A Ranger's Handbook

Time Lapse Cameras

Managing Feral Pigs for Biodiversity Conservation in Cape York

Balkanu

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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Time Lapse Cameras

Background

Understanding how various habitat types respond to a chosen management method such as fencing, aerial shooting or trapping, requires an understanding of what the areas looked like before control occurred. Considering how an area responds to other major changes in the environment, such as above or below average rainfall, is also necessary. Time lapse cameras can be used effectively to monitor activity and changes in wetland health over time.

Trail cameras can be set to detect motion and take images (infrared/motion sensing) or take images continuously at specified times e.g. 6, 7, 8 and 9 am every day (time lapse).

Purpose

Time lapse photography offers a permanent and consistent record of change that extends the ability of traditional photo point survey methods. It is an objective way of assessing ecosystem change over time.

Prerequisites

- Appropriate cameras
- Knowledge or ability to learn how to program the cameras
- Dedication to camera maintenance and data management.

Limitations

Fixed time lapse cameras do not replace traditional monitoring methods. The method is limited to recording changes within the field of view of the camera.

Some key limitations of time lapse cameras are:

- Fringing vegetation can mask broader impacts
- Natural vegetation can block the view of the water, so water quality observations may be variable within or between sites (depending on structure).

Method

In the context of feral pig impact monitoring time lapse cameras can be used for recording:

- Timing of pig damage
- Changes to vegetation structure across years and months
- Extent of feral pig/cattle damage
- Water depth
- Water bird presence, species and abundance.

CCTV camera mounts are great for time lapse cameras, available cheaply at Jaycar. The camera can be mounted on the front swivel plate and tech screws used to fix the base to a tree.

Planning

It is important that careful planning occurs before any field work takes place. Things to consider, for example, include what areas/sites should be monitored and why? What equipment is needed to be able to complete the task and what preparations need to be done with the equipment prior to installation? Select a site that is representative of the change you want to monitor. To monitor the effects of control activities on wetland health, for example, you would ideally select a natural lagoon with evidence of pig presence.

Site Selection

To adequately measure impact, it is important to place enough cameras in the environment to sample the different habitat types. This involves:

- Selecting sites that reflect different wetland types
- Selecting sites that are currently impacted by pest species
- If possible exclude feral pigs from some areas, to provide images of sites where pigs are not causing damage.

Equipment List

Camera and GPS
Memory card (preferably two for interchange)
Camera batteries
CCTV camera mount
Camera protection
Fixings (e.g. tech screws)
Flagging tape
Tools (cordless drill with appropriate drill bits and fittings + spare battery)
Ladder, saw, clipper, axe (potentially used as part of installation)
Cotton buds for lens cleaning

Equipment Required

The type of camera that is used will impact the amount of time needed to be spent on maintenance (servicing of cameras in the field, downloading images, changing batteries and lifespan of the unit). Shown below are current examples.

			
Make	Reconyx	Browning	Acorn
Model	PC-850 Hyperfire WF	Spec OPS	Ltl 5210A
Memory Card	SD/SDHC	SD/SDHC	SD
Battery capacity	12 x AA	8 x AA	8 x AA
IR (Infrared)	No	Black Flash No Glow	Yes
Flash	Yes	Yes	Yes
Image resolution	3.1MP	Up to 20MP	Up to 12MP
Robustness	***	***	*
User friendly	***	**	*
Price	$$$ (850AUD)	$$ (325AUD)	$ (150AUD)
Most suitable	**	***	*

From this sample, the Browning Spec OPS provides adequate quality, robustness and ease of use at a good price.

Installation

What Picture Do You Want To Take?

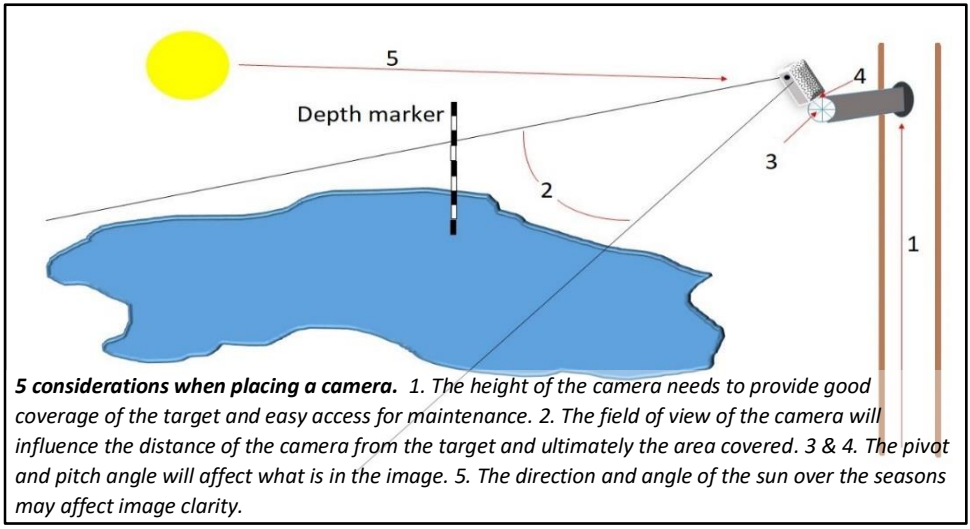
First, make sure you know what you want to include in the image and how you want to frame it. For example, is it to monitor the change over time in a whole lagoon or just a certain part of a lagoon, such as the edge of it?

Choosing Your Tree

Make sure the view in front of the camera is free from branches, bushes and grass that will obstruct the image. You want a completely clear view of the object in study. Use a ladder and saw to remove any foliage in the field of view.

Locating Your Camera

To make sure everyone in the team knows where the camera is located, it is important to record information after installation. For each camera come up with a unique name, record the GPS location of the camera, take a photo of the location and the tree and ideally print maps that show the camera locations and a description of where each camera is.



5 considerations when placing a camera. *1. The height of the camera needs to provide good coverage of the target and easy access for maintenance. 2. The field of view of the camera will influence the distance of the camera from the target and ultimately the area covered. 3 & 4. The pivot and pitch angle will affect what is in the image. 5. The direction and angle of the sun over the seasons may affect image clarity.*

Maintenance and data collection management

A regular schedule is required to make sure cameras are working, pointing in the right direction and have adequate batteries to last the wet season, when access is

limited. Ideally, cameras are checked monthly to clear vegetation growth, check the batteries, check the memory card and download photos to a laptop. If batteries need to be replaced, be sure to check the settings are correct afterwards.

Critical Checks

Directly before and after the wet season batteries and memory cards need to be changed and the camera settings need to be checked.

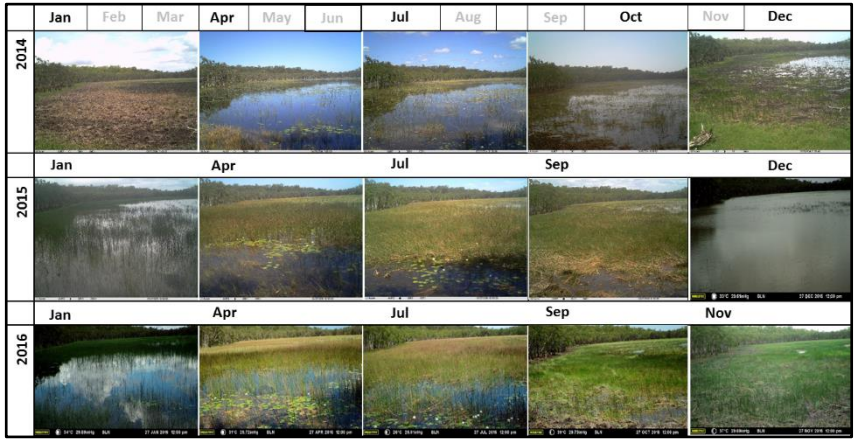
Checking schedule (1st week in each month)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

☐ Wet season. Check when accessible. ☐ Routine monthly checks ☐ Critical checks

Data management and outputs

Managing the photographs from each camera requires a logical filing system on your computer that allows rangers to put the photos in separate folders that reflect the site names. If possible keeping back-ups of the photos on a computer in a secure location is advised.

Photos can be used in reporting by choosing several dates that generally reflect the average seasons and laying out the images on a time line to demonstrate changes. This can be a powerful way to show annual changes (both natural and through feral pig impact). See the 'Data Management' handbook for more information.



Acknowledgements

This handbook was only made possible by the groups we worked with in the life of the original Biodiversity Fund project and the funding received to conduct it. Funding was received under an Australian Government Grant (2011-2017) for the *'Improving biodiversity outcomes & carbon reduction through feral pig abatement'* project. Funding for much of the marine turtle work was received by a Nest to Ocean grant from a Federal and State funded program from National Parks, Sport and Racing (NPRSR). We would like to thank the endless efforts of our partners Aak Puul Ngantam (APN) Cape York, Kalan Enterprises, Balkanu Cape York Development Corporation Pty Ltd, CSIRO, James Cook University and the Queensland Department of Environment and Heritage Protection. We especially thank the Traditional Owners from the lands of which we worked on, and for their advice, support and traditional knowledge shared during this project.
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Please reference as:
Ross, B., Perry, J.J., Waltham, N., Macdonald, S., Mitchell, J. (2017) Managing Feral Pigs for Biodiversity Conservation in Cape York: A Ranger's Handbook, Balkanu Cape York Corporation, Cairns.

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