PIG002 AERIAL SHOOTING OF FERAL PIGS

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Background

Feral pigs (*Sus scrofa*) have a significant impact on the environment and agricultural production and are a potential reservoir and vector of exotic diseases. Control methods include poisoning, trapping, exclusion fencing, ground shooting and aerial shooting.

Aerial shooting of feral pigs from a helicopter is used in extensive or otherwise inaccessible areas where the density of pigs is high. It is an effective and relatively cost-efficient method of quickly reducing feral pig populations. Teams involved in shooting from a helicopter include a shooter, a pilot and a spotter/counter who locates the pigs as well as records the number of pigs shot.

Aerial shooting can be a humane method of destroying feral pigs 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

- Shooting should only be used in a strategic manner as part of a co-ordinated program designed to achieve sustained effective control.
- Aerial shooting is a cost-effective method where pig density is high. Costs increase greatly as pig numbers decrease.
- Aerial shooting is best suited to areas where pigs are living and feeding in extensive or inaccessible areas (e.g. swamps, marshes, rough terrain or broadacre crops) where vehicle access is impossible or impractical and/or pre-feeding will not successfully attract enough pigs for trapping or baiting.
- In areas of heavy cover (e.g. heavily vegetated creek lines, woodlands and dense forest), effectiveness is limited since pigs may be concealed and difficult to locate from the air.
- The optimal period for aerial shooting is when pigs are away from cover e.g. during dry seasons or droughts when pigs are forced to congregate in areas with limited access to water and feed.
- For safety reasons, shooting from a helicopter cannot be undertaken in adverse weather conditions (e.g. strong wind, rain, low cloud).
- Shooting of feral pigs 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 (e.g. in NSW shooters must complete the Feral Animal Aerial Shooter Training (FAAST) course).
- Helicopter pilots must hold the appropriate licences and permits and 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 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

- 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 pigs. 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 too many 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 firearms and ammunition.
- Only head (brain) or chest (heart-lung) shots must be used. Shooting at other parts of the body is unacceptable.
- With aerial shooting, chest shots are preferred over head shots. The heart and lungs are the largest vital area and an accurate shot is more achievable particularly within the range of unusual angles encountered when shooting from above. Wounding in the chest/shoulder area, if not lethal, is likely to severely restrict an animals ability to move and will facilitate the placement of further lethal shots. However, compared to an accurate head shot, a chest shot does not render the animals instantaneously insensible. Although shots to the head are more likely to cause instantaneous loss of consciousness, there is a high risk of missing a smaller, moving target area.
- 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. Correctly placed head shots cause brain function to cease and insensibility will be immediate.
- The shooter must be certain that each animal is dead before another is targeted. Wounded pigs 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.

- Helicopter shooting operations do not always result in a clean kill for all animals therefore prompt follow-up procedures are essential to ensure that all wounded animals are killed. This can be achieved by:
    - Flying the helicopter back to wounded animals so that further shot(s) can be placed into the vital areas of the animal.
    - Using a deliberate policy of 'overkill' whereby numerous rounds are used per animal instead of a single shot. Since it is very difficult to assess if an animal is dead from a distance it is highly recommended that after the initial shot, another one or more shots be fired into the chest or head to ensure a quick death
    - In areas that are accessible, using a ground crew of several individuals walking or on ATV's to locate and humanely kill any wounded animals after aerial shooting has ceased.

  The cost of ammunition and extra flying time must not deter shooters from applying the appropriate follow-up procedures.
- To minimise the animal welfare implications of leaving dependent piglets to die a slow death from starvation it is preferable not to undertake aerial shooting programs when sows have recently farrowed. This will vary with season and area. Peaks in mating often occur in response to the flush of green vegetation that follows heavy rain or flooding with farrowing occurring 112-114 days later. For example, in southern NSW, most births occur in summer and autumn whilst in the monsoonal lowlands of Northern Territory there is a peak in births in the early dry season. Weaning age of piglets varies from 2 to 3 months. At times of farrowing, sows tend to move over less distances and are usually more cryptic which may reduce the effectiveness of any pig control conducted at this time.
- If lactating sows are shot, efforts should be made to find dependent piglets and kill them quickly and humanely. Piglets older than 5 weeks of age will tend to fall in to line behind the sow. Any piglets that escape after a sow has been shot will usually return to the area over the following few hours.

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 etc. and may injure themselves by running into fences and other obstacles. Avoid shooting in areas where these livestock occur or organise the removal of them from the area prior to 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.
- 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 makes 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 away from the helicopter and its rotor blades
- Firearm users must strictly observe all relevant safety guidelines relating to firearm possession and use from a helicopter.
- 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

- 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. 150 or 160 grain soft- or hollow-point ammunition is appropriate for feral pigs.
- 12 gauge pump action shotguns with 70-75cm barrels set on ¾ to full choke with SSG or SG ammunition are also used (usually for smaller animals). SSG or AAA shot is recommended for piglets.
- To provide a backup in case of firearm/ammunition malfunction, at least two weapons (i.e. an SLR and a pump action shotgun) should be carried by shooters at all times.
- The accuracy and precision of rifles should be tested against inanimate targets prior to the commencement of any shooting operation.

Aircraft

- Turbine-powered helicopters are preferred (e.g. Bell Jetrangers, Hughes 500, Kawasaki etc.)
- It is recommended that GPS (global positioning systems) and computer mapping equipment such as GIS (geographic information systems) are used to assist in the accurate recording of information (e.g. where animals are shot) and to eliminate the risk of shooting in off-target areas.

Other equipment:

- Flight helmet (with intercom)
- Fire resistant flight suit
- Safety harness
- Other personal protective equipment including lace-up 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

- The best time to shoot feral pigs is when they are most active and away from cover i.e. in the early morning, late afternoon and evening. During winter months and on cooler, overcast days pigs will be more active during daylight hours.
- Target pigs should be mustered away from watercourses before being shot as wounded animals will be difficult to locate if they go down in water.
- Once a target is sighted and has been positively identified, the pilot should position the helicopter as close as is safe to the target animal to permit the shooter the best opportunity for a humane kill.
- The pilot should aim to provide a shooting platform that is as stable as possible. Shooting from a moving platform can significantly detract from the shooter's accuracy.
- A feral pig 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.
- Piglets are harder to hit with a single projectile so a pump action shotgun may be more effective at achieving a humane kill. The recommended range is 20-30 metres. An SLR should only be used on piglets when conditions are good (minimal wind and turbulence) and the pilot can position the helicopter to within 20 metres of the target animal.
- In a line of running animals, always shoot the animals at the tail end first and then move forward until all animals in the line have been shot.
- In most aerial shooting situations the shooter should aim at the chest, to destroy the heart, lungs and major blood vessels. The following aiming point is recommended (*see diagrams in Appendix*):

    Chest Shot (this is the preferred point of aim for aerial shooting)
    Side view
    The firearm is aimed 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.

- Shots to the head should only be attempted at short ranges and in ideal conditions. The brain is a relatively small target that is well-protected by bone. Only the slightest misplacement of the bullet can result in non-lethal and debilitating wounds, such as a broken jaw. Aiming points for head shots are as follows (*see diagrams in Appendix*):

    Head Shots
    Poll position (rear view)

- When aerial shooting, most head shots will be taken at this position as animals are running away from the helicopter.
- Aim behind the head at a point midway along a line drawn from the base of each ear.

Temporal position (side view)

- This shot is occasionally used where a second shot needs to be delivered to an injured animal that is lying on its side.
- The firearm is aimed from 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. The bullet should be directed horizontally into the skull.

Frontal position (front view)

- This position is occasionally used when an animal faces the shooter. It should not be used for larger adult pigs due to the heavier bone structure of the front of the skull.
- The firearm should be aimed at a point midway across the forehead and about 2cm above the level of the eyes. The bullet should be directed horizontally into the skull.

- If an animal is wounded by an initial shot but not killed, a 'fly back' procedure should be adhered to immediately where the wounded animal is located and additional shot(s) are administered to ensure a quick death. Any wounded animal in a group should be killed immediately before any further animals are targeted and shot.
- After a group of animals have been shot, it is essential that the pilot fly back over them to search for animals that still may be alive.
- It is preferable that <u>all</u> animals receive a second shot (either to the head or chest area) to ensure a rapid death. Animals may appear to be dead but may only be temporarily unconscious.
- Records should be kept of numbers and locations of animals killed, hours flown, ammunition used and details of fly-back procedures.

Further Information

Contact the relevant Commonwealth, State or Territory government agency from the following list of websites:

Commonwealth	Department of Environment and Heritage http://www.deh.gov.au/
ACT	Environment ACT http://www.environment.act.gov.au/
NSW	NSW Agriculture www.agric.nsw.gov.au
NT	Parks & Wildlife Commission www.nt.gov.au/ipe/pwcnt/
QLD	Department of Natural Resources and Mines www.nrm.qld.gov.au
SA	Animal & Plant Control Commission http://sustainableresources.pir.sa.gov.au
TAS	Department of Primary Industries, Water & Environment www.dpiwe.tas.gov.au
VIC	Department of Primary Industries, Agriculture & Food www.dpi.vic.gov.au
WA	Agriculture WA www.agric.wa.gov.au

Natural Heritage Trust
Helping Communities Helping Australia
An Australian Government Initiative

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Appendix

Recommended shot placements - Feral pig

Diagram 1

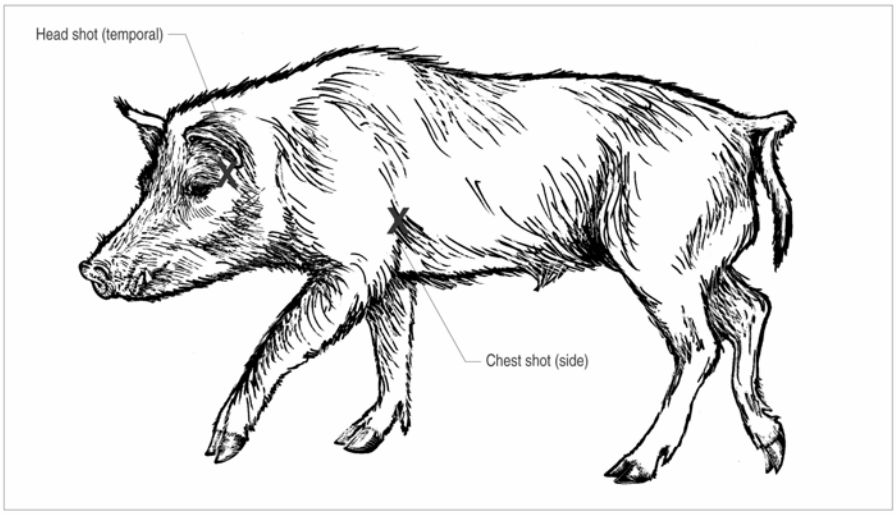

Diagram 2 - Side view (skeleton)

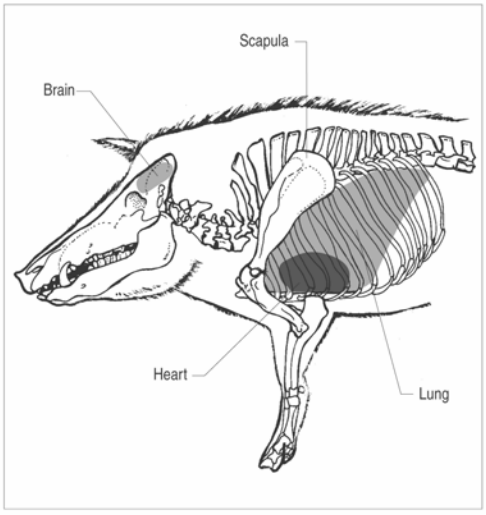

Diagram 3 - Head shot (frontal)