot to the brain. Note that kids are not always easy to find – approximately half of mothers ('stayers') tend to stay in the vicinity of the newborn kid, while others ('leavers') leave them alone to forage. Lactating females tend to be found away from the mob. If kids are bigger, they will often be found with the mother.
- If herding/sheep dogs are used to flush feral goats out from heavily forested areas, they must be muzzled and/or adequately controlled to prevent them from attacking goats. In the event that a dog fastens onto a goat and causes injury, the dog must be restrained and the goat immediately killed by shooting.

Impact on 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 only 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 might disturb the lambing flock and cause mismothering. Also avoid paddocks containing sensitive livestock (eg horses or deer). They are easily frightened by spotlights and gunshots and could injure themselves by running into fences and other obstacles.

Health and safety considerations

- All participants in the culling program 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.
- 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.
- Adequate hearing protection should be worn by the shooter and others in the immediate vicinity of the shooter. Repeated exposure to firearm noise can cause irreversible hearing damage.
- Safety glasses are recommended to protect eyes from gases, metal fragments and other particles.
- Care must be taken when handling goats as they can carry diseases such as Q fever and scabby mouth (also known as orf) that can affect humans and other animals. Routinely wash hands after handling goats or carcasses.
- Operators working with goats and goat carcasses are at risk of contracting Q fever. They can become infected when they inhale droplets of urine, milk, faeces or birth products from infected animals. Infection can also occur from inhalation of aerosols created during slaughter of infected animals or dust from contaminated materials. Blood testing of personnel is recommended to assess previous exposure, followed by vaccination for susceptible individuals.

Equipment required

Firearms and ammunition

- Large calibre, high-powered rifles (at least equal to .243 performance), fitted with a telescopic sight are recommended. Hollow-point or soft-nosed (minimum 80 grain) ammunition should be used. Smaller calibres (.222 or .223) with 70 grain ammunition can be adequate in skilled hands for smaller animals (less than 40 kg).
- 12-gauge shotguns with heavy shot sizes of SG or SSG can be effective, but only up to a distance of 20 metres from the target animal.
- The accuracy and precision of firearms should be tested against inanimate targets before any shooting operation.

Other equipment

- first aid kit
- lockable firearm box
- lockable ammunition box
- personal protective equipment (hearing and eye protection, mask, etc).

Procedures

- The best time to shoot feral goats is when they are most active; that is, in the early morning and late afternoon.
- The objective is to fire over 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 feral goat 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 Diagram 1).

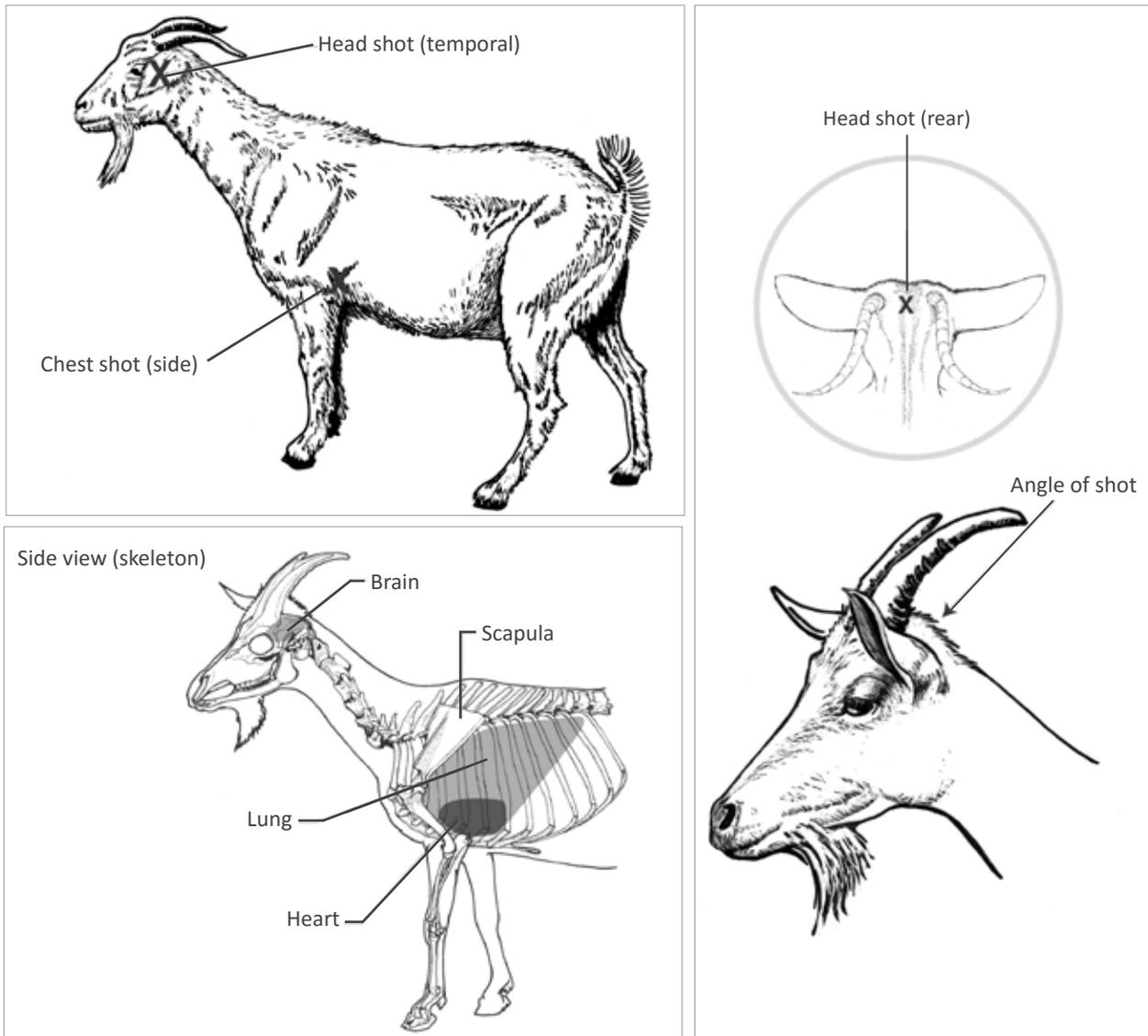
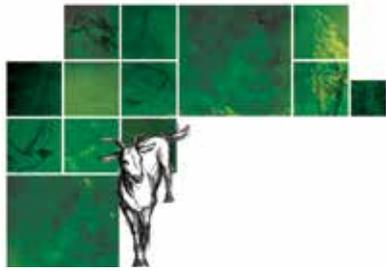


Diagram 1: Recommended shot placements for feral goats.



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Head Shot

- The horn structures on adult goats make the temporal (side-on) or rear head shots the preferred points of aim. Shots to the front of the head can be used on kids, but this method is not recommended for mature goats as the brain is located well back in the skull.

Temporal position (side view)

- The firearm should be directed at the side of the head so that the bullet enters the skull midway between the eye and the base of the ear. The bullet should be directed horizontally.

Rear of the head

- The firearm should be aimed at the back of the head at a point between the base of the horns and directed towards the mouth.

Chest Shot

Front view

- The firearm is aimed horizontally at the point midway between the forelegs and immediately below the base of the throat. Frontal shots should only be used for animals in the 'head high' position.

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 can be stationary or mobile, but must be no further away 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 practise estimating distances before a shooting operation.
- Shoot the dominant and mature animals first or the leading animals if goats are escaping.
- 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:
 - absence of rhythmic, respiratory movements
 - absence of eye protection reflex (corneal reflex) or 'blink'
 - a fixed, glazed expression in the eyes
 - loss of colour in mucous membranes (become mottled and pale without refill after pressure is applied).
- If death cannot be verified, a second shot to the head should be taken immediately.

Further information

1. American Veterinary Medical Association (2007). *AVMA Guidelines on Euthanasia* (formerly The Report of the AVMA Panel on Euthanasia).
2. Biodiversity Group, Environment Australia (1999). *Threat Abatement Plan for Competition and Land Degradation by Feral Goats*. Environment Australia under the Natural Heritage Trust.
3. Parkes J, Henzell R and Pickles G (1996). *Managing Vertebrate Pests: Feral Goats*. Bureau of Resource Sciences and Australian Nature Conservation Agency. Australian Government Publishing Service, Canberra.
4. Gregory N (2003). Assessing the humaneness of pest control methods. In: *Solutions for Achieving Humane Vertebrate Pest Control*. Proceedings of the 2003 RSPCA Australia Scientific Seminar. Royal Society for the Prevention of Cruelty to Animals Australia, Canberra. Pp 65-84.
5. Longair JA, Finley GG, Laniel MA, MacKay C, Mould K, Olfert ED, Roswell H and Preston A (1991). Guidelines for euthanasia of domestic animals by firearms. *Canadian Veterinary Journal* 32:724-726.
6. Mawson P (1991). *Ethics, Animal Welfare and Operational Guidelines for the Humane Shooting of Pest Animals*. Agriculture Protection Board of Western Australia Infonote 8/91 Agdex 670.
7. NSW Agriculture, NSW National Parks and Wildlife Service, Rural Lands Protection Boards, NSW Police (2003). *Feral Animal Aerial Shooting Team (FAAST) Management and Training System*.
8. Smith G (1999). *A Guide to Hunting and Shooting in Australia*. Regency Publishing, South Australia.
9. Standing Committee on Agriculture, Animal Health Committee (1991). *Model Code of Practice for the Welfare of Animals: Feral Livestock animals - Destruction or Capture, Handling and Marketing*. CSIRO, Australia
10. Universities Federation for Animal Welfare (UFAW) (1976). *Humane Destruction of Unwanted Animals*. UFAW, Potters Bar, England.

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Cover image: Rocco Pirrottina