

MUSTERING OF FERAL HORSES (HOR003) STANDARD OPERATING PROCEDURE

BACKGROUND

Feral horses (*Equus caballus*) can cause significant environmental damage and losses to rural industries. Although considered pests, 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 mustered by helicopter, motorbike or on horseback, sometimes with the assistance of 'coacher horses'. Once mustered into yards, net traps or fenced paddocks, 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 (such as in conservation areas or remote areas without access to transportation), horses are sometimes destroyed by shooting in the yards.

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

- Mustering may be used strategically as part of a coordinated program designed to achieve sustained effective control.
- Mustering might only be efficient and economic when horse densities are high.
- In relatively flat and accessible country, horses are usually mustered by people on horseback or on motorbikes. In rough, hilly country and more extensive areas, helicopters or light aircraft are used to drive the horses towards a set of yards where a ground team completes the muster.
- Musters are best centred on smaller areas that include watering points or grazing areas frequently used by feral horses. Intensive mustering of a defined management area (of about 400 km²) around a permanent watering point might be the most effective way of catching most horses. In this way, few horses would have to be pushed outside their normal home range, which they resist leaving.
- When mustering large areas, many horses are forced to go outside of their home range areas. Also, the greater the distance the horses must travel, the more chance they have to escape. Those that get away will be harder to catch next time. Mustering of extensive areas should only be done if access by transport vehicles is restricted by rough terrain, or if there are too few suitable yard sites.
- Mustering is relatively labour intensive compared to trapping and can be more stressful to the horses.
- To ensure that mustering, capture and handling are performed with the least stress to the horses, operators must have a good knowledge of horse behaviour and movement patterns. They should also be familiar with the terrain they are to cover so that dangerous areas (eg sinkholes and bogs) can be avoided.
- Aircraft operators must ensure that their flying operations comply with requirements of the Civil Aviation Safety Authority.
- Feral horses should only be shot 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 legislative requirements.

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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
 - abortion in heavily pregnant females.
- Mustering must not take place if horses are in poor body condition (eg during droughts).
- To avoid heat stress, mustering should be done in the cooler months.
- The tail end of the mob should set the pace rather than being forced to keep up with the leaders. Distances that the horses have to be mustered should be kept to a minimum (eg by using portable yards).
- Feral horses should be handled quietly without force, to avoid panic and trampling.
- Horses that are severely injured during mustering or confinement must be killed quickly and humanely with a rifle shot to the head.
- Whenever possible, avoid mustering when females are foaling or have young at foot. Unweaned foals might be left to die of starvation if their mothers are mustered and they are left behind. Foaling is concentrated over spring and summer.
- Apart from the welfare implications, control at times of foaling will be less effective, as females are usually more secretive and tend to leave the group to give birth in isolated locations.
- Neither dogs nor electric prods should be used in the handling of feral horses.
- Mixing unfamiliar groups or individuals in yards can result in fighting, stress and injury. Normal social groups should be maintained whenever possible. There should be sufficient holding yards to avoid mixing different groups of stock.
- 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 transported at a later date.
- The loading, transport, unloading, holding and slaughter of feral horses must be done with the minimum amount of stress, pain and suffering. More detailed guidelines on these procedures can be found in the following documents:
 - *Australian Standards and Guidelines for the Welfare of Animals – Land Transport of Livestock*
 - [Model Code of Practice for the Welfare of Animals: Animals at Saleyards](#)
 - [Model Code of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments](#)

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- *Operational Guidelines for the Welfare of Animals at Abattoirs and Slaughterhouses* (AQIS 1995).

Impact on non-target animals

- Mustering is target specific and does not usually impact on other species.

HEALTH AND SAFETY CONSIDERATIONS

- During construction of yards, 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.
- The mustering, confinement and handling of feral horses is not without risk to the operators involved. A first-aid kit should be carried at all times.
- 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. 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 can 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

Yards

- Either portable or fixed holding yards can be used. Many yards that are already established were originally designed for cattle rather than horses; therefore some modifications might be required.
- The entrance should consist of winged fences to effectively direct horses into the yard. Hessian is usually run out from the yard for about around 100 m to form part of the wing fences. This prevents horses running into the fences. The wings should be further extended until they reach natural barriers such as the side of a range or a hill. Ribbon wings made out of flagging tape attached to twine are effective. To deflect approaching horses, one wing fence should be longer than the other, usually 500 m to 1 km long.
- Net traps are sometimes used instead of yards. These are constructed of high-strength fishing net with long hessian wing fences that funnel horses into the trap.
- Yards should be large enough for the horses to enter at a reasonable pace, pull up and settle before encountering fences and panels. Entrance gates must be wide enough (about 6 m) to allow the easy flow of animals.

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- To minimise the potential for injuries while contained in the yard, the fencing should be clearly visible to the horses. Steel or timber post-and-rail fencing is recommended. Barbed wire and narrow-gauge hightensile steel should not be used for fencing in closely confined situations as it can cause severe injury to horses.
- The materials used must minimise the risks of injury or escape of horses once inside the enclosure. Projections such as loose wire or sharp edges should be removed and fences should be secure and high enough to prevent horses escaping. Hessian hung above normal yard height can be used to deter horses from pressuring or jumping vulnerable parts of the yard.
- Yards should be designed to minimise both dust and boggy conditions.
- If mustering in extremes of climate (hot or cold) is unavoidable, shelter must be provided for horses. This is particularly important for young horses or animals in poor body condition during cold, windy and rainy conditions.
- Details of yard design and construction can be obtained from relevant guidelines, for example:
 - *Control of Brumbies in Central Australia*
 - *Managing Vertebrate Pests: Feral Horses*
 - *Horse Yards and Handling Facilities*.

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 (less than 5 m). If animals are targeted from a greater distance, a higherpowered rifle will be required. Refer to HOR001 Ground shooting of feral horses for more detailed information.

Light fixed-wing aircraft or helicopters

- The aircraft must be suited to the purpose and must be registered to perform the task.
- Small Robinson helicopters are popular because of their manoeuvrability. Ultralight aircraft could also be used with helicopters, but they are less manoeuvrable than helicopters and so might not be as effective.
- The pilot must be suitably licensed and hold the appropriate endorsements for aerial mustering of stock.

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.

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PROCEDURES

Choosing a yard site

- A suitable yard site must be flat to enable the erection of portable yards, and have sufficient space for trucks to turn.
- Yards should be set up on a stock trail to encourage horses to run along the trails which, ideally, should lead to the main entrance. Low spots should be avoided as horses prefer to run uphill. The approach to the yard should be flat or slightly uphill. The yard should not be easily visible to the horses until they are close to the entrance.
- If possible, yards should be positioned in a shady area with as much natural vegetation as possible. However, avoid having trees near the entrance of the yards as they can restrict manoeuvring of helicopters.

Mustering

- It is preferable that mustering be done when conditions are cool or mild.
- Horses should not be excessively chased, but moved steadily with the slowest animals setting the pace. Horses should never be driven to the point of collapse.
- Only muster that number of horses that can be comfortably handled. The fewer horses that are included in any one operation and the shorter the distance travelled, the less stress will be placed upon the animals.
- 'Coacher horses' are sometimes used to help with mustering. The presence of coacher horses has been shown to reduce stress in free-ranging horses while they are moved towards the trap site. Coacher horses are quiet domestic horses or mares selected from trapped mobs that have been educated to accept human contact, feed and handling. They can be used to facilitate feral horse acceptance of artificial feed and human presence, movement from paddock to yards, or to bring in individual horses separated from their mob.
- Horseback musters, involving skilled riders pursuing feral horses and directing them into the winged yards, are also occasionally used. However, this technique is not common as it requires skilled riders and the capture success is low, with only a few animals taken at a time.
- Heavily pregnant mares, mares with small foals, and other horses such as those in poor condition, should be allowed to drop out of musters if the safety and welfare of these animals is at risk. Also, if a female horse continually breaks away and will not move along with the group, it is possible that she has a dependent foal hidden somewhere. It is best to let her go and move on with the rest of the group. Holding horses in yards
- Horses captured by mustering should be allowed a minimum of 24 hours' rest with adequate shelter, food and water if they are to be transported for more than 8 hours. During this time they must be assessed daily for signs of injury, disease, distress or lack of appetite. Account must be taken of their possible unwillingness to eat unfamiliar feed.
- Hosing down recently mustered horses with water refreshes them and is essential in hot weather. It also has a calming effect.
- Horses need 25 L of water a day, although they might need double this amount in very hot weather (over 40oC). It is desirable to add electrolytes to the drinking water for horses mustered in hot weather. Yarded horses need 6 kg of good quality hay each day.
- To minimise stress and injury in the yards, horses should be segregated into the following groups:
 - females with suckling foals
 - pregnant females

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- other females and juveniles
- males – if males are fighting or they are of significantly different age or weight, they should be drafted into separate yards.
- Horses should not be held in the holding yards for extended periods. If horses are being held for any length of time more than a few days they should be drafted into a large holding paddock that contains adequate shade, shelter, food and water.

Loading and transporting horses

- Specific requirements for the land transport of horses can be found in:
 - *Australian Standards and Guidelines for the Welfare of Animals – Land Transport of Livestock.*

Shooting of horses

- It might 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
 - if there are dependent young that are separated from their mother
 - if there is a pre-existing disease or condition that would prevent the animal from being transported, slaughtered or domesticated.
- Shooting must be done in a way that causes 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):

Head Shots (this is the preferred point of aim)

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 nonlethal and debilitating wounds, such as a broken jaw.

Frontal position (front view)

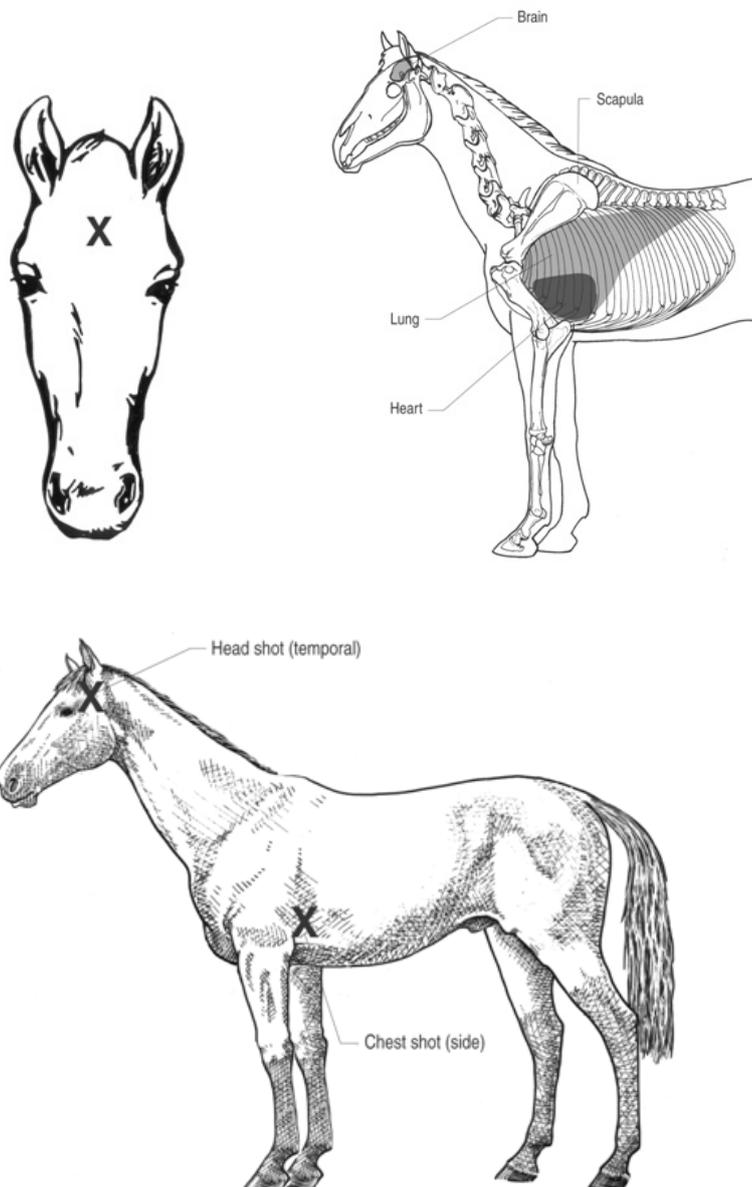
The firearm should be directed at the point of intersection of diagonal lines taken from the base of each ear to the opposite eye. The bullet should be directed horizontally.

Temporal (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.

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- 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
 - 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 (see Burton 1999, AHA 2007, NSW EPA 2001).



Recommended shot placements for feral horses

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