

Mackay District - Feral Pig Management

Stakeholder Training Package



Natural Heritage Trust

Helping Communities Helping Australia

An Australian Government Initiative



INTRODUCTION:

Feral pigs currently cause significant economic, environmental and social issues within the Mackay Region. Within 2002 the Cane productivity loss due to feral pigs in the Mackay District was 16,648 tonnes, 633Ha. In addition to this economic loss, environmental and social damage due to feral pigs is occurring within the Mackay region. To date environmental loss is occurring within several of Mackay's major State Parks and forests including; Conway National Park/State Forest, Dryander National Park and Eungella National Park.

The Federal Governments \$2.7 billion Natural Heritage Trust is Australia's largest ever environmental rescue package. Under the trust the Mackay region purchased 30 traps to utilise for strategic, co-ordinated feral pig trapping within the Mackay coastal region. This project aims to actively involve all relevant sectors of the community including; Landholders, Natural Parks and Wildlife Service, Mackay Area Productivity Service (MAPS), City/Shire Councils and the Department of Natural Resources Mines and Energy in strategic feral pig trapping programs.

Traps funded via the trust were allocated as follows:-

Whitsunday Shire Council – 20 traps

Sarina Shire Council – 2 traps

Mirani Shire Council – 2 traps

Mackay City Council – 6 traps.

The program includes utilising accredited trappers working in conjunction with their Local Shire/City Councils, Environmental Protection Agency or MAPS to undertake strategic feral pig trapping within the Mackay region.

Other than trap usage the accredited trappers will not receive any financial support or incentive from any of the stakeholders. Stakeholders will not receive any financial incentives from trappers. All pigs trapped are to be disposed of at the discretion of the trapper.

OBJECTIVES:

The benefits of participating in Government and community based feral animal control programs are:

1. To participate in a harmonious, cooperative, collaborative approach to feral species management between a range of stakeholders and landowners.
2. To reduce the impact feral pigs are having on sugar cane crops and other agricultural activities within the Mackay Region.
3. Reduce the impact feral pigs are having on conservation values within the Mackay Region.
4. Provide data on the effectiveness of feral pig control programs.

Participants within the regional trapping program include; the National Heritage Trust, the Department of Natural Resources Mines and Energy, the Environmental Protection Agency, Mackay Area Productivity Service, Whitsunday Shire Council, Sarina Shire Council, Mirani Shire Council, Mackay City Council, and stakeholders within the Mackay Region.

BACKGROUND:

Under the new *Land Protection (Pest and Stock Route) Act 2002* the feral pig (*Sus scrofa*) is declared a class 2 pest signifying the pest is established in Queensland and has or could have significant adverse economic, environmental or social impact. Section 77 of the act requires all landholders to take reasonable steps to keep the land free of feral pigs.

In addition to requirements under the Departments of Natural Resource Mines and Energy and Environmental Protection Acts this training package includes information and requirements under the Australian Model Code of Practice for the Welfare of Animals – Feral Livestock Animals. This code has been prepared for the Standing Committee of Agriculture and Resource Management (SCARM) and has been developed in full consultation with animal industries, animal welfare groups and relevant State and Federal Government bodies.

FERAL PIG BIOLOGY

FOOD

Feral pigs are non-ruminant mammals that are primarily omnivores. They have a single stomach and are unable to feed solely on roughage due to the stomachs poor capacity to digest cellulose. They're opportunistic with a strong preference for succulent green vegetation, fruit and grain, with a wide variety of animal material and underground starch-rich plant material.

Feral pigs have high protein requirements, particularly for successful lactation and growth of young. If crude protein levels drop below 15% of their diet, lactation can cease and piglets may die. Dietary energy needs of pigs are also relatively high, in particular during pregnancy and lactation. This seasonal need for either more food, or high energy or protein-rich food, is often the reason for their impact on agricultural crops. It is also the weakness in their ecology that can be exploited for management purposes.

Diets throughout Australia vary from region to region but include:-

- ✓ Fruits and seeds:- Figs, palms, pandanus, cycads, a wide range of orchard fruit, grasses, pumpkins, watermelons, bananas, mangoes, potatoes, peanuts, maize, wheat, oats, sorghum and other cereals.
- ✓ Foliage and stems:- small palms, pandanus, sugarcane, semi-aquatic ferns, range forbs, grasses and legumes including native medics, introduced clovers and lucerne and young wheat.
- ✓ Rhizomes, bulbs and tubers:- Lilies, grasses, sedges/rushes, bracken, dock and thistles, yams and other tropical rootstocks.
- ✓ Fungi
- ✓ Animal material: - Earthworms, snails, arthropods, crustaceans, shellfish, frogs, fish, reptiles, eggs, birds mice, young rabbits, lambs and other small mammals and carrion. (Choquenot, McIlroy, Korn, 1996).

Chemical constituents (ranges) of tropical and temperate fruits and other items likely to be eaten by feral pigs. Adapted from Bolton and Phillipson (1976), Barrett (1978), Lee (1985), Bell (1990) and Cork and Foley (1991). Dashes indicate no data available.

| Food item | Constituent (% dry matter) | | |
|-----------------------------------|----------------------------|-------------------|-----------|
| | Crude protein | Sugars and starch | Cellulose |
| Tropical and temperate: | | | |
| Fruits | 3-12 | 12-78 | 1-8 |
| Seeds | 3-15 | 2-16 | - |
| Grasses | 4-17 | 3-19 | 15-40 |
| Forbs | 4-35 | 2-18 | 6-33 |
| Tropical trees and shrubs: | | | |
| Young leaves | 7-55 | 0-33 | 6-25 |
| Mature leaves | 5-36 | 1-15 | 11-30 |
| General: | | | |
| Bulbs | 12-15 | - | - |
| Legumes | 24-25 | - | - |
| Earthworms | 54-80 | - | - |
| Insects | 60 | 7 | - |
| Carriion (cow) | 57 | - | - |

(Choquenot, McIlroy, Korn, 1996)

Locally pre-feeding generally consists of: - seasoned fruits and vegetable in-particular (mangoes, bananas), fermented grain wheat, nuts or crustaceans (mussels, crab carapace).

Under the *Stock Regulation 1988* (the Regulation), pigs may have access to, or be fed rendered animal meals, such as meat and bone meal or blood meal in pig trapping programs provided every reasonable measure is taken to deny access to such meals to any ruminant. However, under the Regulation meat, carcasses and offal cannot be utilised within pig trapping programs, unless they are utilised as a scent lure only and the pigs do not have access to, or are unable to feed on such materials.

MOVEMENT

Feral pigs are capable of migrating considerable distances but they tend to stay in home ranges, with watering points and food abundance the focus of activity. Pigs have few sweat glands, so high temperatures require them to drink more often and wallow in water or mud to cool off. Dense cover is the preferred habitat, providing protection from the sun and their main predator, man.

Female and juvenile pigs usually live in small family groups with a home range of 2-20 klm². Adult males are typically solitary, with a home range of 8-50 klm². Range size varies with season, habitat, food availability and disturbance.

Most pigs remain in their home range, even when subject to some disturbance such as infrequent hunting by people and dogs. Regular disturbance will drive them on.

Feral pigs are generally nocturnal, spending daylight hours sheltering in dense cover. They are shy animals and will avoid humans, making it easy to miss their presence or to drastically underestimate their numbers.

Pigs generally move along well-marked customary trails to feeding areas.

LIFE CYCLE

The reproductive potential of feral pigs is more similar to rabbits than other large mammals in Australia. In good conditions feral pig populations may increase fivefold in a 12 month period.

Under favourable conditions breeding occurs all year. Adult females have a 21-day oestrus cycle, with a gestation period of about 113days, producing a litter of 4-10 piglets, depending on the sow's age, weight and food supply.

Sows can make nests of available vegetation just before farrowing. Nests can be 3 m long by 1.5m wide and up to 1m high, with a domed roof. They are usually less than 2 klms from available water. Piglets normally spend the first 1-5 days of life inside the nest, with the sow inside or close by.

The next fertile mating can occur after 2-3 months. Sexual maturity is reached when sows weigh about 25kg, usually around 6 months of age.

Mortality of juveniles is high if the mother's dietary protein intake is low (up to 100% mortality in dry seasons). Adult mortality does not vary as much with seasonal conditions, but few animals live more than 5 years.

ESTIMATING POPULATIONS

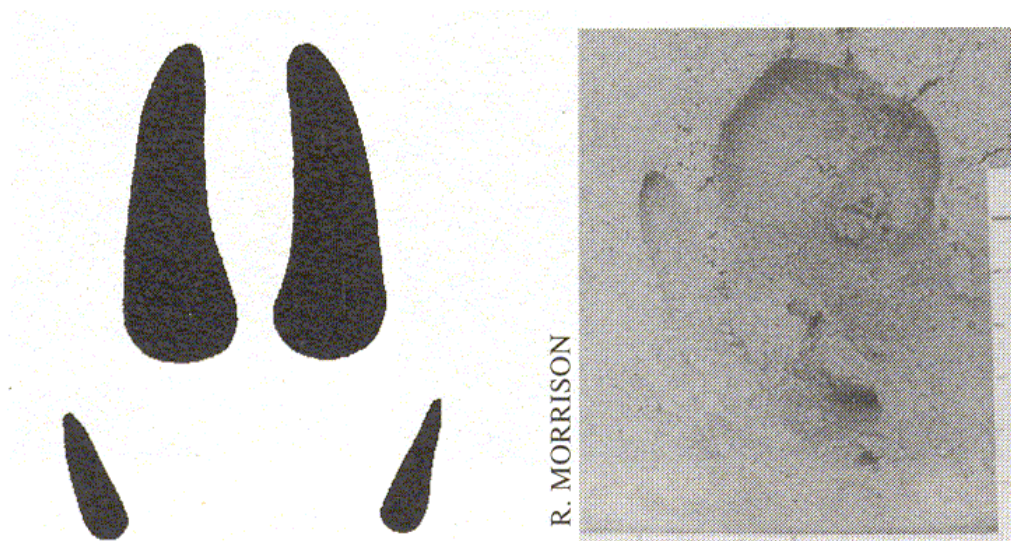
Sightings are the least reliable guide to feral pig presence. Careful observation of the signs of pig activity will allow an experienced observer to estimate population densities. A beginner, however, may see nothing.

The following is a list of common pig signs that may be used to establish relative numbers and sizes:

Fresh digging or rooting of ground (causing a ploughed appearance) indicates recent pig activity, but area affected gives little indication of numbers as large areas can be dug by a small number of pigs.



Tracks and faeces on and off pads.



(Triggs, 1996)

Faeces size, shape and consistency vary with age and diet, but are typically 3-6cm wide, 7-22cm long and well formed. Close inspection can enable diet to be established.



(Triggs, 1996)

Mud or hair at holes in fences where pigs have pushed through.

Wallows distinctive oval depressions in mud.

Tusk marking and mud rubs on trees and fence posts give an indication of pig size.

Nests in vegetation made by sows should only be approached with caution.

Spotlighting, aerial survey, and use of dogs can be used for actual pig counts.

TRAPPING

There are four basic control techniques trapping, hunting, fencing and poisoning. Each method has benefits and drawbacks.

Trapping is becoming more widely accepted and after careful consideration by the community is one of the integrated techniques being utilised within this trial program.

Advantages of Trapping

- Is the safest form of control, can be safely undertaken on closely human populated areas.
- Is flexible and can be incorporated into routine property activities, making economical use of labour and materials.
- Carcasses can be safely disposed of.
- Traps can be moved and re-used, good trapping makes use of opportunities as they arise.
- Selling trapped pigs can offset cost of traps.
- Does not alter normal pig behaviour so allows greater number of the total population of an area to be removed.
- More humane to pigs and non-target species.

Disadvantages

- Can be time consuming and expensive to construct and maintain.
- Must be checked regularly.
- Not practical for large-scale control.
- Some pigs are trap shy.



Steps to good trapping

The key elements to catching whole groups of pigs at one time and no non-target species in traps are; appropriate trap design, free feeding, suitable locations to put traps, maintenance of the door mechanism and regular inspection once the trap is “set”.

Additional recommendations when trapping:

1. Stop all activities that will disturb normal feeding. For example, do not undertake any shooting or dogging.
2. The trapping site should be in a shady area with as much natural vegetation cover as possible. It should also be close to pig sign. Vehicle access is recommended as carrying large amounts of bait to a trap on foot will soon become a chore.
3. It is best to locate traps in a circuit to make for easy daily checking. This task could possibly be included in other daily duties.
4. Pre-feeding should be carried out at several potential sites prior to trap placement, with the sites showing most pig activity being selected. Once the trap is set up, place fresh bait material outside and inside to keep the pigs feeding, at the site. Once the pigs settle down and are regularly feeding put fresh bait inside the trap only. Undertake feeding within the trap for several nights before it is set. It is important to ensure that all the pigs in a group are going into the trap before it is set.
5. The bait used should initially be whatever pigs are naturally eating. Pigs feeding on one crop (eg. Sugarcane) will often not take to an alternative food (eg. Bananas). However, experimenting with a few different baits can produce good results. Bait should be readily available at low or no cost as large quantities will be required; where banana or other waste fruit are available these can produce good results.

General rules of thumb:

- Use bait with a strong attracting smell
 - Lay large amounts of bait in the trap
 - Continue to place additional bait on top of previous bait.
 - Grain and fruit seem to be the best option.
6. Set the trap every night and check each day. If the trap cannot be checked daily then shade and water must be provided.
 7. Within this project trial:-
 - Only grain or other plants are to be used for bait. No offal or meat based baits are to be used, unless they are contained in a way the feral pigs can't access the material.
 - Bait must be treated in such a way as to prevent bait species propagules from germinating.
 - Monitoring for weeds from bait in the trapping area must be carried out by the stakeholder and controlled if necessary.
 8. Do not be deterred if pigs are hesitant to enter the trap at first, as a little time should overcome this. Some ideas for enticing shy pigs into the trap include:
 - Disturbing the ground inside the trap with a hoe.
 - Using aromatic attractants such as vanilla essence, aniseed, creosote or fish oil.
 - Laying a bait trail from the pad or fresh diggings to the trap.
 9. While pigs are being caught at one site continue to pre-feed at other sites so that the trap can be moved and immediately continue to catch pigs when the first site is exhausted
 10. Keep activity in the area of the trap to an absolute minimum. That is don't leave unnecessary human scent near the trap site by urinating, smoking....
 11. Stop hunting and the use of dogs on the entire property while trapping is in process. Dogging and hunting make pigs nervous and trap-shy.

12. Destroy or remove trapped pigs from the trap as quickly and humanely as possible.
13. Trapping when agricultural feed is in short supply (for example, after the cane harvest) often produces good results.
14. Continue to trap until no more pigs are caught. A change of bait can be tried. Again feed for one or two nights before re-setting the trap.

TRAP DESIGN

There are a lot of trap designs, but all are essentially an enclosed area with one-way gates. The trap can be almost any size or shape and can be built utilising materials on farm. The best material is steel mesh with a grid no greater than 100 x 100 mm. The minimum height needs to be at least 1.5m, although if a roof is used the walls can be shorter.

Traps that are built specifically so they can be easily transported on a standard trailer or ute and dropped on site are called Box traps. Silo (roll of mesh staked in a rough circle) and panel traps (rigid panel sides that lock together) are built onsite.

For silo traps, star pickets need to be placed no more than 1.5m apart and driven far enough to ensure that adult pigs cannot push them over or lift them and the attached mesh walls up out of the ground. In soft or very sandy soil the pickets need to be put in at a 45° angle. For box traps and panel traps a rough guide is one picket for each side of the trap.

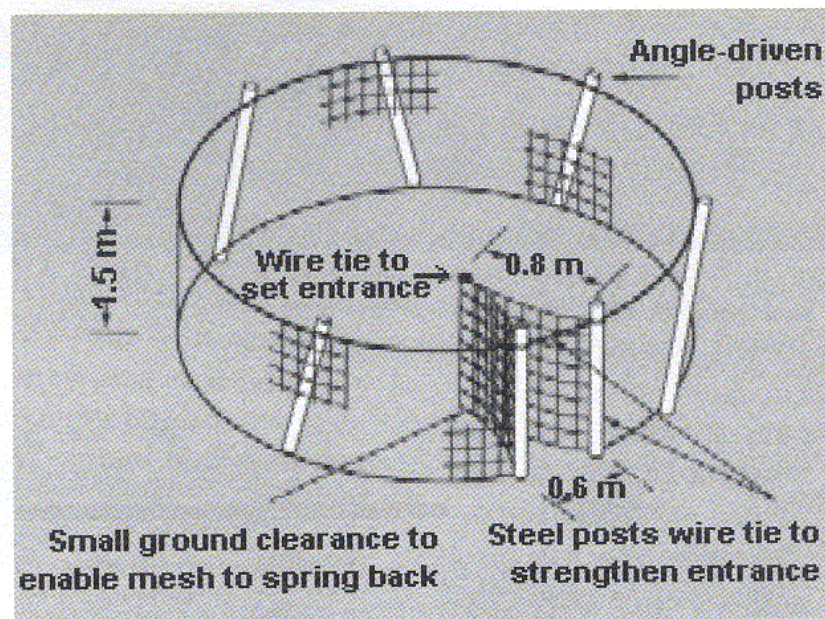
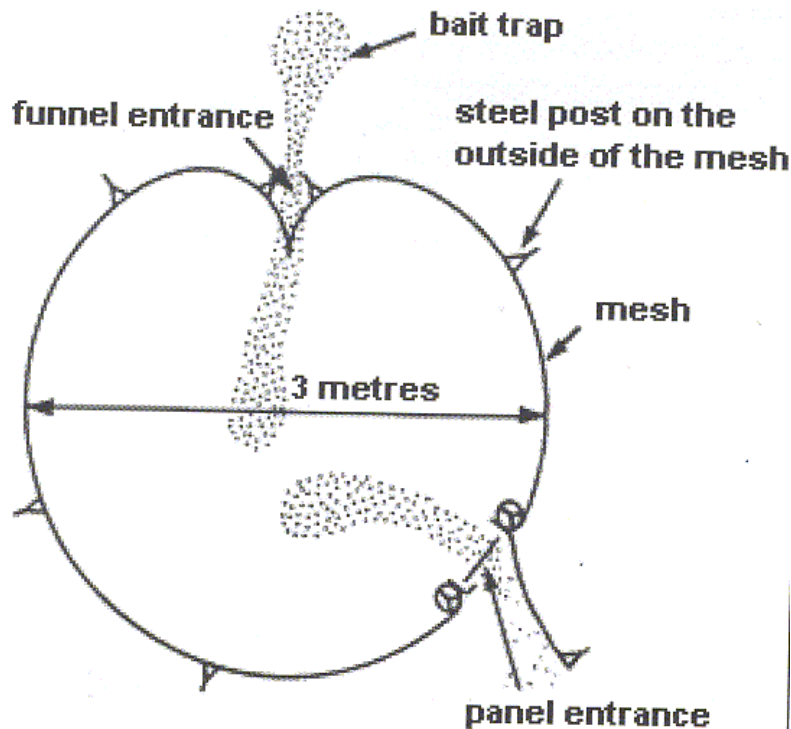


Figure 2 - Silo trap with funnel entrance (14 m of silo mesh diameter about 4.5 m.

Alternative trap entrances

Funnel entrance

Formed by the two ends of the mesh forming a funnel, the ends are tied together at the top with wire or rope. The pig moves through the funnel forcing the bottom of the mesh ends apart and once it is in the trap the ends spring back together.



Tripped gate entrance

A side-hinged gate is pulled shut by springs and is held open by many systems that can be triggered to allow the gate to swing shut. Often trip wires are used, but many other systems have been tried. Most of these systems are not selective for feral pigs and can be triggered by any animal attracted to the bait. Once triggered the trap is no longer effective in trapping pigs.

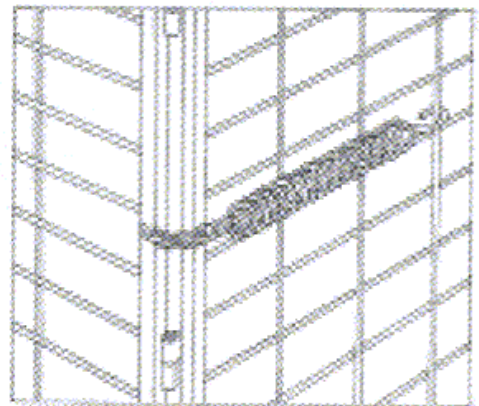
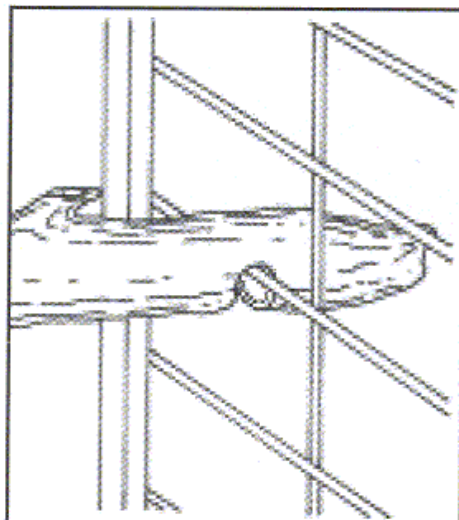
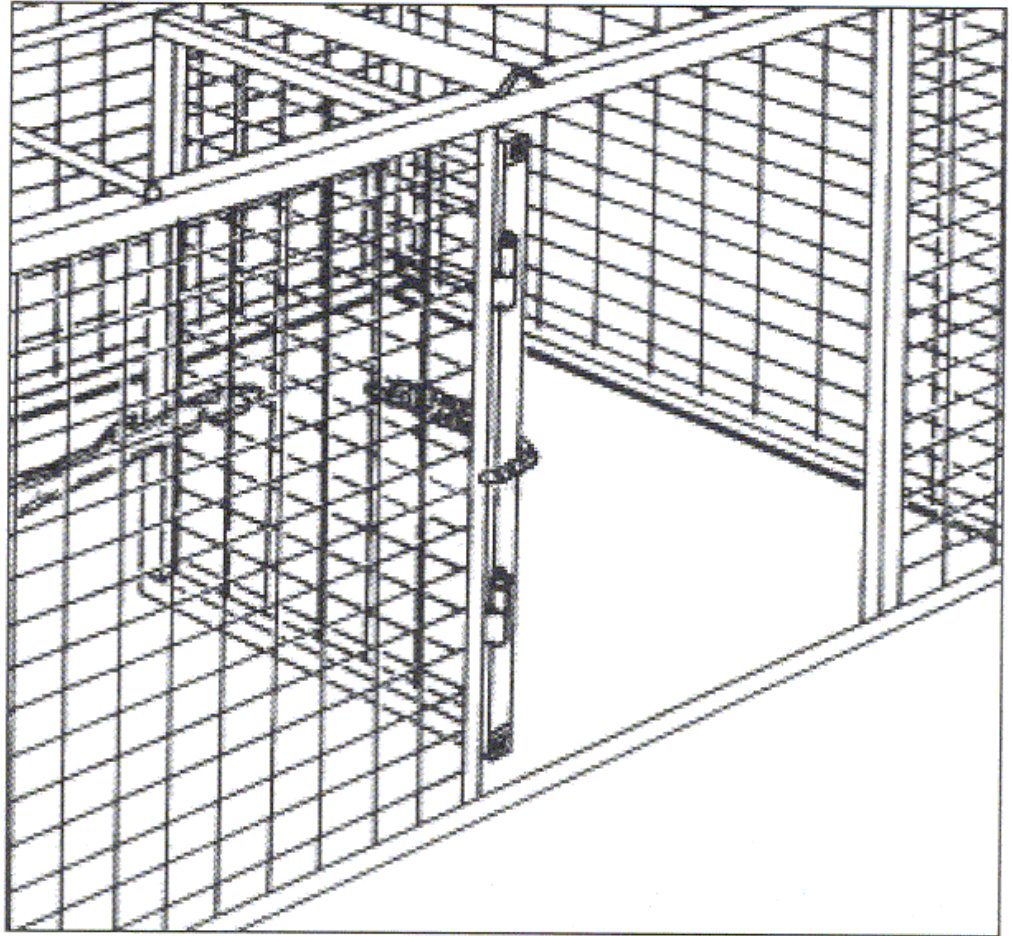
Pig specific trigger

By far the simplest and most effective trigger system has the gate held open by a bar (often a branch or piece of wood), which is hooked over the wire on the gate and on the side panel.

Pigs rooting for feed in the trap lift the bar allowing the gate to swing shut. Ensure the slot on the door end is wide enough and releases freely and the other end of the bar is tied down to the trap wall. When the trap is set the area behind the trigger bar should be no more than 60 cm wide. The bar should be 20-30cm above the ground. The specific feeding habit of pigs insures they are the only animals that life the trigger bar.

The gate may be latched to prevent pigs from opening the door once triggered however this will prevent more pigs pushing their way into join those inside. When trapping a group of pigs with tripped gate or pig specific

triggers, put more bait at the back of the trap then under the trigger. It only takes one pig to set off the trigger.



DATA SHEET

The stakeholder shall return the data sheet monthly during the duration of the trail to the relevant Local Government.

Feral Pig Trapping Monthly Record Sheet

Monthly Record of details of trapping of Feral Pigs in..... Reserve.

Forward to: [Project Officer] PO Box 623 MACKAY QLD 4740 within 7 days of the end of the month.

MONTH:.....

Name of Trapper / Permit Holder:.....Permit No.:

Trap No.:.....

No. of days in the month free baited:..... Bait used:

| | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Date of Trapping | | | | | | | | | | | | | | | | | |
| No. Females | | | | | | | | | | | | | | | | | |
| No. Males | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | |
| Development No. Piglets | | | | | | | | | | | | | | | | | |
| No. Young | | | | | | | | | | | | | | | | | |
| No. Adult | | | | | | | | | | | | | | | | | |
| Estimated Weights of each Pig: (KG's) | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| No. Suckling Piglets: (if sow) | | | | | | | | | | | | | | | | | |
| No. Pregnant Sows: | | | | | | | | | | | | | | | | | |
| Special Features, Abnormalities: TB, Lice etc. | | | | | | | | | | | | | | | | | |
| Other Notes | | | | | | | | | | | | | | | | | |

HUMANE DESTRUCTION

The following information has been obtained from the Australian Model codes of Practice for the Welfare of Animals prepared for the Standing Committee on Agriculture and Resource Management (SCARM). Both the Pigs (1998) and Feral Livestock Animals – Destruction or Capture, Handling and Marketing Codes (1996) have been endorsed as national codes by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

The code of Practice for the Welfare of Animals emphasises that, whatever the form of husbandry, managers and others responsible for the day-to-day needs of pigs have a responsibility to care for animals under their control.

WELFARE PROBLEMS ASSOCIATED WITH CULLING

Culling of animals in management programs should be carried out with due regard for the welfare of the animals involved. Personnel responsible for feral animals control should be aware of their responsibilities to limit the amount of suffering of target animals and avoid suffering of non-target animals. The methods used should involve the lowest level of suffering consistent with effective control. The method of slaughter should be effective and cause a sudden and painless death for the animal. It is important that the animal be handled quietly beforehand to ensure it is not unnecessarily distressed/alarmed.

In practice, a variety of methods may be used with shooting as a humane endpoint. Eg. Trapping using feed or water.

The following methods are unacceptable on animal welfare grounds:-

- Poisoning using unregistered poisons which cause severe and prolonged pain
- Denial of water without provision of alternative sources as a means of killing animals.
- Wounding of animals so that they will die away from the shooting area
- Trapping without prompt destruction or removal of animals.

Shooting within traps, if carried out properly is the most, effective method for humanely destroying pigs.

Shooting of feral animals should only be carried out:-

- ❑ By experienced and conscientious shooters.
- ❑ By personnel who have a current firearms licence and comply in every respect with the provisions of the *Weapons Act 1990*.
- ❑ By using a firearm capable of killing the target animal with a single round.
- ❑ When the animal is cleanly sighted.

The effectiveness of shooting is dependent upon the destruction of major centres at the back of the brain near the spinal cord. A common mistake is to direct the bullet too low, damaging frontal areas. Partial recovery may then occur.

(Australian Agriculture Council, Sub-committee on Animal Welfare, 1996)

SAFETY

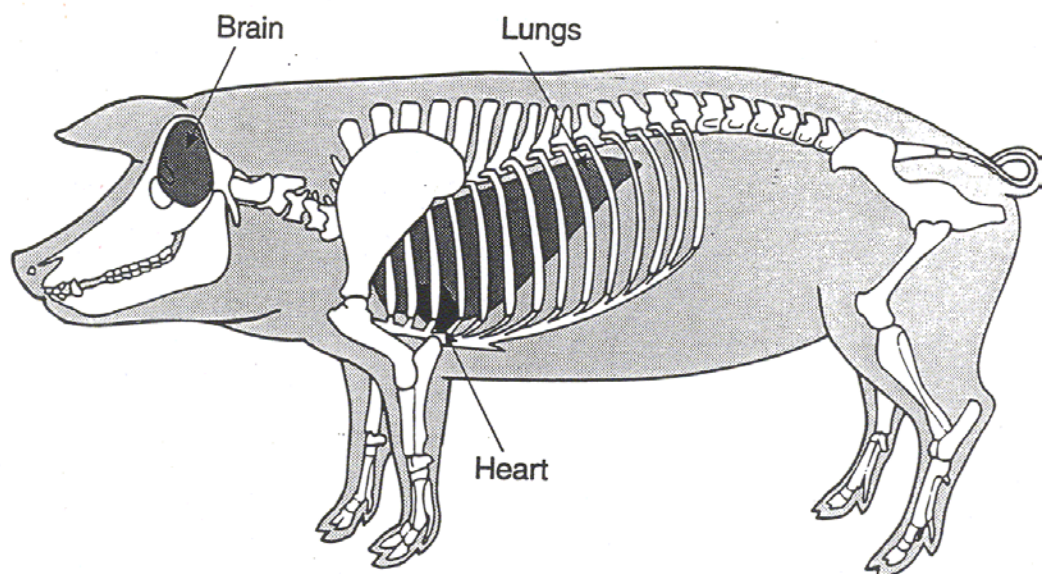
The following aspects of firearms safety should be borne in mind:-

- ❖ For smaller pigs (less than 40 kg) and ground shooting, .243 calibre rifles with 80 or 100 grain soft nose projectiles are suitable. In competent hands smaller calibre rifles such as .222, .223 may be satisfactory.
- ❖ Persons other than the marksman and an animal handler should be cleared from the area or should stand well behind the marksman.
- ❖ Never fire while the animal is moving its head; wait patiently for a quiet interval before firing.
- ❖ To provide maximum impact and the least possibility of misdirection the range should be as short as circumstances permit.
- ❖ While the humane killer pistol and captive-bolt pistols are designed to be pressed firmly on the head prior to being discharged, it is not safe to do this with a standard rifle or pistol.

(Australian Agriculture Council, Sub-committee on Animal Welfare, 1996)

METHODS

Anatomy and aim points for humane destruction of pigs



Temporal method

The pig is shot from the side of the head so that the bullet enters the skull at a point midway between the eyes and the base of the ear on the same side. The bullet should be directed horizontally into the skull. This method is preferred for adult pigs because of the heavier bone structure of the front of the skull.

Frontal method

The firearm should be aimed horizontally into the skull at a point midway across the forehead and (for adult pigs) about 2cm above the level of the eyes.

(Australian Agriculture Council, Sub-committee on Animal Welfare, 1996)

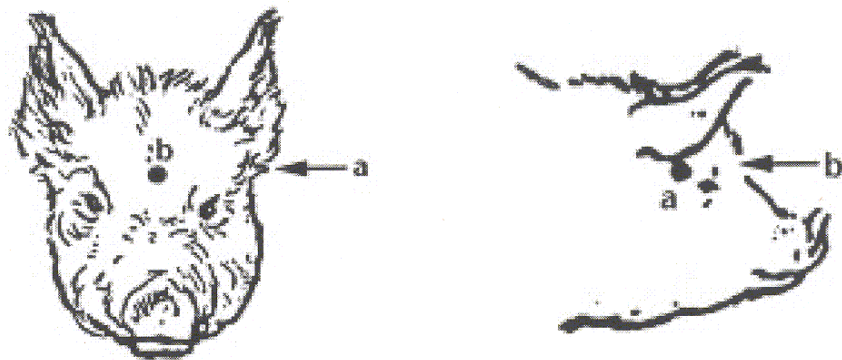


Figure 1: Humane destruction of pigs

'a' indicates recommended position for **temporal method** (Suitable for firearm only).

'b' indicates recommended position for **frontal method** (Suitable for firearm or captive-bolt pistol).

(Australian Agriculture Council, Sub-committee on Animal Welfare, 1996)

Poll method

Aim behind the head at a point midway along a line drawn from the base of each ear.

STUNNING BY CLUBBING

A hammer or other blunt, but heavy object may be used to make a blow to the skull to render unconscious small, easily controlled piglets. The blow should be aimed at the centre of the forehead in the position indicated for shooting in the Frontal method. The unconscious piglet should be immediately bled out to ensure death.

(Australian Agriculture Council, Sub-committee on Animal Welfare, 1996)

EQUIPMENT

- ❑ All equipment to which pigs have access should be designed and maintained so as to avoid both injury and pain.
- ❑ The use of steel-jawed traps, trap pits or other devices likely to cause injury and undue stress are not acceptable.
- ❑ Trap sites within this project must be away from public thoroughfares.
- ❑ The release of any pig after capture is not permitted.

- ❑ Any native wildlife captured is to be immediately released unless the wildlife is injured. Advice must be sought as soon as possible from the Environmental Protection Agency on what action to take in cases of injured native wildlife.
- ❑ Traps are to be placed in areas where ample shade is available throughout the day.
- ❑ Water must be freely available to captured animals
- ❑ Set traps are to be checked daily.
- ❑ When traps are not in use for “free” feeding or trapping either the trap door must be maintained in the open position or the trap must be removed from the permit area.

SAFETY

DISEASES AND PARASITES

Feral pigs are known to carry many diseases that can infect other livestock (not just pigs) and be transmitted to humans.

Those most likely to affect people are:

Sparganosis – a parasite that can infest the muscles of humans.

Leptospirosis – a serious illness, which causes very high temperatures, kidney trouble and jaundice.

Q Fever – this disease occurs in all animals. It can cause very high temperature and result in severe heart problems.

Q Fever and Leptospirosis cause symptoms similar to Ross River Fever, and can be contracted through contact with blood, meat and urine through broken skin, intake of urine contaminated food or water, and inhalation of infection air-borne organisms. Both can be fatal.

Owing to these possibilities it's advisable to avoid excess handling of feral pigs, where possible.

RISK AND INDEMNITY

- The stakeholder will be liable for loss or damage (including injury whether or not resulting in death) suffered by the Agency, its officers, servants or agents, arising from the unlawful or negligent acts or omissions of the stakeholder, its employees, or agents, in the course of conducting (or attempted or purported conducting) of trapping activities.
- The stakeholder releases and indemnifies the participating Federal, State, Local Governments and Industry and its officers, servants and agents from and against all actions whatsoever and howsoever arising which may be brought or made against any of them by any person, including the stakeholder, arising from:
 - a. Any wilful or negligent act or omission of the stakeholder or any person for whose conduct the stakeholder is liable.
 - b. Any unlawful or negligent act or omission of the visitors, invitees or licensees of the stakeholder.

- c. Death, injury, loss or damage suffered by the stakeholder, its employees, or agents, or any of its visitors, invitees or licensees except where the death, injury, loss or damage is caused by the negligence or other wrongful act or omission of the agency, its officers, servants or agents.
- Stakeholders under no circumstances are to enter a trap when live Feral pigs are enclosed within the trap.

References:

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