AERIAL SHOOTING OF FERAL GOATS (GOA002) STANDARD OPERATING PROCEDURE

BACKGROUND

Feral goats (*Capra hircus*) can have a significant impact on the environment and agricultural production and are a potential reservoir and vector of endemic and exotic diseases. Although often 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 during aerial shooting campaigns to locate sparsely distributed goats or groups that are difficult to find. Refer to GOA005 Use of Judas goats.
Aerial shooting of feral goats from a helicopter is used in inaccessible areas, and to manage low-density populations or remove survivors from other control programs. It is also used for broadscale population reductions when prices for goats are low and mustering is not economic. Teams involved in shooting from a helicopter include a shooter, a pilot and a spotter/counter who locates the goats and records the location and number of animals shot.

Aerial shooting can be a humane method of destroying feral goats 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 OH&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.
- Aerial shooting is a cost-effective method where goat density is high. Costs increase greatly as goat numbers decrease. Also, feral goats learn to avoid helicopters, so successive shoots can become less effective.
- Aerial shooting is effectively used to control feral goats in inaccessible or rough terrain.
- In areas of heavy cover (eg vegetated creek lines, woodlands and forest), effectiveness is limited since goats might be concealed and difficult to locate from the air.
- The optimal period for aerial shooting is during dry seasons or droughts when goats are forced to congregate around remaining areas of water and feed. Shooting during drought reduces the number of goats that would otherwise die slowly of hunger or thirst.
- For safety reasons, shooting from a helicopter must not be undertaken in adverse weather conditions (eg strong wind, rain, low cloud, hot days that cause unpredictable thermals).
- Shooting of feral goats 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 be skilled and experienced in aerial shooting operations.

Reference me as: Sharp, Trudy., 2005. Aerial shooting of feral goats. Standard Operating Procedure. PestSmart website. https://pestsmart.org.au/toolkit-resource/aerial-shooting-of-feral-goats/

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- Helicopter operators must have approval from the Civil Aviation Safety Authority to undertake aerial shooting operations.

- Aerial shooting should comply with all relevant federal and state/territory legislation, policy and guidelines.
- Storage, use and transportation of firearms and ammunition must comply with relevant legislative requirements.

ANIMAL WELFARE CONSIDERATIONS

Impact on target animals

- The humaneness of aerial shooting as a control technique depends on the skill and judgement of both the shooter and the pilot. If properly done, it can be a humane method of destroying feral goats. On the other hand, if done inexpertly, shooting can result in wounding that can cause considerable pain and suffering.
- Aerial shooting should not be done if the nature of the terrain reduces accuracy resulting in too many wounding shots and prevents the humane and prompt despatch of wounded animals.
- Shooting must be done in a manner that 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 shots/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 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.
- Wounded goats 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 pain and the disabling effects of the injury (including sickness due to infection).
- A 'fly-back' procedure must be followed, in which the 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. In areas that are accessible, a ground crew of several individuals walking or on all-terrain vehicles can be used to locate and humanely kill any wounded animals.
- To minimise the animal welfare implications of leaving dependent kids to die a slow death from starvation, it is preferable not to undertake aerial shooting programs when females are kidding or have dependent young at foot. Although feral goats have been observed to breed at all times of the year, there are periods when the majority of kidding occurs (eg in southwest Queensland, kidding mainly occurs in May—June). Control at times of kidding might be less effective, as females are usually more secretive and tend to leave the group to give birth in isolated and/or sheltered locations. Control programs are therefore best targeted before major kidding periods.

- If lactating females are shot, efforts should be made to find dependent kids and kill them quickly and humanely. 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.

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 before an animal has been positively identified.
- Sensitive livestock such as horses, deer and ostriches are easily frightened by gunshots, helicopter rotor noise wind and so on and might injure themselves by running into fences and other obstacles. Avoid shooting in areas where these livestock occur or organise their removal from the area before the shooting program.

HEALTH AND SAFETY CONSIDERATIONS

- 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 might 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/territory 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

- Self-loading rifles (SLR) with large magazine capacity such as the M14, M1A, L1A1 or Heckler and Koch M19 in .308 calibre are suitable. They should be fitted with a spot on/aim-point/ red dot scope. 130, 150 or 160 grain soft- or hollow-point ammunition is appropriate for feral goats.
- 12-gauge pump action shotguns with 70—75 cm barrels set on ¾ to full choke with SG or SSG ammunition are also used. SSG or AAA shot is recommended for smaller animals (less than 40 kg).
- To provide a backup in case of firearm/ammunition malfunction, at least two firearms should be carried by shooters at all times.

- The accuracy and precision of firearms should be tested against inanimate targets before any shooting operation.

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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