

Standard Operating Procedure

CAM001: Ground shooting of camels

Prepared by Trudy Sharp

Background

The population of feral camels (*Camelus dromedarius*) in Australia is currently estimated to be around one million with numbers increasing at around 8% per year. At high densities camels can have serious impacts on vegetation and have the potential to cause significant production losses through competition with cattle. They can also damage fences and watering points, particularly during times of drought. Control methods include capture (by trapping at watering points or mustering), exclusion fencing, ground shooting and shooting from helicopters.

Ground shooting is usually conducted from all-terrain vehicles and is best suited to accessible and relatively flat areas where there are low numbers of problem camels. The Judas approach has been used with some success to support this technique. Ground shooting is also used for euthanasia of sick or injured camels. 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 for large scale population reductions in remote and/or inaccessible areas. Refer to [CAM002 Aerial shooting of feral camels](#).

Shooting can be a humane method of destroying feral camels 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.

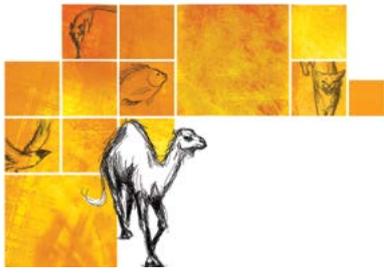
This standard operating procedure (SOP) is a guide only; it does not replace or

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 WH&S) operating in the relevant jurisdiction.

Application

- Ground shooting should only be used in a strategic manner as part of a co-ordinated program designed to achieve sustained effective control.
- Ground shooting is time consuming and labour intensive, and is therefore not considered an effective method for large-scale control.
- Ground shooting is used to euthanase small numbers of sick, injured or unwanted camels.
- 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.
- The optimal period for ground shooting is during dry seasons or droughts when many groups of camels are forced to congregate around remaining areas of water or succulent feed. Shooting during drought may reduce the number of camels that may otherwise die slowly of hunger or thirst.
- Frequent shooting from the ground may teach camels to avoid certain areas, making overall control difficult.
- Shooting of feral camels should only be performed by skilled operators who





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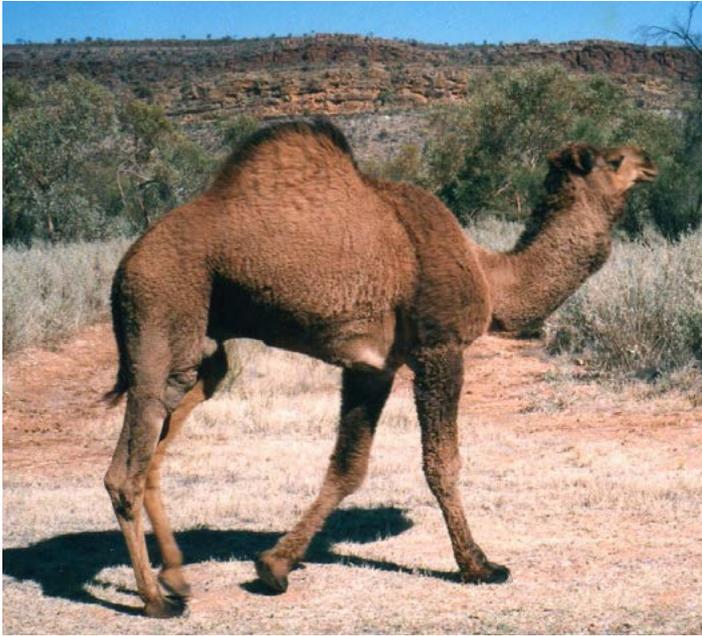


Image: Judy Blackshaw

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.

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 carried out, it can be a humane method of destroying feral camels. On the other hand, if inexpertly carried out, shooting can result in wounding which may cause considerable pain and suffering.
- Shooting must be conducted with the appropriate firearms and ammunition and in a manner which aims to cause immediate insensibility and painless death.
- Shooters should not shoot at an animal unless it is clearly visible and the shooter is 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.

- Wounded camels 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. Ground shooting should be conducted from all-terrain vehicles to help effectively follow-up injured animals if required. In cases where the terrain is difficult to access with a vehicle (eg cutaways, jump-ups) following on foot may be necessary.
- Ground shooting should be timed to minimise the risk of orphaning dependent calves or causing abortion when females are in late pregnancy.
- If lactating cows are shot, dependent calves should be located and killed quickly and humanely.

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.

Health and Safety Considerations

- People in the immediate vicinity should stand well behind the shooter when shots are to be fired. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- Although normally relatively placid, bull camels during rut should be approached with caution as they can have no fear making them quite dangerous.
- 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 the eyes from gases, metal fragments and other particles.
- Care must be taken when handling feral camel carcasses as they may carry diseases such as ringworm, mange and melioidosis that can affect humans and other animals. Routinely wash hands and other skin surfaces after handling carcasses. Carcasses can be heavy, so care must be taken when lifting/dragging.

Equipment Required

Firearms and ammunition

- Large calibre, high powered, centre-fire, bolt action or semi-automatic rifles should be used. Preferred calibre is .300 Magnum ballistics or greater, with cartridges of .308 Win performance being minimum. Rifles should be fitted with quality telescopic sights of at least 4X magnification. Soft-point ammunition with heavily constructed, controlled expansion projectiles (eg Winchester Fail Safe, Barnes X, or Nosler Partition). Minimum weight is 150 grain for .308, 180 or 200 grain for .300 Magnum.
- Shotguns are NOT recommended for use on feral camels.
- The accuracy and precision of firearms should be tested against inanimate targets prior to the commencement of any shooting operation.

Other equipment:

- Lockable firearm box
- Lockable ammunition box
- Personal protective equipment (hearing and eye protection)
- First aid kit
- Appropriate maps identifying access trails and land tenure

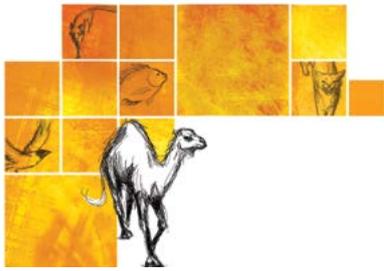
Procedures

- Camels should 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.
- 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 camel 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, and
 - A humane kill is probable. If in doubt, do NOT shoot.
- Ensure there are no other camels behind the target animal that may be wounded by the shot passing through the target.
- Although camels are large animals, the vital areas targeted for clean killing are small. Shooters should be adequately skilled (ie be able to consistently shoot a group of not less than 3 shots within a 10 cm target at 100 m). Shooters should also be able to accurately judge distance, wind direction and speed and have 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 diagrams, p5):



Image: Patrick Hodgens



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Head shots (This is the preferred point of aim)

Poll position (rear view)

The firearm should be aimed at the back of the head at the intersection of the skull and the neck and directed towards the mouth (ie perpendicular to the neck line).

Temporal position (side view)

The camel is shot from the side so that the bullet enters the skull midway between the eye and the base of the ear. The bullet should be directed horizontally.

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 behind and below the shoulder at the point immediately behind the elbow. This shot needs to be angled forward at 40-45° to the camel's body to hit the heart.
- The target animal should be checked to ensure it is dead before moving on to the next animal. Always approach the animal from the dorsal (or spinal) side to prevent injury from kicking legs. Death of shot animals can be confirmed by observing the following:
- Absence of rhythmic, respiratory movements



Image: Hans Boessem

- Absence of eye protection reflex (corneal reflex) or 'blink'
- A fixed, glazed expression in the eyes, and
- 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

Contact the relevant federal, state or territory government agency from the following list of websites:

- Australian Department of the Environment and Energy
<http://www.environment.gov.au/>
- Australian Department of Agriculture and Water Resources
<http://www.agriculture.gov.au/>
- Transport Canberra and City Services
<http://www.tccs.act.gov.au/>
- NSW Department of Primary Industries
<http://www.dpi.nsw.gov.au>
- NT Department of Land Resource Management
<http://lrm.nt.gov.au/>
- Qld Department of Agriculture, Fisheries and Forestry
<http://www.daff.qld.gov.au/>
- Biosecurity SA, Department of Primary Industries and Regions
<http://www.pir.sa.gov.au/biosecuritysa>
- Tas Department of Primary Industries, Parks, Water and Environment
<http://www.dpiw.tas.gov.au/>
- Vic Department of Primary Industries
<http://www.dpi.vic.gov.au/>
- WA Department of Agriculture and Food
<http://www.agric.wa.gov.au>

Also refer to: www.pestsmart.org.au

Diagram 1: Recommended shot placements for camels. Note that frontal brain shots are not recommended during ground shooting of camels since the shape of the skull can cause bullet deflection.

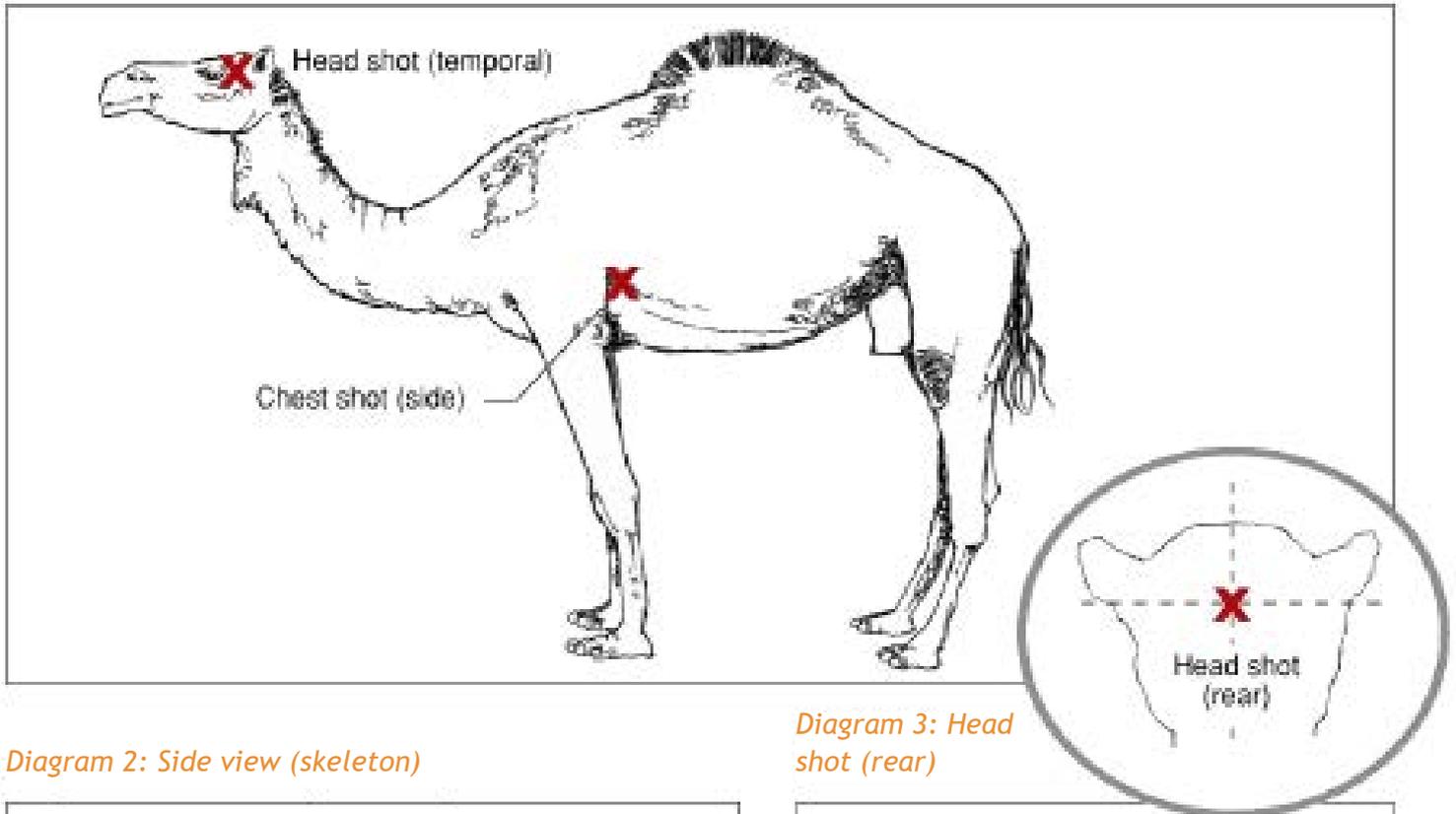


Diagram 2: Side view (skeleton)

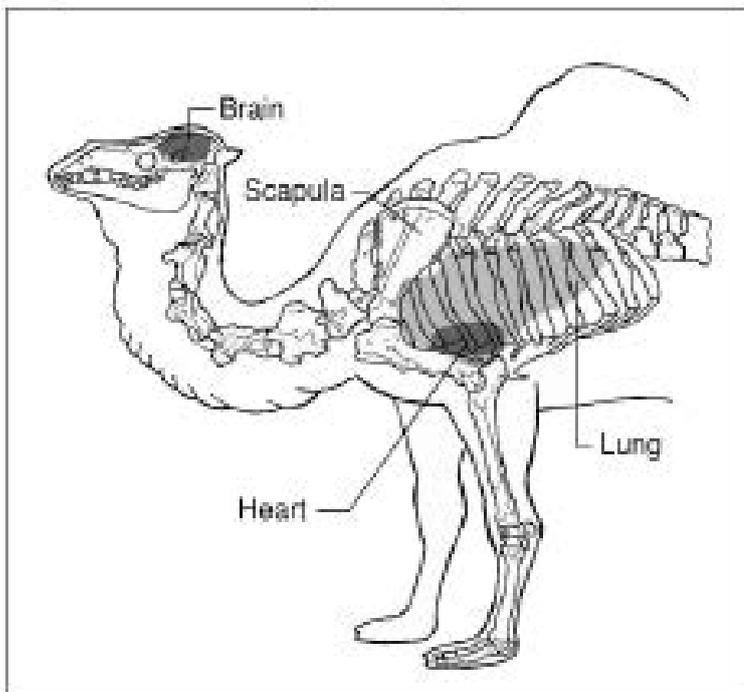
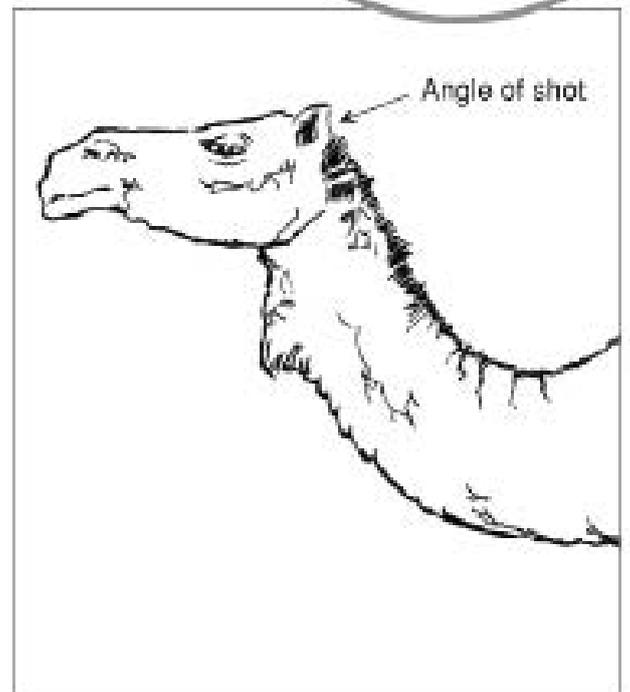
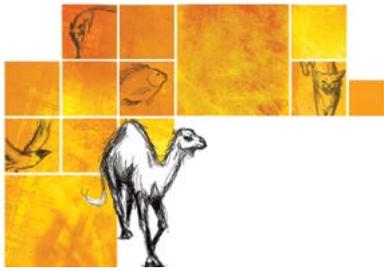


Diagram 3: Head shot (rear)





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References

1. American Veterinary Medical Association (2001). 2000 Report of the AVMA Panel on Euthanasia. *Journal of the American Veterinary Medical Association* 218:669-696.
2. Department of the Environment and Heritage (2004). *The Feral Camel (Camelus dromedarius)*. Natural Heritage Trust, Department of the Environment and Heritage, Canberra.
3. Brown A (2004). *A Review of Camel Diseases in Central Australia*. Department of Business, Industry and Resource Development, Arid Zone Research Institute, Alice Springs, NT.
4. Edwards GP, Eldridge SR, Wurst D, Berman DM and Garbin V (2001). Movement patterns of female feral camels in central and northern Australia. *Wildlife Research* 28:283-289.
5. Edwards GP, Saalfield K and Clifford B (2004). Population trend of feral camels in the Northern Territory, Australia. *Wildlife Research* 31:509-517.
6. 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 held at the Telstra Theatre, Australian War Memorial, Canberra, 25 February, 2003. Royal Society for the Prevention of Cruelty to Animals Australia, Canberra. Pp 65-84
7. 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.
8. 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.
9. NSW Agriculture, NSW National Parks & Wildlife Service, Rural Lands Protection Boards, NSW Police (2003). *Feral Animal Aerial Shooting Team (FAAST) Management and Training System*.
10. Primary Industries Standing Committee (2006). *Model Code of Practice for the Welfare of Animals: The Camel (Camelus dromedarius)*. 2nd Edition. PISC report No. 86. CSIRO, Australia.
11. Ramsay BJ (1994). *Commercial Use of Wild Animals in Australia*. Australian Government Publishing Service, Canberra.
12. Senate Select Committee on Animal Welfare (SSCAW) (1991). *Culling of Large Feral Animals in the Northern Territory*. Senate Printing Unit, Parliament House, Canberra.
13. Smith G (1999). *A guide to hunting and shooting in Australia*. Regency Publishing, South Australia.
14. 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.
15. UFAW (1988). *Humane Killing of Animals* (4th Ed). Universities Federation for Animal Welfare, Potters Bar, England.



Image: Dave Waterson

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