

Feral Pig

Biology and Control in the Northern Territory

(*Sus scrofa*)

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Feral pigs (*Sus scrofa*) are distributed throughout the Top End of the Northern Territory wherever their basic requirements of water, food and shade are met. They are most numerous on the major flood plains, where densities of six pigs/km² are common. Away from the major flood plains feral pigs are distributed along watercourses and around permanent billabongs where average densities vary between one and three pigs/km². In grain cropping areas, the density of feral pigs is increased permanently in response to an increase in their food supply. In the Top End the density of feral pigs fluctuates seasonally, typically increasing during the wet season and early dry season as food supplies increase, and decreasing during the late dry season as food supply diminishes.

Reproduction

Feral pigs are opportunistic breeders, capable of breeding year round if conditions are favourable. With a gestation period of 113 days, feral sows are capable of producing two litters per year, averaging seven piglets per litter, if conditions are favourable. However the average is 1.1 litters per year. Sows whose protein intake drops below critical levels cease to lactate and this may result in high piglet mortality, particularly during severe late dry season periods.



Movements and habitat use

Feral pigs tend to be sedentary, restricting their movements to a defined home-range. Daily home-ranges tend to be small, averaging around 1.0 km². Yearly home-ranges are larger, averaging 31 km² for feral boars and 19 km² for feral sows in the Douglas Daly district. Large dominant boars may have home ranges larger than 50 km². Feral pigs show little tendency to disperse over long distances. The longest recorded movement of a feral boar in a four year study of pig movements in the Douglas Daly district was 22 km from its initial point of capture over a period of three years. The longest recorded movement of a feral sow was 8 km from its initial point of capture. However, 95% of boars and sows were recaptured within 15 km and 6 km, respectively, from their initial point of capture.

PROBLEMS ASSOCIATED WITH FERAL PIGS

Parasites and Diseases

Feral pigs are potential hosts of a number of parasites which could be detrimental to human health. In particular, they are recorded as being a host of leptospirosis (*Leptospira* spp.) and sparganosis (*Spirometra erinacei*), the latter tending to be more prevalent in pigs inhabiting the wetter swamp areas. Feral pigs may also be early infected with the diseases melioidosis (*Pseudomonas pseudomallei*) and swine brucellosis (*Brucella suis*). Infections of game meat workers with brucellosis and leptospirosis are well documented in Queensland. Hunters and game meat operators should observe good hygienic practices when dressing and handling feral pigs. Field-caught pork should be well cooked before it is eaten. Pigs in the Northern Territory may have many helminth parasites including lungworm (*Metastrongylus* spp.), stomach worm (*Physocephalus sexulatus*, *Hysotrongylus rubidus*), thorny-headed worm (*Macracanthorhynchus hirudinaceus*) and the kidney worm (*Stephanurus dentatus*). They are also an end host of bovine tuberculosis (*Mycobacterium bovis*) with the occurrence of T.B. in feral pigs closely linked to the presence of T.B. infected stock (cattle, buffalo). The removal of T.B. infected stock has resulted in the incidence of *M. bovis* infections in feral pigs declining to virtually zero.

Environmental impact

The environmental impact of feral pigs is largely unquantified, although damage is presumed to be heavy. Whether feral pigs are causing the demise of native animal and plant species is unknown. Feral pigs have been implicated along with buffalo, cattle and fire as causing the decline of the rare palm *Ptychosperma bleeseri* which occurs in the Darwin Koolpinyah area. A program of fencing jungles to exclude pigs and stock and to help control fire is being implemented.

Areas where pigs have rooted up the soil are more susceptible than undisturbed soil to invasion by weeds. Although the role of pigs in spreading weeds has not been fully elucidated, some ingested seeds survive passage through the gut and others could be carried on the body or feet.

Crop damage

Nationally, pigs are estimated to cause \$70 million of damage to the Australian agricultural sector annually. In the Northern Territory, crop damage at Tortilla Flats and Katherine has been low to moderate whilst that in the Douglas Daly district has been moderate to severe, ranging from 23 to 110 tonnes of maize destroyed out of a 100 hectare crop. In maize crops at Douglas Daly between 7% and 30% of grain has been destroyed and damage can exceed 200 dollars per adult pig per season. Damage is highest when the crop is adjacent to suitable shade cover and water while crops greater than 10 kilometres from suitable cover rarely suffer significant damage.

Threat of exotic disease

The potential of feral pigs to act as reservoirs of exotic diseases such as swine vesicular disease, rinderpest, African swine fever and classical swine fever (hog cholera) and in particular, foot-and-mouth disease is of concern to Australian livestock industries and animal health authorities. Our close proximity to Asia, where foot and mouth is endemic in some areas such as Thailand and Burma, and the possibility of foreign boats landing without undergoing quarantine measures, makes the Top End a potential site for an outbreak of foot-and-mouth disease. It has been estimated that such an outbreak would cost Australia \$3 billion. In the

event of an outbreak occurring, eradication of the disease would be achieved by reducing pig density to low levels and maintaining it there.

TECHNIQUES FOR CONTROLLING FERAL PIGS

Feral pigs can be controlled by a variety of means, including ground shooting (with and without dogs), helicopter shooting, poisoning, trapping and constructing exclusion fencing. The effectiveness and cost of the various methods varies with the habitat the pigs are utilising and their densities.

Aims of feral pig control

The primary aim of controlling feral pigs should be to reduce their damage in a cost effective manner. The effectiveness of control operations should be determined by the reduction in the level of pig damage, and not on the number of pigs killed. The underlying strategy of ongoing control is to reduce pig numbers and keep them low. Feral pigs can double their population in one year, hence annual control operations need to achieve a rapid reduction of about 70% to suppress the population for one year.

Trapping

Trapping can be an effective way to reduce numbers of feral pigs where they are at low to moderate densities. Traps designed specifically for pigs pose little danger to wildlife or stock and can be used when poisoning or shooting are not feasible. Pig trapping is time consuming and is best suited to situations where the operator can visit traps daily, and has good access to areas where pigs are present.

There are two basic types of traps, silo traps and panel traps (see diagrams) with silo traps cheaper (\$250 approx.) and easier to build than panel traps (\$350 approx.). Variations on the two basic designs can be used, the only requirement being that pigs can enter relatively easily and cannot escape. Traps should be at least 1.5 metres high to minimise the number of pigs that jump out.

Types of trap

Silo traps - Silo traps are constructed from a piece of weldmesh (10-14 metres long and at least 1.5 metres high) formed into a heart shape or figure 6 configuration, the latter being simpler and equally effective. Traps should be held down with at least eight star pickets. Pigs enter the trap by pushing through the spear (funnel) which closes behind them. Using a smaller but more expensive mesh size (50 x 50 mm) prevents pigs from lifting the traps with their snouts and escaping underneath.

Panel traps - Panel traps are square traps usually made of prefabricated steel mesh panels. They have side-hinged or top-hinged gates operated by trip devices, with a roof necessary if height is less than 1.5 m. Gates should be placed in the corner of panel traps to prevent pigs leaving as others are entering and be constructed of 50 x 50 mm weldmesh or smaller to prevent pigs pulling the door open with their teeth.

Locating trap sites

Selecting the correct trap site is important for success in trapping. Likely trap sites can be found by investigating areas that feral pigs are likely to frequent such as around permanent water and in dense cover along creek lines. Fresh tracks, wallows, faeces and formed pads are sure signs that pigs are frequenting an area. Pigs are more likely to enter traps which are in cover

compared to those that are in the open. Setting traps on pads away from cover can be successful, but it is better to follow the pad back to a sheltered area and construct a trap there.

The selection of trapsites can be aided by placing small piles of bait (e.g. 3-10 kg of grain) at likely locations and checking daily, if possible. If pigs eat the bait or it goes stale it should be replaced. If pigs start to eat bait regularly at a location, a trap should be built there. Traps should be built in the shade to prevent pigs from suffering from heat exhaustion or digging out.

Free-feeding

An important component of trapping pigs is to get the pigs accustomed to the trap, particularly walking through the gate of the trap. This is accomplished by tying the trap door open and running a trail of bait into the trap to encourage pigs to enter. If pigs eat some or all of the bait it should be replaced daily, if possible. Once pigs are readily walking right into the trap and are feeding on the bait, the trap should be set. Free-feeding is usually required for about one week.

Operators should avoid checking or constructing traps in the early morning and late evening to avoid scaring pigs away from the trapsite. Shooting and hunting activities should also be curtailed whilst trying to lure pigs into a trap.

Setting

When a trap is set, the operator should still run a light bait trail outside the trap from about one metre from the gate. The majority of bait should be placed far enough inside to ensure that pigs walk entirely through the door to feed on it.

If pigs are caught they can be shot in the trap and left there as bait, shot and removed or removed and shot elsewhere. It has been suggested that pigs will shy away from entering a trap containing pig carcasses or pig blood. If in doubt, remove carcasses, dump them elsewhere but check in case pigs start feeding on them. In this case a trap should be constructed around them. A .22 calibre rifle is ideal for shooting pigs in traps. Larger calibres are more expensive and may scare other pigs from coming near traps.

If pigs start eating the bait only to the entrance of the trap, free-feeding should be repeated until these pigs are readily entering the trap which should then be set. Once fresh signs of pigs around a trap are no longer seen, it can be moved to a new site or left pending the arrival of more pigs.

Bait

Baits which are attractive to feral pigs include grain, manufactured pig pellets, fruit, vegetables and meat or carrion. Grain should be fermented by soaking it in water for at least 24 hours prior to use. Animal carcasses are very effective in attracting feral pigs to an area, especially if dragged to a likely location.

When to trap

During the wet season there is abundant alternative food and water, pigs are scattered and access is difficult causing trapping to be ineffective. The effectiveness of traps steadily increases as the dry season progresses, with trapping being most effective during the late dry season. There is a risk, however, of early wet season rains causing pigs to disperse if trapping is left too late. The cost of trapping pigs in the Douglas Daly district was \$72 per pig during the early dry season and \$20 per pig during the late dry season.

Shooting from the ground

Ground shooting can be effective where pig populations are low and the vegetation is open with few watering points and dense cover. Carrying a firearm at all times increases the chances of ground control being effective. Using hunting dogs dramatically increases the effectiveness of shooting when there is dense cover for pigs. Unfortunately, rarely are all the pigs in a group killed, and surviving pigs tend to become wary and hence difficult to shoot from the ground or a vehicle.

Ground shooting, particularly with the aid of dogs can be a useful technique to "follow up" other control techniques. It should not be employed as the primary method of control if pig numbers are high.

Shooting from a helicopter

Shooting from a helicopter is potentially a rapid, cheap and effective method of reducing feral pig numbers over large areas such as open flood plains with minimal dense cover. To maximise its cost-effectiveness, shooting should be confined to the first two hours after sunrise, and the last two hours before sunset when pigs are moving about and are away from cover. The best weapons to use are semi automatic rifles in .308 calibre or pump action shotguns loaded with solids for large pigs or SG's for small to medium sized pigs.

On flood plain habitats, the optimal period to shoot feral pigs from a helicopter is during the middle of the dry season as pigs can be caught out away from dense paperbark swamps and monsoon forest patches following the receding water. In the late dry season, pigs tend to confine their activities to dense areas of paperbark and monsoon forest for most of the time.

Shooting from a helicopter should be the chosen method of feral pig control if the density of pigs is high and the vegetation is open. In areas with dense cover such as heavily vegetated creek lines, dense paperbark or monsoon vine forests, shooting from a helicopter is not a good method of controlling feral pigs and should not be employed. Where pigs are inhabiting swamp or marsh country shooting from a helicopter may be the only effective form of control other than exclusion fencing.

Animal Welfare

It must not be forgotten that a pig may suffer pain and discomfort as may any other animal. Destruction of pigs must be done as humanely as possible. Traps that are exposed should be cleared before the heat of the day and all traps should be inspected at least once a day. Shooting, particularly from a vehicle or helicopter, should only be done by a skilled shooter; a shot should only be taken when the chance of a kill is high and wounded animals should be killed wherever possible. Poisoning may only be performed with the prescribed poison.

Exclusion Fencing

Exclusion fencing is the simplest and in the case of high value agricultural crops, the most cost-effective method of reducing damage by feral pigs. For it to be effective, fencing must be accompanied by diligent surveillance and maintenance, particularly if pigs have become accustomed to feeding in a particular crop.

A pig-proof fence consists of pig netting and two electric outrigger wires as shown (see diagram). Both outrigger wires should be pulsed and suitable earths attached every five hundred metres. The energiser used should be rated at 8,000 -10,000 volts. Pickets should be no further than 10 metres apart and closer if the terrain is rough.

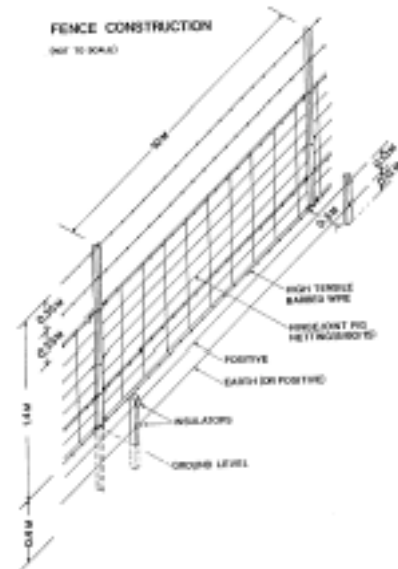
Fences should be constructed prior to planting so as to lessen the number of pigs which become accustomed to feeding in the paddock. The most effective and quickest way to remove pigs which have breached the fence and are camping within the crop is to use dogs to flush them from the crop. The cost of fencing excluding labour and clearing costs is approximately \$2100 per kilometre. It is recommended as the most cost-effective method of reducing crop damage caused by pigs when damage levels are high.

What to do if you are suffering crop damage from feral pigs

The first and most important step when deciding what to do regarding feral pig damage is to obtain accurate estimates of the extent of the damage and convert that to a cost. Once the yearly damage bill attributable to pigs is known, control options can be decided on. The option which should be considered first is exclusion fencing. The economics of exclusion fencing are easily calculated based on the perimeter length of the paddock or crop to be protected. If damage is occurring over wide areas, exclusion fencing may not be economical and alternatives should be investigated.

Feral pigs do not observe property boundaries and the pigs that are on your property at any one time may be only a proportion of those which utilise it over the course of the year. Therefore, control operations should be co-ordinated with adjoining landholders to maximise their effectiveness.

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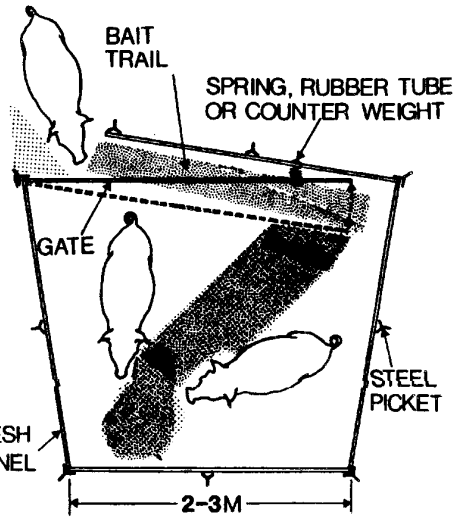
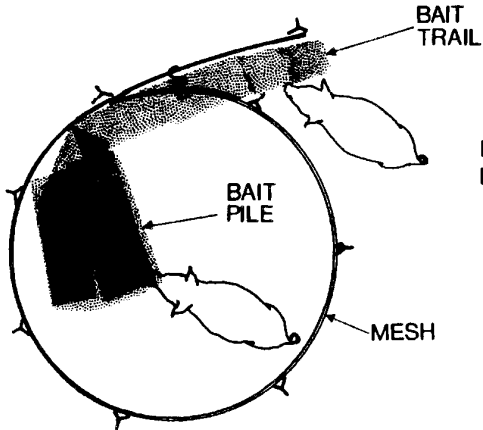
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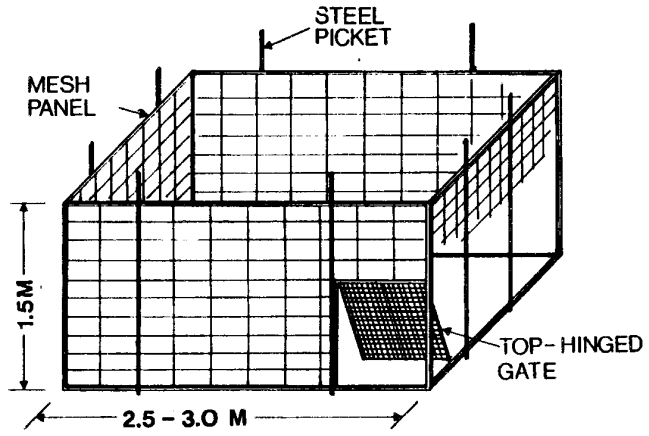
TRAP CONSTRUCTION

(DIMENSIONS GIVEN ARE GUIDES ONLY)

SILO TRAP IN FIGURE 6 CONFIGURATION



PANEL TRAP WITH SIDE-HINGED DOOR (ABOVE) AND TOP-HINGED DOOR (BELOW)



TOP-HINGED GATE

