

A Ranger's Handbook

Exclusion and Spit Fencing

Managing Feral Pigs for Biodiversity Conservation in Cape York



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Cape York Development Corporation P/L



This series of handbooks helps you choose suitable methods for the control of feral pigs and the monitoring of their impacts on biodiversity in your region. The techniques it describes have been used on Cape York Peninsula, Australia, but the ideas can be applied in similar environments in other regions.

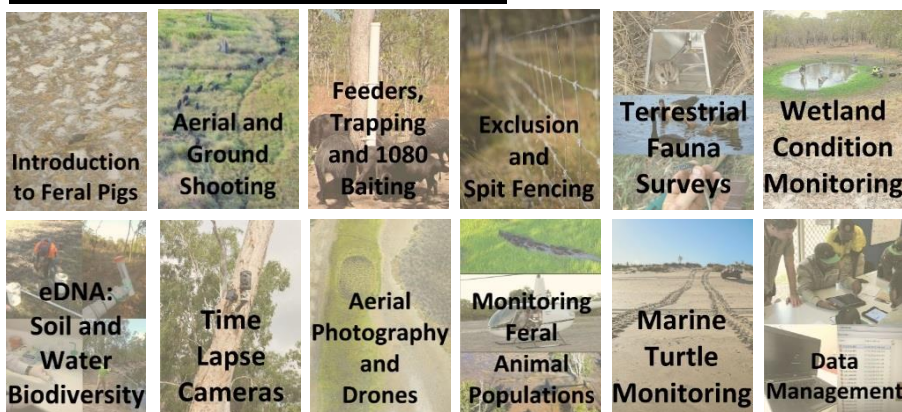
To choose what will work best in your area, it is important to understand the techniques that are available and their limitations. These handbooks provide a brief overview of the available options.

There are multiple techniques for both control and monitoring. Often the best approach for successful control is a combination of techniques (as opposed to just one). Knowing what impacts you want to monitor will drive your decision for a monitoring technique.

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Handbooks in this series:



Exclusion Fencing



Background

Exclusion fencing is a rare example of (a type of) control and monitoring combined in one method. It is a very effective method of protecting selected areas and is one of the methods used for '**asset protection**'. Exclusion fencing prevents certain animals from accessing a particular site. It may come in several forms, but for the purpose of this handbook we describe two types of exclusion:

1. Horse and cattle exclusion – large, hooved animals
 - 3-4 strand barb wire
2. Pig exclusion – also excludes the above
 - Griplock wire netting.

Below we also describe two different types of pig exclusion fencing; paired lagoon fencing and spit fencing.

Purpose

Exclusion fencing is designed to exclude animals from a selected area. This benefits the area that is protected by removing the pressures exerted by the animals that are excluded, e.g. by excluding feral pigs, the area within is now protected from digging or predation.

Prerequisites

- Suitable sites to protect (lagoons, turtle nesting beaches)
- Large amount of funding for material purchase (up to \$7,000/km)
- Time and fencing knowledge to construct fences
 - Pig exclusion fences take much longer to construct than cattle fences

Planning and Site Selection

It is critical to think 'why do we want to protect site x' and 'what will we achieve by fencing site x'. Fencing is expensive and permanent, therefore, the choice to change sites is a very costly decision if a site is incorrectly chosen. Time should be spent talking to TOs, rangers, scientists and other specialists in deciding which sites to fence.

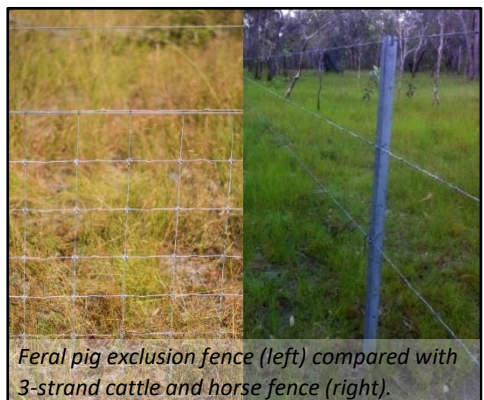
Sites should ideally be:

- Important culturally or environmentally
- Severely impacted by pigs
- Will show a good response to the removal of pigs and, therefore, be good for monitoring
- Are naturally occurring sites (e.g. a natural lagoon, compared to a man-made dam).

Spend some time planning which sites are most important to fence. Once a fence is installed, they are hard to move!

Method

We describe two different methods for exclusion fencing below. Each of these methods can employ either wire netting or 3-strand wire, excluding different types and sizes of animals. The first type of exclusion fencing is paired lagoon fencing, which protects lagoons from the impacts of pigs and other animals. This method also provides a pig-free area for monitoring. The second type of exclusion fencing is spit fencing, which is designed to prevent access by pigs and wild dogs to large areas of important marine turtle nesting habitat.



Lagoon Fencing



Two images taken a year apart, before (top) and after (bottom) a pig exclusion fence was erected



The fencing of lagoons is one of the most certain ways to protect a site (asset protection). The above photo shows a lagoon on the same date a year apart; before and after pig fencing was erected. The effect of pigs can be entirely removed, allowing the lagoon to return to a state similar to what it was once in. If a similar site is selected nearby and fenced with only cattle fencing, you can compare the effects of just pigs on a lagoon. This is termed 'paired lagoon fencing'. With one lagoon excluding cattle and horses but allowing pigs, and the other lagoon excluding all three, the effect of pig presence or absence solely can be seen. With good monitoring programs this can be measured. If your control program is working well, both lagoons should look equally healthy, as the site that allows pig access (but all pigs have been controlled) should look like

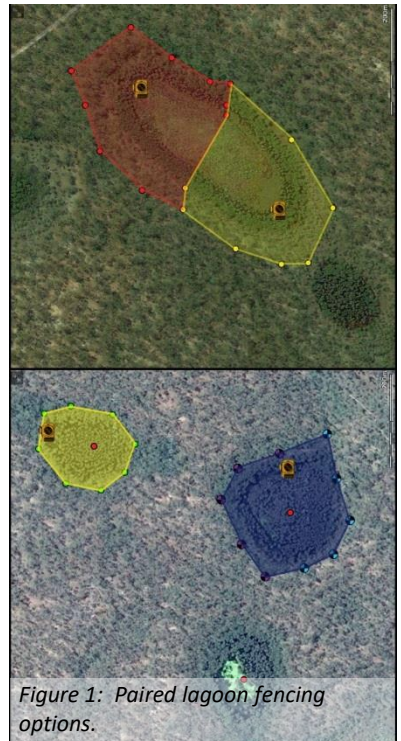


Figure 1: Paired lagoon fencing options.

the site that entirely excludes pigs with a fence. There are options to select two separate lagoons that are similar as a pair; or to select one larger lagoon and divide it in the middle (see Figures 1 and 2).

Exclusion fencing installation is a timely process. First the lagoons need to be selected and the proposed fence lines mapped and marked out on the ground with flagging tape (flagged). Trees or commercial steel posts can be used as strainer posts. If trees are used, appropriate measures should be taken so the fencing does not kill the tree. Strainer posts should be around 100 m apart, where possible, with 165 cm, galvanized star pickets spaced 5 m apart for wire netting, or 10 m apart for 3-4 strand barb wire. For 3-4 strand barb wire, the wires are spaced evenly apart, so that adults and juveniles can be excluded. For the wire netting exclusion, a barb wire is placed at ground level to deter pigs from digging underneath, another barb wire at 20 cm high, a plain wire at the top of the mesh wire (90 cm high), and a plain wire placed on top of the star pickets. This is so any animals jumping over the fence do not become entangled. Once complete, fencing should be inspected every few months to check for breaks or fallen trees.

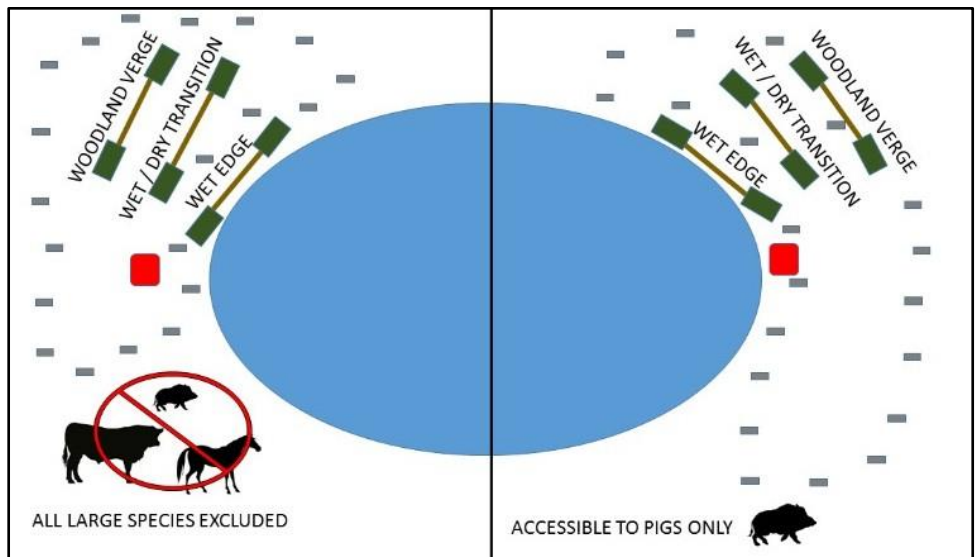


Figure 2: In cases where similar nearby lagoons are not available or suitable for ‘paired lagoon fencing’, a single lagoon can be split into two to compare the effects of pig exclusion. This diagram shows which animals have access and some terrestrial fauna survey plots (green), Elliott traps (grey) and cage traps (red).

Spit Fencing



APN Cape York ranger staff and the completed spit fence (one of two), protecting 10 km of turtle nesting habitat from potential pig predation. The fence is mostly wire (as in the exclusion fencing section) but has netting on the beach.

Spit fencing is a modified version of exclusion fencing, designed to exclude pigs from beaches and prevent turtle nest predation. The system is designed to protect a large length of beach, using only a small proportion of the length in materials. A system erected by APN rangers south of Aurukun protected 19 km of important turtle nesting coastline, using only 2.5 km of fencing material.

The prerequisite is having an estuary or river system that runs parallel to the coastline, so that only a small amount of fencing material to close the gap between the estuary and the ocean is needed (see Figure 3). The same wire netting fence and methods used in lagoon fencing are used to fence across the terrain up until it reaches the beach. At the beach end a special net is used which runs down to the waterline and a specially made set of marine pilings in the water. This prevents pigs from moving around the fence on the beach. Trail cameras or bait stations may be setup near the fence to detect or remove any problem animals that may attempt to breach the fence.

This method is a permanent method of preventing the never-ending predation of turtle nests by feral pigs. The method requires any pigs (and/or dogs) within the zones to be culled, and then nest predation should be reduced close to 0%. This provides long term outcomes as opposed to short term fixes provided by aerial shooting.

The materials selected need to be of an engineered standard appropriate to the site to achieve long-term durable outcomes. Suitable pilings, particularly in remote areas, may introduce a high cost that needs to be formally estimated at the start of the project planning.

The fence must be inspected regularly for breaks and fallen trees and the sand near the beach nets should be checked regularly for pig or wild dog tracks.



Figure 3: A large area of nesting beach and dune scrub (yellow) is protected by a 500 m 'spit fence' (red) south of Aurukun.



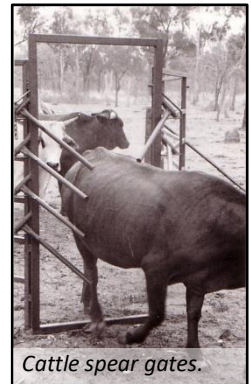
The marine piling installation holding the netting at the end of the spit fence.

Wetland Exclusion Mega-Traps



Background

Wetland exclusion mega-trapping is a new theoretical control method that is as-yet not field tested. It combines the methods of conventional trapping with exclusion fencing, to create enormous 'wetland exclusion mega-traps'. The system is based on the same method as the traps used for cattle mustering, whereby stockmen use watering points to lure cattle in before a muster, and by using one way spear gates, the cattle cannot escape. A site is selected where there is permanent water which attracts pigs all year. It is then fenced with one-way gates installed, keeping pigs within the zone where they can be easily culled.



Cattle spear gates.

Purpose

This method is designed to reduce the effort needed to trap, remove the need for aerial shooting, and provide a type of work that is ranger-based, as opposed to contractor-based. It brings pigs to you, as opposed to having to find the pigs. This method has the ability to exclude pigs from a site entirely, or use it as a large trap. As pigs will have water, food and shelter within the fenced area, longer intervals between checking the trap are allowed, making this method suitable for remote locations.

Prerequisites

- A permanent, year-round wetland
- Information if pigs come to the site all year round

- Pig distribution mapping (from aerial shoots) in different seasons is helpful
- Large amount of funding for fencing materials, construction and ongoing maintenance.

Planning and Site Selection

Choosing the right site is important here because:

- The fence cannot be relocated
- A fence placed in the wrong place will be ineffective.

Having good planning and information to draw from is helpful. If previous aerial shoots have been conducted in the area, then having the culled pigs mapped to find out their distribution in different seasons will help select a site. An ideal site would be a lagoon that is permanent (year round water) and has pigs coming to it regularly in all seasons (see Figure 4).

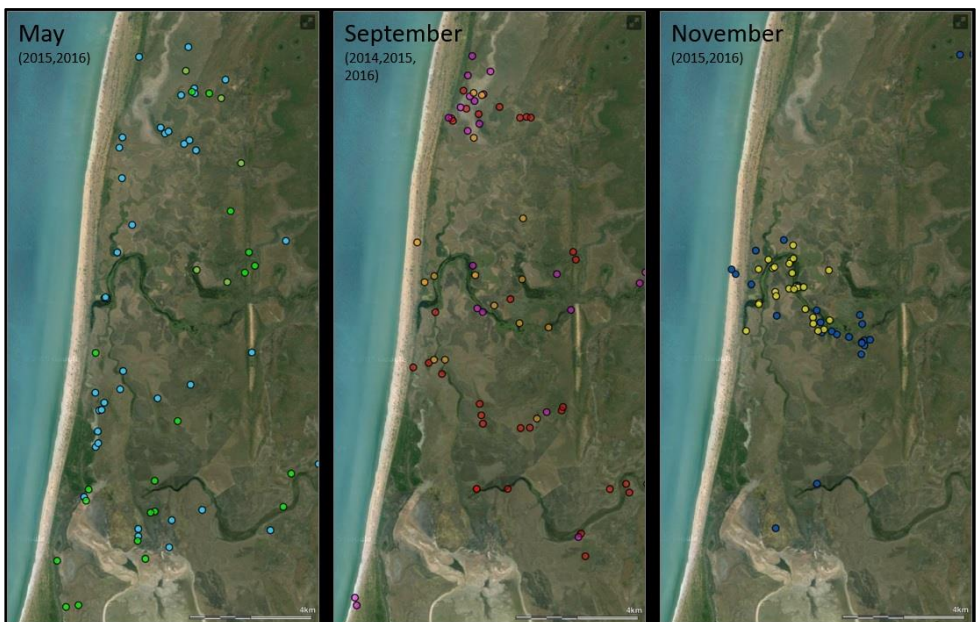


Figure 4: A permanent lagoon which pigs frequent all year round. Notice how in the later seasons pigs are only at this site. Different colours represent different years for culling events.

Method

Once a suitable site is selected, it will need to be mapped, flagged and cleared ready for construction. The fencing is the same method as used in the paired lagoons (pig version), with the inclusion of one-way gates for pigs that will make it into a large trap. Several one-way gates will be installed in the fence; ideally two or more, especially in areas that have existing pig pads (frequent tracks) (see Figure 5). Periodic (weekly) checking is recommended at a minimum to decrease the stress on



Figure 5: An example of the fence (dotted red line), gates (pink) and potential pathways of pigs (green) at the site shown on the previous page in

animals, damage to the fence and damage to the site that is being protected. During the wet seasons when access is cut or pigs aren't visiting the site in high numbers, the gates can be locked to protect the site entirely.

Do Nothing

While the above are all very viable and practical options, at times **doing nothing** is also an option. In scenarios when feral pigs are at low density and causing little damage, it may be most practical and cost-efficient to choose this option. It may also be the option when density and damage is so high, but your resources are so low that it would cost far too much to gain any significant benefit or noticeable difference.

One of the first questions when selecting a control method should be; what are the benefits of controlling? The second should be; what are the costs? If your area would not benefit from pig control, and the cost of attempting control would be too high to be cost-efficient, then doing nothing is a sensible option. If your area would benefit from pig control but the cost of attempting control is currently too high, then start planning for the desired outcome and seek additional funding opportunities.

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