

AERIAL SHOOTING OF CAMELS (CAM002) STANDARD OPERATING PROCEDURE

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.

Aerial shooting of feral camels from a helicopter is used for large scale population reductions in remote and/or inaccessible areas. Teams involved in shooting from a helicopter include a shooter and a pilot who together locate the camels as well as record the number of animals shot.

Aerial shooting can be a humane method of destroying feral camels when it is carried out by experienced and skilled shooters and pilots; 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

- Aerial shooting should only be used in a strategic manner as part of a coordinated program designed to achieve sustained effective control.
- Population surveys should be conducted both prior to, and after the shooting operation to monitor effectiveness and to justify the culling program.
- Aerial shooting is considered the only practical method of control in rugged and inaccessible terrain where camels cannot be caught, or humanely ground shot, or when there is no viable market for them
- Aerial shooting is a cost-effective method where camel density is high (ie during dry seasons where animals have congregated near water and feed). Costs increase greatly as camel density decrease (ie during wet seasons where animals are more scattered).
- The optimal period for aerial shooting is during dry seasons or droughts when many groups of feral camels are forced to congregate around remaining areas of water and feed. Shooting during drought reduces the number of camels that would otherwise die slowly of hunger or thirst. Aerial shooting during wet seasons when camels are widely dispersed will be less effective and more expensive.
- For safety reasons, shooting from a helicopter cannot be undertaken in adverse weather conditions (eg strong wind, rain, low cloud, hot days that cause unpredictable thermals).
- Shooting of feral camels should only be performed by competent, trained personnel who have been tested and accredited for suitability to the task and marksmanship and who hold the appropriate licences (eg NSW Feral Animal Aerial Shooter Training (FAAST) course; NT Parks and Wildlife Advanced Firearms course; QLD Biosecurity Aerial Platform Marksmanship Course).
- Helicopter pilots must hold the appropriate licences and permits and should be skilled and experienced in aerial shooting operations.
- Helicopter operators must have approval from the Civil Aviation Safety Authority to undertake aerial shooting operations.
- Aerial shooting should comply with all relevant federal, state and territory legislation, policy and guidelines.

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- Storage, use and transportation of firearms and ammunition must comply with relevant legislative requirements.

ANIMAL WELFARE CONSIDERATIONS

Impact on target animals

- Humaneness of aerial shooting as a control technique depends on the skill and judgement of both the shooter and the pilot. 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.
- Aerial shooting should not be carried out if the nature of the terrain reduces accuracy resulting in increased likelihood of wounding shots and prevents the humane and prompt despatch of wounded animals.
- Shooting must be conducted in a manner which maximises its effect thus causing rapid death. This requires the use of appropriate shot placements, appropriate firearms, and ammunition as described below.
- Only head (brain) or chest (heart-lung) shots must be used. Shooting at other parts of the body is unacceptable.
- Since it is very difficult to assess if an animal is dead from a distance, it is essential that a deliberate policy of 'overkill' be followed where a minimum of two shots are used per animal. That is, after an initial head or chest shot, another shot/s must be fired into the chest or head to ensure death. If the initial shot is to the head it must be correctly placed to achieve instantaneous loss of consciousness and loss of brain function. A follow-up chest shot (or shots) will ensure death if the initial head shot is not lethal.
- 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 after an interval ranging from a few seconds to a minute or more. If a shot stops the heart functioning, the animal will lose consciousness very rapidly.
- Wounded camels must be located and killed as quickly and humanely as possible with further shot(s) directed at the chest or head. If left, wounded animals can suffer from the disabling effects of the injury, from sickness due to infection of the wound, and from pain created by the wound.
- A 'fly-back' procedure must be conducted in which the helicopter and shooter is flown back over the shot animals so that follow-up shots to the vital areas can be applied. The cost of ammunition and extra flying time must not deter operators from applying this flyback procedure.
- If lactating cows are shot, the dependent calves must be located and killed quickly and humanely.

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Impact on non-target animals

- Aerial shooting is relatively target specific and does not usually impact on other species.

Health and Safety

- The potentially hazardous nature of aerial shooting requires that safety protocols be strictly followed. Each team member must be aware of and trained in all aspects of helicopter and firearm safety.
- The helicopter pilot must perform a thorough pre-flight briefing with all personnel to establish communication protocols between the shooter and the pilot including pre-shot manoeuvre, commands for firing, and emergency procedures.
- Shooting from a helicopter can be hazardous particularly in areas of rugged topography. The combination of low-level flight, close proximity to obstacles (trees, rocks, wires) and the use of firearms make this task extremely hazardous.
- It is essential that ejected firearm shells do not interfere with the safe operations of the helicopter. It may be necessary to fit a deflector plate to the firearm to ensure shells are ejected safely.
- Firearm users must strictly observe all relevant safety guidelines relating to firearm ownership, possession and use.
- When not in 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.

Equipment Required

Firearms and ammunition

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

Aircraft

- Aircraft used for aerial shooting should be manoeuvrable, fast and responsive to allow quick follow-up of any wounded animals. They should also allow for a good shooting position for the shooter. Operating conditions and performance characteristics of the aircraft will determine the most suitable for the job. Robinson 44 or equivalent or turbine-powered helicopters such as the Bell 206 Jet Ranger are recommended.
- GPS (global positioning systems) and computer mapping equipment such as GIS (geographic information systems) should be used to assist in the accurate recording of information (eg where animals are shot) and to eliminate the risk of shooting in off-target areas.

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Other equipment

- Flight helmet (with intercom)
- Fire resistant flight suit
- Safety harness
- Other personal protective equipment including laceup boots, gloves and appropriate eye and hearing protection.
- Survival kit (including a first aid kit)
- Emergency locating beacon
- Lockable firearm box
- Lockable ammunition box

PROCEDURES

- Target camels should be mustered away from watercourses and areas of dense vegetation before being shot as wounded animals will be difficult to locate if they go down in these locations.
- If camels need to be mustered away from 'no-go areas' eg communities and homesteads, the animals should not be moved further than detailed in CAM 003 Mustering of Feral Camels.
- Once a target is sighted and has been positively identified as a feral camel, the pilot should position the helicopter as close as is safe to the target animal to permit the shooter the best opportunities for a humane kill.
- The pilot should aim to provide a shooting platform that is as stable as possible. Shooting from an unsteady platform can significantly detract from the shooter's accuracy.
- A feral camel 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, and
 - A humane kill is probable. If in doubt, do NOT shoot.
- When shooting feral camels, all animals must receive multiple shots to the vital areas to ensure a rapid death. This is because animals may appear to be dead but may only be temporarily unconscious after a single shot.
- The initial shot to the head is preferred since it can render an animal instantaneously insensible. It is also achievable since the head of a camel is relatively stable during running. However the judgement of the shooter is paramount in determining the optimum initial shot placement for each target animal. In some situations (ie when conditions are ideal) an initial head shot will achieve a quick humane death, in other situations, an initial chest shot will be more appropriate.
- Immediately after delivering the initial shot, the shooter must perform a second chest shot. This is to destroy the heart, lungs and major blood vessels ensuring a humane death.
- In a line of running animals, shoot the animals at the tail end first and then move forward until all animals in the line have been shot. Any wounded animals must be destroyed immediately before returning to the remainder of the herd.
- The fly-back procedure must then be undertaken to ensure death and apply follow-up shots to vital areas if necessary. Any wounded animal in a group should be killed immediately before any further groups are targeted and shot.
- Records should be kept of number, type and location of animals killed, hours flown, ammunition used and details of established fly-back procedures. Aiming points Aiming points for head and chest shots are as follows (see diagrams on the next page):

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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 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.

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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

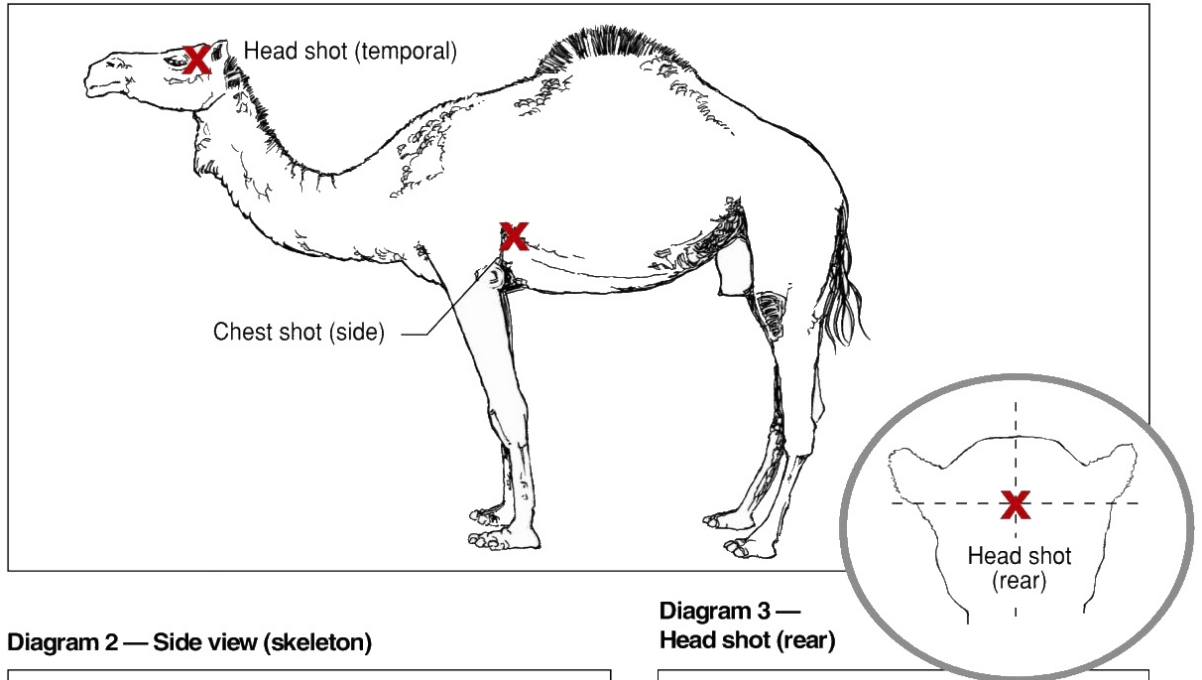


Diagram 2 — Side view (skeleton)

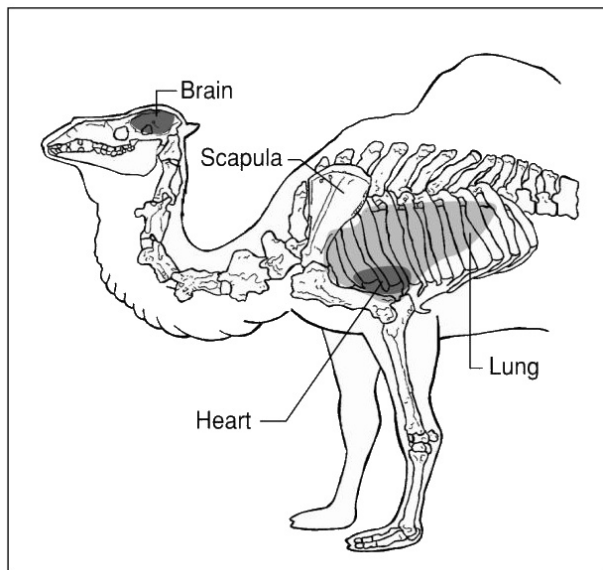
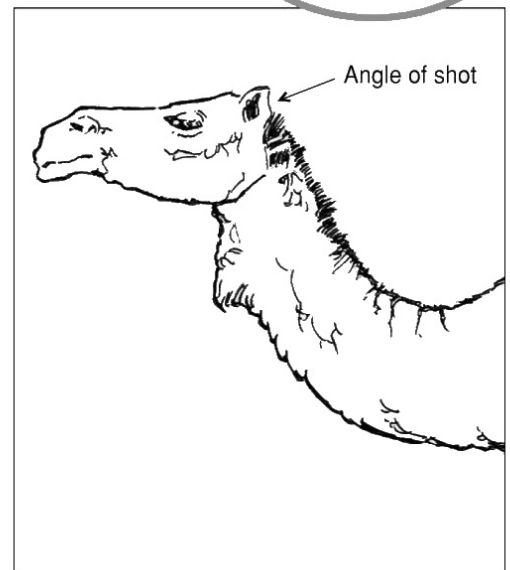


Diagram 3 — Head shot (rear)



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