pestSMART

Powered by the Centre for Invasive Species Solutions

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

Voluntarily adopted by the Vertebrate Pest Committee 2012 with the Invasive Plants and Animals Committee endorsing minor updates September 2017.

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 considered pests, feral goats are also a resource, providing products such as pet meat for the domestic market. Control methods include trapping, mustering, exclusion fencing, ground shooting and shooting from helicopters.

Feral goats are usually trapped by landholders and this involves the use of self-mustering technology that was originally developed for the management of sheep and cattle in rangeland areas. Trapping involves the construction of goat-proof fences around water points with a number of one-way gates or ramps. The gates/ramps allow goats to enter the trap and have access to water but prevent them leaving. Once trapped, the goats are usually sold for live export, to abattoirs for slaughter or less commonly for domestication, which offsets the costs of capture. Where there is no market for them or where removal might be costly or impractical (eg in conservation areas or remote areas without access to transportation), the goats are usually destroyed by shooting in the trap yard.

This National Standard Operating Procedure (NATSOP) is a guide only. It does not replace or override the legislation that applies in the relevant state or territory jurisdiction. The NATSOP should only be used subject to the applicable legal requirements (including OH&S) operating in the relevant jurisdiction.

APPLICATION

- Trapping should only be used in a strategic manner as part of a coordinated program designed to achieve sustained effective control.
- Trapping is mainly used in semi-arid and arid rangelands where there are no alternative watering points for goats.
  Although traps can be expensive to establish, trapping is more cost effective than mustering and is also less stressful for the goats. Trapping is the preferred method of control when goats are at low densities.
- Trapping is most effective during dry periods, when goats drink regularly and congregate around water holes. It becomes less effective and sometimes impractical during periods of wet weather when water is plentiful and goats are dispersed.
  Trapping at water can have significant negative impacts on non-target species, especially macropods and emus.
- Maintaining traps is time consuming. Therefore, it is only suitable to use traps in situations where the operator has time to check them on a regular basis.
- Traps can also be used as self-mustering yards for domestic stock such as sheep and cattle.
- Operators should try to keep stress on the goats to a minimum during capture and handling. Prolonged stress not only has a negative impact on an animal's welfare but can also decrease carcass and meat quality.
- Shooting of goats should only be done by skilled operators who 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 legislation requirements.

pestSMART
Powered by the Centre for Invasive Species Solutions

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

ANIMAL WELFARE CONSIDERATIONS

Impact on target animals

- Capture and handling increase stress in feral goats, as they are not used to being confined or in close contact with humans. Because of this, these procedures can result in mismothering, feeding disruption, social disruption, heat stress and abortion in heavily pregnant females. Metabolic, nutritional and parasitic diseases and also sudden changes in environmental conditions are common causes of mortality and morbidity in confined feral goats.
- Mixing unfamiliar animals can result in fighting, stress and/or injury. There should be sufficient yards to avoid mixing different groups of stock.
- Traps should be large enough to avoid overcrowding and allow all goats to access the water point.
- Feral goats should be handled quietly without force, to avoid panic and trampling.
- Traps should be constructed to include trees, other vegetation and logs (located away from the edge of the fence line) to provide goats with shade and shelter. Goats can suffer when exposed to extremes of heat and cold.
  To avoid heat stress, mustering should be done in the cooler months.
- Capture and handling should be avoided when female goats are kidding or have dependent young at foot. Kids that do not accompany their mother into the trap can be separated and die of starvation or, if trapped, can get trampled underfoot. 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 to June). Generally, spring is the time of year when there is a greater proportion of does in late pregnancy or with young kids at foot.
- To minimise the possibility of starvation and stress, all traps must be inspected at least once each day. More frequent checking might be necessary during extreme weather conditions.
- The supply of water should be checked daily and appropriate feed must be made available if captured goats are to be held for more than 24 hours. Account must be taken of their possible unwillingness to drink and eat from troughs. Animals being held for any length of time must be checked daily for ill thrift and signs of injury and disease.
- The trap should be constructed in a way so that it will not cause injury from loose wire, sharp edges or malfunctioning gates. The trap gates should be large enough to allow big animals and those with large horns to enter the trap. The trap yard should be large enough so that each goat has enough space to avoid social stress.
- Fencing off alternative watering points to force goats to water at the trapped points has welfare implications. Some animals might not leave their preferred water source and will die of thirst rather than move and search for another.
  Goats that are found severely injured inside the trap must be killed quickly and humanely with a rifle shot to the head.
  Electric prods must not be used to assist in the handling of feral goats.
- Only non-aggressive, trained sheep dogs should be used to assist in the handling of feral goats, if used at all.
  Only fit and healthy animals should be selected for transport. Heavily pregnant, very young or weak/sick/injured animals must either be destroyed, given proper veterinary assistance or be transported at a later date when they are more suitable for transportation.
- The loading, transport, unloading, holding and slaughter of feral goats must be done with the minimum amount of stress, pain or suffering. Guidelines on these procedures can be found in relevant state or federal government guidelines, for example:
  - Pre-slaughter Management of Goats (Finn et al 2003)

  - Australian Standards and Guidelines for the Welfare of Animals — Land Transport of Livestock (AHA 2008).
- Also, the following Model Codes of Practice for the Welfare of Animals might be useful:
  - The Goat (SCAAHC 1991b)
  - Air Transport of Livestock (AAHQS 1986)
  - Rail Transport of Livestock (AAHQS 1983)
  - Sea Transport of Livestock (AAHQS 1987)
  - Model Code of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments (SCARM 2002b).
- Guidelines on the export of live goats can be found in the Australian Standards for the Export of Livestock (Department of Agriculture, Fisheries and Forestry 2011).

Impact on non-target animals

- Traps that would exclude large numbers of native species from natural springs and waterholes should not be constructed.
  If a trap continually catches numerous non-target animals, it should be constructed at another site where it will have minimal effect on other species, or another goat control method could be used.
- Goat traps can have a significant negative impact on native species such as macropods, by inadvertently trapping them and by excluding them from water sources. For example:
  - Traps that are closed from dusk to dawn will exclude macropods from drinking at a time when they mostly seek water.
    Macropods might be reluctant to enter a trap, even when the exit gates are open, but will often hang around the perimeter fence trying to get access to water rather than moving on to another water source.
  - Macropods that enter an activated trap to drink will become trapped. Trapped macropods will rush at fences and injure themselves in an attempt to escape. They can also get caught in the fence when attempting to go over, through or under it.
  - Macropods are not easily herded, so injuries and stress can be caused when trying to release trapped animals through the exit gates.
- A combination of engineering and management strategies could be used to reduce the impact of inadvertent trapping on non-target animals. These include:
  - A barrier can be used on the external mesh fence to prevent kangaroos from getting their hind legs caught if they attempt to jump over. Chicken wire, rubber belting or shade cloth placed on the top 20 cm of the mesh acts as both a physical and visual barrier. The fence should be no more than 1.2 m high (preferably 90 cm).
  - Small escape gates can be incorporated at intervals around the fence to allow macropods to escape under the fence.
    A protected water source could be provided nearby that would allow access to wildlife species, but not to stock and feral goats.
  - Traps could be activated only during the day when goats and stock tend to water. This will help to avoid capture of macropods, which tend to water at night.
  - Moving macropods out of a trap should be done during the coolest part of the day to prevent them from overheating. Females should be closely monitored to see if they drop their pouch young. Macropods are very susceptible to capture myopathy, so they should be moved gently and quietly out of the yard through the trap gate before any other work is done in the vicinity of the trap.

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

- Trapped native non-target animals and livestock that are still watering at the trapping point will need to be drafted from the trapped goats on a daily basis.
- To reduce the risk of injury to livestock, it is preferable to plan trapping sessions for times when livestock are out of the paddock (eg during shearing, lambing/calving, spelling). Trapping should be avoided during lambing/ calving, as ewes and cows can become separated from their young when they enter the trap for a drink.
- Non-target animals caught in traps must be examined for injuries and signs of illness or distress and dealt with as follows:
    - Animals that are unharmed or have only received minimal injuries such as minor cuts or abrasions should be immediately released at the site of capture.
    - Animals with more severe injuries or that are suffering from thermal stress should receive appropriate attention. An animal suffering from thermal stress can be placed in a suitable quiet holding area that provides warmth or shade to allow recovery before release.
    - Animals with treatable injuries that cannot be immediately released, or those failing to recover from thermal stress, should be presented to a vet or a registered wildlife carer for treatment.
    - Animals with injuries that are untreatable or that would compromise their survival in the wild should be euthanased using a technique that is suitable for the species. For more information on euthanasia techniques, refer to GEN001 Methods of Euthanasia.

HEALTH AND SAFETY CONSIDERATIONS

- Care must be taken when handling goats as they can carry diseases such as Q fever and scabby mouth (orf) that can affect humans and other animals. Routinely wash hands after handling goats or carcasses.
- Operators working with goats and goat carcasses are at risk of contracting Q fever. They can become infected when they inhale droplets of urine, milk, faeces or birth products from infected animals. Infection can also occur from inhalation of aerosols created during slaughter of infected animals or dust from contaminated materials. Blood testing of personnel is recommended to assess previous exposure, followed by vaccination for susceptible individuals.
- During construction of traps, operators should be wary of the risks of injury from lifting heavy items. Leather gloves and eye protection will help prevent injuries from wire, steel posts and hammers.
- Firearms are potentially hazardous. All people should stand well behind the shooter when animals are being shot. The line of fire must be chosen to prevent accidents or injury from stray bullets or ricochets.
- 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/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.
- When shooting, safety glasses are recommended to protect eyes from gases, metal fragments and other particles.

pestSMART
Powered by the Centre for Invasive Species Solutions

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

EQUIPMENT REQUIRED

Traps

- Several trap designs exist, differing mainly in the one-way entrance. The three most commonly used traps are:

Jump-down traps

- The entrance consists of an earth ramp sloping up to approximately 1 m high that allows the goats to access the trap by jumping down into it. A heavy-gauge wire or baulking bar is placed approximately 30 cm above the top of the ramp to prevent the goats from jumping back out of the trap.
- The width of the ramp depends on the number of goats in the area.
- A gate is placed next to the ramp and this is left open when the traps are not in use, to encourage the goats to use the traps.
- Jump-down ramps are best suited to areas that are free of livestock. Cattle and sheep that are in poor condition, and also lambs can suffer injuries when jumping from the ramp into the trap.
- Timid and small animals can be reluctant to use the ramp.

Spear gate traps

- The entrance consists of a V-shaped, four-barred gate with flexible spears. Goats have to squeeze through the spears to enter the yard to drink.
- Goats have to be trained to go through the gates by gradually closing the spears to get them used to squeezing through.
- Big billies and other goats with large horns can have difficulty squeezing through this type of gate.

Swinging one-way gate traps

- These gates allow the goats to push through one way into the yard, but do not move in the opposite direction when they push to get out.
- Trap yards should be large enough to comfortably handle the work they are expected to do. The most appropriate size will depend on the size of the water point, number and type of livestock using the water point, whether livestock and feral animals will be in the yard together and whether the animals will be held in the trap yard or drafted into holding yards. Large trap sizes give the goats enough room to move away from people entering the trap, allow for effective handling and will also reduce the pressure on (and therefore damage to) the fences. An adequate size to handle a large number of goats would be 50 x 50 m.
- It is preferable to incorporate loading pens and holding yards in the trap design that allow for onsite animal handling.
  The yard fencing must be strong enough to withstand the pressure of animals bumping into it. The most effective and economic fencing material used is ringlock or hingelock mesh. The most commonly used fence configuration is of prefabricated 8/90/15 hingelock with plain wires top and bottom to tie the hinged panels together (ie the fence is 90 cm high, has 8 horizontal wires and a gap of 15 cm between vertical wires). The fence can also be topped with one or two plain wires and a strip of shade cloth material to increase the height of the fence (to no greater than 1.2 m high).

- Self-mustering trap yards can be built as squares, triangles and rounded yards. Round yards provide advantages over the other designs, as the round shape provides the largest trap for material used, there are no corners to accumulate animals and the rounded shape aids in the flow of animals in and through the yard.
- Choice of trap design will depend on habitat, material available and accessibility to site. Knowledge of other species that might be at risk from inappropriately designed traps should be used to identify the most suitable trap designs and usage.
- Details of trap specifications and construction can be obtained from relevant state/territory agriculture guidelines; for example:
    - Cost Effective and Multipurpose Self-mustering Enclosures for Stock (Connelly et al 2000)
    - Methods of Controlling Feral Goats (Henzell 1984)
    - Yard Design for Goats (Joshua 2003)
    - Goat Control Methods (King 1991)
    - Total Grazing Management Field Guide: Self-mustering Systems for Cattle, Sheep and Goats (Underwood 2002).

Firearms and ammunition

- Smaller calibre rifles such as .22 magnum rimfire with hollow- or soft-point ammunition are adequate for euthanasia of goats at short range (within 5 metres). If shooting animals from a greater distance, refer to GOA001 Ground shooting of feral goats for more detailed information.

PROCEDURES

Selection of trap sites

- Construct the trap at a site where there are limited numbers of watering points that can be fenced off easily. The trap should be situated on animal trails coming into the water point so that the gates are encountered on the usual path to water — this will make it more likely the target species will quickly accept and continue to use it.
- If possible, choose a site that is in a shady area, with as much natural vegetation as possible.
- Monitor the use of other watering points so that they can be fenced off if necessary to force goats to use the trap yard.
- Strategic placement is essential to reduce impact on local native species.

Setting the trap

- If goats are being removed from the property for live sale, suitable transport must be arranged and confirmed before trapping begins.
- Before setting the trap, an adequate training period (around three weeks) must be allowed so that the animals can become familiar with watering inside the trap yard. This period should be extended if any animals are showing difficulties in adapting.
- Once the goats are used to watering at the trap, the exit gate/s should be closed and trapping can begin.
- The trap should be checked at least once daily to avoid stress to the goats and to remove any domestic stock or non-target animals. Once trapped, goats are usually drafted into separate

holding yards with access to feed and water. It is preferable to activate the trap each morning and then check it in the evening.

- If bucks are fighting they should be drafted into separate yards.
- When checking the trap, always approach from the direction of the gate. This will prevent the goats being forced into the gate area of the trap where the fence is lowest and there is a chance they will escape.
- Traps can be left at permanent sites with the gates open and reactivated when further trapping is needed.

Holding goats in yards

- Captured goats should be allowed at least 3–4 days to rest with adequate shelter, food and water before they are transported on journeys longer than 8 hours. This will also allow them to become accustomed to lot feeding before transport to a feedlot or depot. During this time they must be assessed daily for signs of injury, disease, loss of appetite, illness or distress. Account must be taken of their possible unwillingness to drink and eat from troughs.
- Goats should not be held in the holding yards for extended periods. If goats are being held for any length of time (no longer than four days) they should be drafted into a large holding paddock that contains adequate shelter, food and water.
- To minimise stress and injury in yards, ideally, goats should be segregated into the following groups:
    - does with kids at foot
    - heavily pregnant does and small or young goats
    - bucks.

Loading and transporting goats

- Specific requirements for the land transport of goats can be found in Australian Standards and Guidelines for the Welfare of Animals — Land Transport of Livestock (AHA 2008).

Shooting of goats

- It may be necessary to humanely destroy goats by shooting; for example, when:
    - there is no market for the captured goats (including smaller animals that are of no commercial value)
    - goats have sustained serious injury during capture or in the holding yards
    - dependent young that are separated from their mother
    - a previous (or pre-existing) disease or condition prevents the animal from being transported, slaughtered or domesticated.
- Shooting must be done in a manner that causes sudden and painless death with minimum distress to the animal. Only head shots are acceptable (see Diagram 1).
- The shooter should approach the animals in a calm and quiet manner. To prevent unnecessary agitation of the yarded goats, other people should keep away from the area until shooting is completed.
- To maximise the impact of the shot and to minimise the risk of misdirection, the range should be as short as possible.

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

- Never fire when the goat is moving its head. Be patient and wait until the goat is motionless before shooting. Accuracy is important to achieve a humane death. One shot should ensure instantaneous loss of consciousness and rapid death.
- Shots must be aimed to destroy the major centres at the back of the brain near the spinal cord. This can be achieved by one of the following methods:

Head Shot

- The horn structures on adult goats make the temporal (side-on) or rear head shots the preferred points of aim. Shots to the front of the head can be used on kids, but this method is not recommended for mature goats as the brain is located well back in the skull.

Temporal position (side view)

- The firearm should be directed at the side of the head so that the bullet enters the skull midway between the eye and the base of the ear. The bullet should be directed horizontally.

Rear of the head

- The firearm should be aimed at the back of the head at a point between the base of the horns and directed towards the mouth.
- Death of shot animals should always be confirmed by observing the following:
    - absence of rhythmic respiratory movements
    - absence of eye protection reflex (corneal reflex) or ‘blink’
    - a fixed, glazed expression in the eyes
    - 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.
- When large numbers of animals are to be killed in the holding yard, provisions should be made to dispose of carcasses in an appropriate manner (ie by burying and/or burning). Numerous guidelines are available that describe disposal methods, for example:
    - Humane Disposal and Destruction of Stock (Burton 1999).
    - AUSVETPLAN Operational Procedures Manual: Disposal (AHA 2007).
    - Procedure for Dead Stock Disposal (NSW EPA 2001).

pestSMART

Powered by the Centre for Invasive Species Solutions

NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

Recommended shot placements - Feral goat

Diagram 1

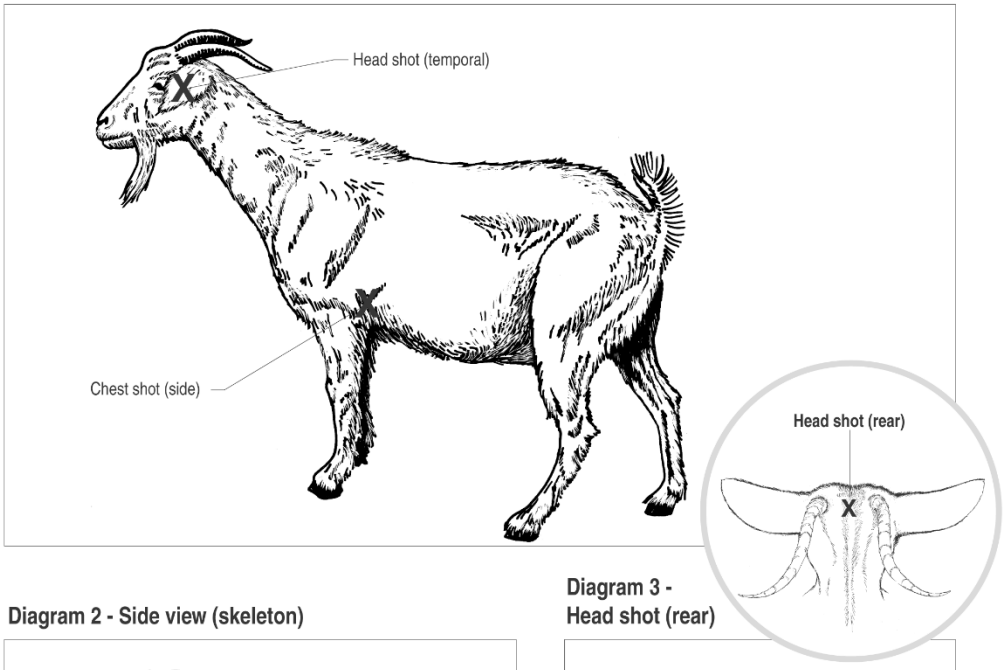


Diagram 2 - Side view (skeleton)

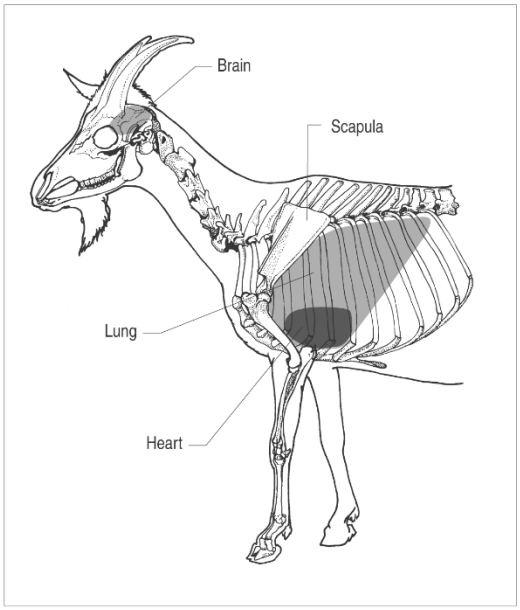
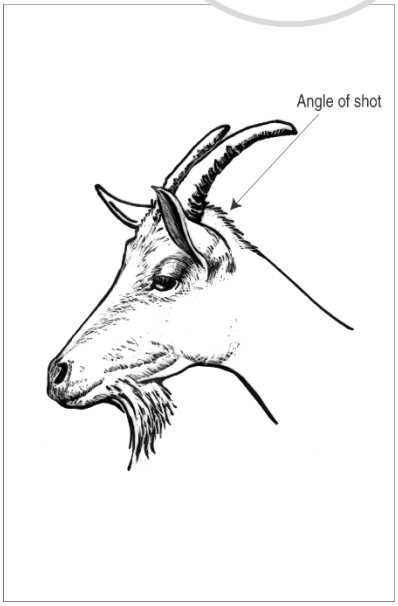


Diagram 3 - Head shot (rear)



NATSOP-GOA004 NATIONAL STANDARD OPERATING PROCEDURE: TRAPPING OF FERAL GOATS

REFERENCES

1. AHA (Animal Health Australia) (2007). Operational Procedures Manual: Disposal (Version 3.0). Australian Veterinary Emergency Plan (AUSVETPLAN), Edition 3, Primary Industries Ministerial Council, Canberra, ACT.
2. AHA (2008). Australian Standards and Guidelines for the Welfare of Animals — Land Transport of Livestock. AHA, Canberra.
3. American Veterinary Medical Association (2007). AVMA Guidelines on Euthanasia (formerly The Report of the AVMA Panel on Euthanasia).
4. Department of Natural Resources and Mines (2001). Feral Goat (Capra hircus). NRM Facts PA18. Department of Natural Resources and Mines, Queensland.
5. Biodiversity Group, Environment Australia (1999). Threat Abatement Plan for Competition and Land Degradation by Feral Goats. The Environment and Heritage through the National Threat Abatement Component of the Natural Heritage Trust.
6. AAHQS (Australian Agricultural Health and Quarantine Service) (1983). Model Code of Practice for the Welfare of Animals — Rail Transport of Livestock. Department of Primary Industry, Canberra.
7. AAHQS (1986). Model Code of Practice for the Welfare of Animals — Air Transport of Livestock. Department of Primary Industry, Canberra.
8. AAHQS (1987). Model Code of Practice for the Welfare of Animals — Sea Transport of Livestock. Department of Primary Industry, Canberra.
9. Bellchambers K (2004). Improving the Development Of Effective and Humane Trapping Systems as a Control Method for Feral Goats in Australia. Department of the Environment and Heritage, Canberra.
10. Burton R (1999). Humane Destruction and Disposal of Stock. Agnote DAI-136. NSW Agriculture.
11. Casburn G, Hacker R and Brill T (1999). Evaluation of Cooperative Feral Goat Harvesting/Control Techniques. Project 94/1, Vertebrate Pest Program. NSW Agriculture, Orange.
12. Connelly P, Horrocks D, Pahl L and Warman K (2000). Cost Effective and Multipurpose Self-mustering Enclosures for Stock. Department of Primary Industries, Queensland.
13. DAFF (Australian Government Department of Agriculture, Fisheries and Forestry) (2011). Australian Standards for the Export of Livestock. DAFF, Commonwealth of Australia.
14. Finn J, Greenwood P and May T (2003). Pre-slaughter Management of Goats. Agfact A7.1.12. NSW Agriculture.
15. Henzell R (1984). Methods of Controlling Feral Goats. Factsheet, Agdex 573. Department of Agriculture, South Australia.
16. Jago B (1999). Feral Goat (Capra hircus) in Queensland. Pest status Review Series – Land Protection. Department of Natural Resources and Mines, Queensland.
17. Joshua E (2003). Yard Design for Goats. Agfact A7.7.2. NSW Agriculture.
18. King D (1991). Goat Control Methods. Infonote no. 21/91. Agriculture Protection Board of Western Australia.
19. 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.
20. NSW Environment Protection Authority (EPA) (2001). Procedure for Dead Stock Disposal.

21. O'Flynn M (1992). Animal welfare considerations. In: D Freudenberger (ed), Proceedings of the National Workshop on Feral Goat Management: Planning for Action, Dubbo, NSW. Bureau of Resource Sciences, Canberra. Pp 39-55.
22. Parkes J, Henzell R and Pickles G (1996). Managing Vertebrate Pests: Feral Goats. Australian Government Publishing Service, Canberra.
23. Primary Industries Ministerial Council (undated). Draft Model Code of Practice for the Welfare of Animals: Killing or Capture, Handling and Marketing of Feral Livestock Animals. CSIRO, Australia.
24. Ramsay BJ (1994). Commercial Use of Wild Animals in Australia. Bureau of Resource Sciences. Australian Government Publishing Service, Canberra.
25. SCAAHC (Standing Committee on Agriculture, Animal Health Committee) (1991a). Model Code of Practice for the Welfare of Animals: Feral Livestock Animals – Destruction or Capture, Handling and Marketing. CSIRO Publishing, Australia.
26. SCAAHC (1991b). Model Code of Practice for the Welfare of Animals: The Goat. CSIRO Publishing, Australia.
27. SCARM (Standing Committee on Agriculture and Resource Management) (2002a). Model Code of Practice for the Welfare of Animals: Animals at Saleyards. SCARM Report 31. CSIRO Publishing, Collingwood.
28. SCARM (2002b). Model Code of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments. SCARM Report 79. CSIRO Publishing, Collingwood.
29. Thompson J, Riethmuller J, Kelly D, Boyd-Law S and Miller E (1999). Technical Report on Feral Goat Management in South-west Queensland. Report to the Bureau of Rural Sciences. Queensland Department of Natural Resources.
30. Underwood C (2002). Total Grazing Management Field Guide: Self-mustering Systems for Cattle, Sheep and Goats. Bulletin No. 4547. Department of Agriculture Western Australia.

Reference me as: Sharp T (2005) NATASOP-GOA004 National Standard Operating Procedure: Trapping of feral goats. PestSmart website. https://pestsmart.org.au/toolkit-resource/trapping-of-feral-goats/