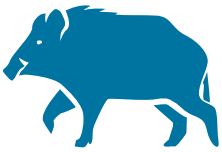


NSWPIG SOP2
Aerial shooting of feral pigs

Background

Aerial shooting of feral pigs from a helicopter is used in extensive or otherwise inaccessible areas. It is an effective and relatively cost-effective method of quickly reducing feral pig populations. Teams involved in shooting from a helicopter require (at minimum) a shooter (seated immediately behind the pilot), an observer/navigator and the pilot. The observer or navigator primarily looks for and reports hazards plus keeps the helicopter within the approved shooting area, identifies target animals for the pilot, and records locations, species and animals killed. The pilot aligns the helicopter for the optimum shot, advises the shooter when to shoot and can also confirm kills and advise on requirements of additional shots for humaneness purposes.

Aerial shooting is a humane method of killing 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 relevant NSW or federal legislation. The SOP should only be used subject to the applicable legal requirements (including WHS) operating in the relevant jurisdiction.

Individual SOPs should be read in conjunction with the overarching Code of Practice for that species to help ensure that the most appropriate control techniques are selected and that they are deployed in a strategic way, usually in combination with other control techniques, to achieve rapid and sustained reduction of pest animal populations and impacts.

Application

- All aerial shooting programs conducted by Government Agencies - National Parks and Wildlife Service (NPWS) or Local Lands Services (LLS) - in NSW must be planned and implemented under the NSW Feral Animal Aerial Shooting Team (FAAST) framework and in accordance with the procedures of the NSW FAAST Manual.
- Private or commercial operators in NSW that are not conducting shooting as part of a FAAST program must still adhere to all relevant regulatory and legislative requirements.
- 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 and accreditation (e.g., accredited through the NSW Feral Animal Aerial Shooting Team [FAAST] training course or other approved competency,

e.g., AHCPMG311 – Use firearms for pest control activities from aircraft, AHCPMG304 – Use firearms to humanely destroy animals).

- Aerial shooting should only be used in a strategic manner as part of a coordinated program designed to achieve sustained and effective control. A shooting operations plan must be prepared and approved by the relevant agency for each FAAST aerial shooting program.
- Aerial shooting is a cost-effective method where pig density is high or the area is inaccessible. Costs per pig increases as pig density decreases. Also, pigs learn to avoid helicopters, so successive shoots can become less effective.
- Aerial shooting is best suited to areas where pigs are living and feeding in extensive or inaccessible areas (e.g., swamps, marshes and 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.
- There are two scenarios in which aerial shooting can be used. The first in areas of closed vegetation (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. In this scenario aerial shooting would be a secondary method. The second scenario is in relatively open country where pigs are highly visible and readily shot. Aerial shooting here would be a primary method of control.
- 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, hot days that cause unpredictable thermals).
- Operators (including helicopters, pilots, shooters and navigators/observers) must hold the appropriate licences and permits and be skilled and experienced in aerial shooting operations. Where managed by Government Agencies they must also be approved by FAAST.
- 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 legislation, policy and guidelines.
- Storage use and transportation of firearms and ammunition must comply with relevant legislative requirements.

Animal welfare implications

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 killing feral pigs.
- Only chest (heart-lung) or head (brain) shots must be used. Although well-placed head shots result in instant insensibility, a more realistic target point for aerial shooting of feral

pigs is the larger heart-lung zone. The initial shot must be followed up with a further accurate heart-lung shot once the animal has collapsed. This deliberate 'overkill' policy is aimed at ensuring a quick death given the difficulty in confirming death from the air.

- Death from a shot to the chest is due to massive tissue damage and haemorrhage from major blood vessels. Insensibility will occur sometime after the shot, 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.
- Shooting must be conducted in a manner that maximises its effect thus causing rapid death. This requires the use of appropriate firearms and ammunition.
- A target animal can only be shot when:
  - it is clearly visible and recognised
  - it is within effective range of shooter and the firearm and ammunition being used
  - a humane kill is probable.
  - if in doubt do NOT shoot.
- The pilot must offer the shooter the best opportunities for a humane kill. This includes maintaining a stable shooting platform and to ensure that the helicopter is always aligned so that the shooter can maintain accuracy and to avoid shots to unacceptable parts of the body e.g., spine or neck shots. 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.
- If lactating sows are shot, reasonable 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.
- Aerial shooting programs by their nature must be highly accountable. Apart from maintaining absolute animal welfare standards, records should be kept of number and location of animals killed, hours flown, ammunition used and fly-back procedures.

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, farmed deer and free range poultry 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.

Workplace 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, and wires) and the use of firearms makes this task extremely hazardous.
- It is essential that ejected ammunition cases do not interfere with the safe operations of the helicopter. It might be necessary to fit a deflector plate (mandatory for FAAST operations) 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.
- Refer to the current version of the FAAST Management and Training System for further details on workplace health and safety requirements.

Equipment required

Firearms and ammunition

- Firearms should be:
  - Reliable, well maintained and capable of good accuracy
  - Fitted with a red dot scope with zero magnification
  - Rifles should be semi-automatic .308 calibre.
  - Shotguns should be 12-gauge and either pump action or semi- automatic – for small to medium sized pigs only.
- To provide a backup in case of firearm/ammunition malfunction, at least two functioning firearms must be carried by shooters at all times.
- The accuracy and precision of firearms should be tested against inanimate targets before any shooting operation.

- Ammunition
  - Hollow point, 130gn -135gn; protected point 130gn or SG, SSG (larger pigs) and AAA, BB (small pigs or piglets)
  - Firearm and ammunition combinations for rifles with maximum shooting distances are included in the table below:

Cartridge	Bullet weight (gr)	Muzzle velocity (ft/sec)	Muzzle energy (ft-lbs)	Maximum distance (metres)*
.308 Winchester	130	3050	2685	70
.308 Winchester	135	3000	2699	70

Source:

https://www.federalpremium.com/rifle/american-eagle/american-eagle-varmint-and-predator/11-AE308130VP.html

https://www.osaaustralia.com.au/products/ammunition/centrefire-rifle/308-win/osa-ammo-308win-135gr-sierra-20-pack/

*With aerial shooting, most shots are taken at 20 to 50 metres and the maximum range would be about 70 metres

- Specifying ammunition based on species alone rather than individual body mass is problematic. Shooters should select ammunition (from those specified) that best suits their situation, and which is justifiable on animal welfare grounds. This may particularly apply to situations where multiple species are being controlled in the one operation.
- 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.
- The FAAST governance structure has compiled a list of helicopter operators, aircraft and pilots who are approved for FAAST operations. Only helicopter operators and aircraft deemed appropriate to the particular task will be selected for FAAST operations. Approved operators can be sourced through the State Air Desk (LLS) or the through the Flight Operations Unit (NPWS).
- GPS (global positioning systems) and computer mapping equipment with appropriate software must be 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.
- Refer to the current FAAST Manual for further information.

Procedures

- Shooters must not shoot at an animal unless they are confident of cleanly killing it without unnecessary pain, distress or suffering. Only chest (heart-lung) or head/brain shots must be used. Shooting at other parts of the body is unacceptable.
- Wounded animals can suffer from pain and the disabling effects of the injury (including sickness due to infection). The cost of ammunition and extra flying time must not deter operators from applying fly-back procedures.
- Where target animals are encountered in a group they should typically be shot from the back of the group first (the last one shot is furthest away from the helicopter). This may not always be possible e.g., when an animal breaks away from a group. In this case the shooter and pilot need to communicate so they focus on the same animal.
- Each animal must be shot *at least* twice with at least one bullet placed in the heart/lung and before shooting further animals. The only exemption to two shots is when the heart/lung is completely destroyed after the first shot as may be the case with smaller animals.
- The shooter must shoot an animal *more than twice* in the following circumstances:
  - where directed by the pilot or if the shooter considers it necessary
  - until a bullet is placed in the heart/lung of the animal
  - if the animal doesn't appear dead (signs of life could include attempting to lift its head, any coordinated body movement, eye blinking or breathing).
- Each animal shot must be considered dead by the shooter and pilot, and verbally announced as a 'kill' by the pilot before shooting further animals. This procedure allows for both the shooter and pilot to make a judgement of each animal shot being dead, by the animal exhibiting no sign of life and/or by observing the placement of a bullet into the heart/lung.
- A flyback procedure is required after shooting a group of animals and must be applied at all times. The procedure is as follows:
  - fly back over each animal of the group shot
  - hover over each animal long enough to assess that the animal doesn't exhibit any sign of life
  - where there is any doubt by the shooter or pilot that the animal is dead or that there is a bullet in the heart/lung, the shooter is to shoot further bullet/s into the heart/lung of the animal.

- When large groups of animals are encountered or when groups are encountered in heavy vegetation, the shooter and pilot must consider the ability to conduct an effective flyback procedure. If an effective flyback is likely to be hampered by continuing to shoot further animals in a group or when animals already shot are unlikely to be found, shooting should temporarily cease, and a flyback conducted over animals already shot.
- The best time to shoot feral pigs is when they are most active and away from cover; that is, 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 and areas of dense vegetation before being shot, as wounded animals will be difficult to locate if they go down in these locations.
- 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.

Target and shot placement

Aiming points for head and chest shots are as follows (see also Figure 2).

Chest Shot

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.

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

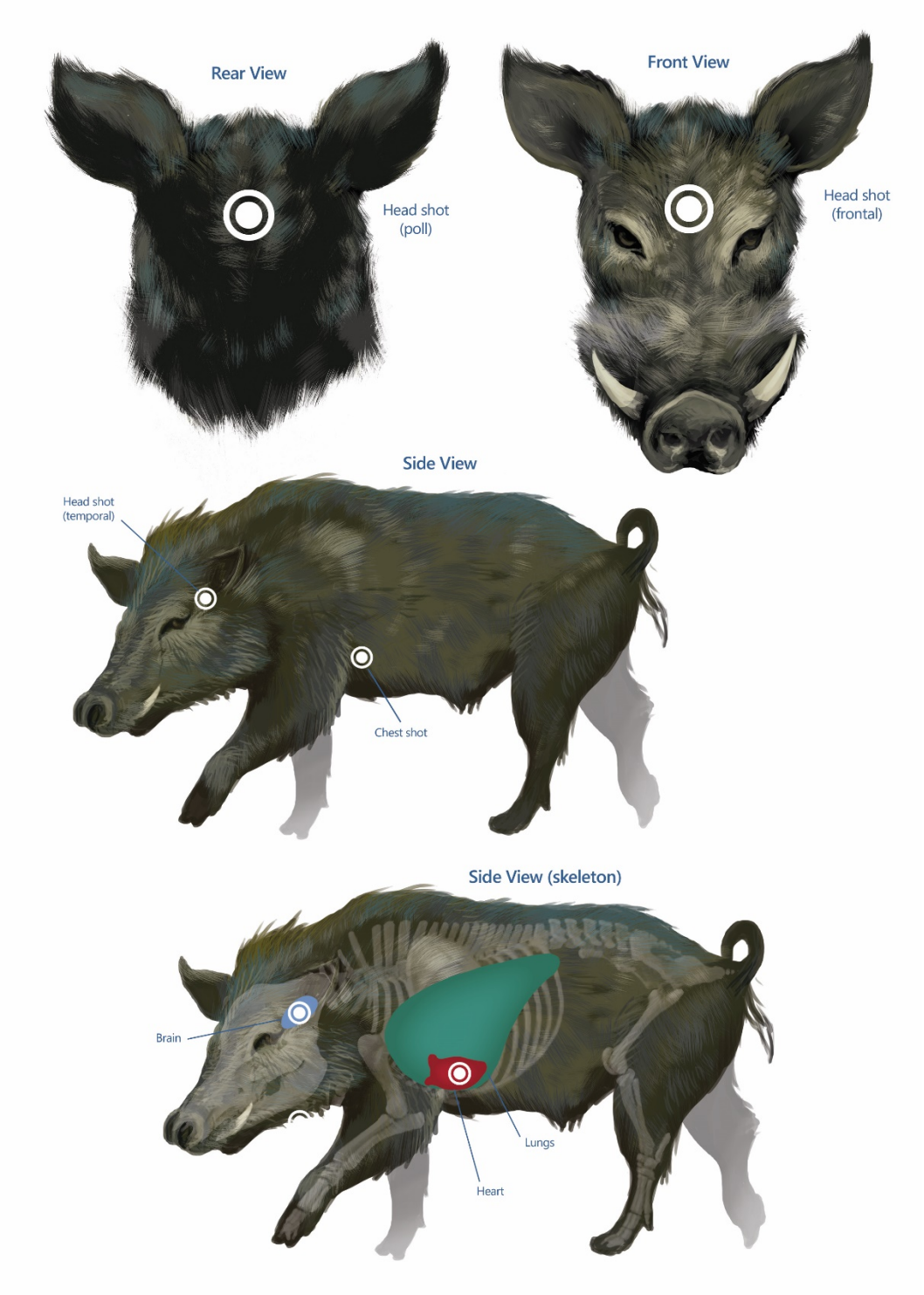
Temporal position (side view)

- This shot is occasionally used where a second shot needs to be delivered to an injured animal that is lying on its side. The pig is shot from the side so that the bullet enters the skull at a point midway between the eye and the base of the ear.

Frontal position (front view)

- This position is occasionally used when an animal faces the shooter. The firearm is aimed at a point in the middle of the forehead slightly above a line drawn between the eyes.

Figure 2: shot placement for aerial shooting of feral pigs



Note that shooting an animal from above or below the horizontal level as depicted here will influence the direction of the bullet through the body. Adjustment to the point of aim on the external surface of the body may need to be made to ensure that the angled bullet path causes extensive (and therefore fatal) damage to the main organs in the target areas.

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