

Background

Feral horses (*Equus caballus*) can cause significant environmental damage and losses to rural industries. Although considered a pest, feral horses are also a resource, providing products such as pet meat for the domestic market and meat for human consumption for the export market. Control methods include trapping, mustering exclusion fencing, ground shooting and shooting from helicopters.

Feral horses are trapped in yards at a water source or occasionally by using mineral blocks, feed or lure mares as an enticement. Trapping at water involves the construction of fences around water points with a number of one-way gates or ramps. The gates/ramps allow horses to enter the trap and have access to water but prevent them leaving.

Once trapped, the horses are usually sold to abattoirs for slaughter which can offset the costs of capture and handling. Less commonly, they are sold as riding horses or relocated to reserves or horse sanctuaries. Where there is no market for them or where removal may be too costly or impractical e.g. in conservation areas or remote areas without access to transportation, the horses are sometimes destroyed by shooting in the trap yard.

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

- Trapping should only be used in a strategic manner as part of a co-ordinated 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 horses.
- Although traps can be costly to establish, trapping is more cost effective than mustering and is also less stressful for the horses. Trapping is the preferred method when horses are at low densities.
- Trapping is most effective during dry periods when horses drink regularly and are congregating around water holes. It becomes less effective and sometimes impractical during periods of wet weather when water is plentiful and horses are dispersed.
- Trapping at water can have negative impacts on non-target species, especially macropods and emus.

- Maintenance of 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 cattle.

Animal Welfare Considerations

Impact on target animals

- Capture and handling increase stress in feral horses as they are not used to confinement or close contact with humans. Operators should endeavour to keep stress to a minimum during these procedures. Exposure to prolonged or excessive stress causes severe physiological effects and can result in the following conditions:
 - Capture myopathy;
 - Heat stress and dehydration;
 - Acute lameness due to injury or damage to tendons, ligaments or bones;
 - Fight injuries due to mixing unfamiliar groups or individuals;
 - Bruising and injury caused by rough capture techniques and poorly designed handling techniques;
 - Stress-induced infections, such as salmonellosis;
 - Feeding disruption resulting in ill-thrift or colic; and
 - Abortion in heavily pregnant females
- Enforcing a new social structure on horses and confining them in yards with strange horses greatly increases their stress levels and can result in a higher incidence of injuries. Normal social groups should be maintained whenever possible. Injuries can be dependent on social behaviours and the degree of aggressive interaction between horses.
- Traps should be large enough to avoid overcrowding and allow all horses to access the water point.
- Traps should be constructed to include trees or other vegetation to provide horses with shade and shelter. Horses can suffer when exposed to extremes of heat and cold.
- To minimise the possibility of starvation and stress, all traps must be inspected at least once daily. More frequent checking may be necessary during extreme weather conditions.
- The supply of water should be checked daily and appropriate feed must be made available if captured horses are to be held 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 as not to cause injury from loose wire, sharp edges or malfunctioning gates. The trap gates should be large enough to allow large stallions to enter the trap. The trap yard should be large enough so that each horse has enough space to avoid social stress.
- Fencing off alternative watering points to force horses to water at the trapped points has welfare implications. Some animals may not leave their preferred water source and will die of thirst rather than move and search for another.

- To avoid heat stress, trapping and handling of horses should be carried out when conditions are cool or mild.
 - Horses that are found severely injured inside the trap must be killed quickly and humanely with a rifle shot to the head.
 - Capture and handling should be avoided when females are foaling or have dependent young at foot. Unweaned foals that do not accompany their mother into the trap may be separated and die of starvation or if trapped can get trampled underfoot. Foaling is concentrated over spring and summer. Apart from the welfare implications, control at times of foaling will reduce effectiveness as females are usually more cryptic and tend to leave the group to give birth in isolated locations
 - Electric prods and dogs must not be used to assist in the handling of feral horses.
 - Heavily pregnant, very young or weak/sick/injured animals must not be transported. They must either be destroyed, proper veterinary assistance given or transported at a later date when they are more suitable for transportation.
 - The loading, transport, unloading, holding and slaughter of feral horses must be undertaken with the minimum amount of stress, pain or suffering.
- Guidelines on these procedures can be found in the following documents:
- Model Codes of Practice for the Welfare of Animals:
 - Land Transport of Horses (1997)
 - Livestock at Slaughtering Establishments, SCARM Report 79 (2002)
 - Killing or Capture, Handling and Marketing of Feral Livestock Animals (draft)
 - AQIS (1995). Operational guidelines for the welfare of animals at abattoirs and slaughterhouses. Australian Quarantine and Inspection Service. Australian government Publishing Service, Canberra.

Impact on non-target animals

- Traps or fencing 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 alternatively another horse control method could be used.
- Horse traps can have a negative impact on native non-target species by inadvertently trapping them and also by excluding them from water sources. For example macropods are affected by the following:
 - Traps that are closed from dusk to dawn will exclude macropods from drinking at a time when they mostly seek water;
 - Macropods may be reluctant to enter the 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; and
 - Macropods are not easily herded, so injuries and stress can be caused when trying to release those trapped out through the exit gates.

- Methods that could be used to reduce the impact of inadvertent trapping on non-target animals are a combination of engineering and management strategies. 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 20cm of the mesh acts as both a physical and visual barrier. The fence should be no more than 1.2 metres high (preferably 90cm).
 - 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 horses.
 - Traps could be activated only during the day when horses and stock tend to water. This will help to avoid capture of macropods as they 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, therefore they should be moved gently and quietly out of the yard through the trap gate prior to performing any other work in the vicinity of the trap.
- Trapped native non-target animals and also livestock that are still watering at the trapping point will need to be drafted from the trapped horses 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 (e.g. during calving or spelling). Trapping should be avoided during calving as 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 which are unharmed or have only received minimal injuries such as minor cuts or abrasions should be immediately released at the site of capture.
 - Animals which have more severe injuries or which are suffering from thermal stress should receive appropriate attention. An animal suffering from thermal stress can initially be placed in a suitable quiet holding area which 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 veterinarian or a registered wildlife carer for treatment.
 - Animals that have injuries which are untreatable or which 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

- 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.
- Operators must be wary of horses especially when working with them in a yard. Beware of horses kicking directly backward with either or both hind feet. Horses can also strike, bite and crush people against fences.
- Firearms are potentially hazardous. All people should stand well behind the shooter when horses 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.
- Care must be taken when handling feral horse carcasses as they may carry diseases such as melioidosis, ringworm and dermatophilosis that can affect humans and other animals. Routinely wash hands and other skin surfaces after handling carcasses.

Equipment Required

Traps

- Either portable or fixed yards can be used as traps. If using established cattle yards at a bore, they must be secure for horses. Portable panels inside the yard can be used to reinforce low or weak sections.
- Entrances to the trap should be directly opposite the water trough to encourage horses to enter and drink. Standard gates or one-way spear (or bayonet) gates are most commonly used:

Standard gate

- These are easy for horses to locate; therefore more horses will probably enter.
- Training of horses to go thorough the gate is not required
- The gate needs to be closed manually behind each group of horses entering, therefore require continuous monitoring.

One-way spear (or bayonet) gate

- The entrance consists of a v-shaped, four-barred gate with flexible spears. Horses have to squeeze through the spears to enter the yard to drink.
- Horses have to be trained to go through the gates by gradually closing the spears to get them used to squeezing through.
- Do not need continuous monitoring.

- 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 horses 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 around 150 horses can be made from 50 portable panels.
- It is preferable to incorporate loading pens and holding yards in the trap design that allows for on-site animal handling.
- The yard fencing should form both a physical and visible barrier to minimise the potential for injuries. Steel or timber post-and-rail fencing is recommended. Barbed wire and narrow gauge high tensile steel should not be used for fencing in closely confined situations as it can cause severe injury to horses.
- Self-mustering trap yards have been 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 upon habitat, material available and accessibility to site. Knowledge of other species that may 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:
 - Dobbie, W. (1992). *Control of brumbies in central Australia*. Conservation Committee of the Northern Territory and the Northern Territory Department of Primary Industries and Fisheries, Alice Springs.
 - McKiernan, B. (1999). *Horse yards and handling facilities*. Agfact A6.7.1. NSW Agriculture.
 - Connelly, P. Horrocks, D., Pahl, L. and Warmin, K. (2000). *Cost effective and multipurpose self-mustering enclosures for stock*. Department of Primary Industries, Queensland.
 - Underwood, C. (2002). *Total Grazing Management Field Guide: Self-mustering systems for cattle, sheep and goats*. Department of Agriculture, Western Australia.

Firearms and ammunition

- Smaller calibre rifles such as .22 magnum rimfire with hollow/soft point ammunition are adequate for euthanasia of horses at short range (<5 metres). If shooting animals from a greater distance, a higher powered rifle will be required, refer to **HOR001 *Ground shooting of feral horses*** 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 making 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 horses to use the trap yard.
- Strategic placement is essential to reduce impact on local native species.

Setting the trap

- If horses are being removed from the area for live sale, suitable transport must be arranged and confirmed before trapping is commenced.
- Prior to setting the trap an adequate training period (at least one week) is required so that the all animals can become familiar with watering inside the trap yard. This period should be extended if any animals are showing difficulties in adapting.
- A mineral block placed in the trap yard may assist in attracting horses. Hay or other palatable forage can also be used as an attractant, however, horses may not always recognise hay as feed and therefore this may not be effective or practical for large-scale control programs.
- Tame mares can be used to lure feral stallions, however, this method is useful only for intensive treatment of small areas when the feral horse population is low.
- Once the horses are accustomed to watering at the trap, the exit gate/s is/are closed and trapping commences.
- The trap should be checked at least once daily to avoid stress to the horses and to remove any non-target animals or domestic stock. Once trapped, horses 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 in the evening.
- When checking the trap always approach from the direction of the gate. This will prevent the horses being forced into the gate area of the trap where the fence is lowest and there is a chance they may escape.
- Mature stallions and other aggressive or incompatible horses must be separated from other animals as soon as possible after yarding. To minimise stress and injury in the yards, ideally, horses should be segregated into the following groups:
 - Females with suckling foals;
 - Pregnant females;
 - Other females and juveniles; and
 - Males. If males are observed to be fighting or they are of significantly different age or weight they should be drafted into separate yards.
- Horses should not be held in the trap or holding yards for extended periods. If they are being held for any length of time they should be drafted into a large holding paddock with adequate shelter, feed and water.
- Traps can be left at permanent sites with the gates open and reactivated when further trapping is required.

Shooting of horses

- It may be necessary to humanely destroy horses by shooting in the following situations:
 - When there is no market for the captured horses;
 - If horses have sustained serious injury during mustering or in the holding yards;
 - Dependant young that are separated from their mother;
 - Previous disease or condition that would prevent the animal from being transported, slaughtered or domesticated.
- Shooting must be conducted to cause sudden and painless death with minimum distress to the animal. Only head shots are acceptable.
- The shooter should approach the animals in a calm and quiet manner. To prevent unnecessary agitation of the confined horses, 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.
- Never fire when the horse is moving its head. Be patient and wait until the horse is motionless before shooting. Accuracy is important to achieve a humane death. One shot should ensure instantaneous loss of consciousness and rapid death without resumption of consciousness.
- 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 (*see diagrams in Appendix*):

Head Shots

Frontal position (front view)

The firearm should be directed at the point of intersection of diagonal lines taken from the base of each ear to the opposite eye. The bullet should be directed horizontally.

Temporal position (side view)

The horse 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.

- Death of shot animals can 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; 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.

- 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 i.e. by burying and/or burning. Numerous guidelines are available which describe disposal methods e.g. Burton, 1999; AUSVETPLAN Operational Procedures Manual: Disposal (1996); NSW EPA (2001) Guidelines for disposal of dead stock.

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

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<http://www.nationalparks.nsw.gov.au/npws.nsf/Content/English+Reports+on+feral+horse+management+in+national+parks+and+reserves>
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Recommended shot placements - Feral horse

Diagram 1

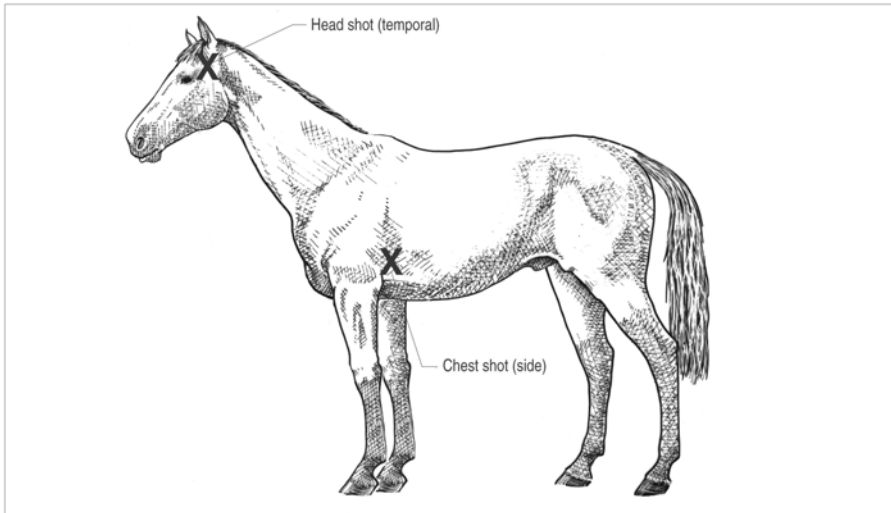


Diagram 2 - Side view (skeleton)

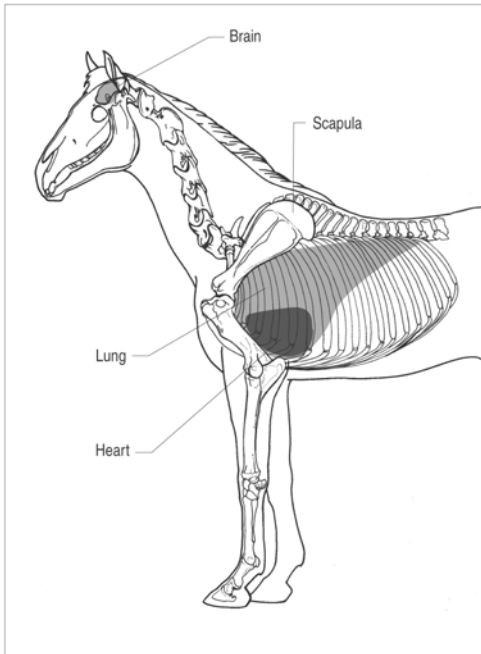
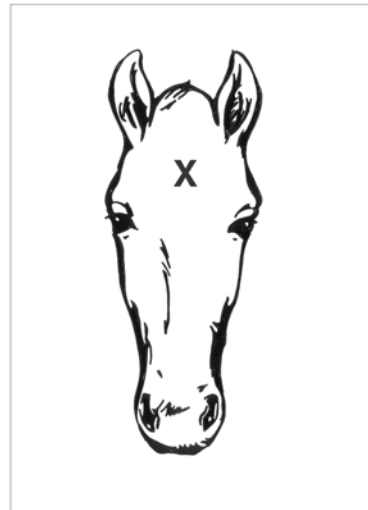


Diagram 3 - Head shot (frontal)



Note: Head shots (temporal or frontal) should be used for shooting feral horses at short range (<5 metres). See text for details.