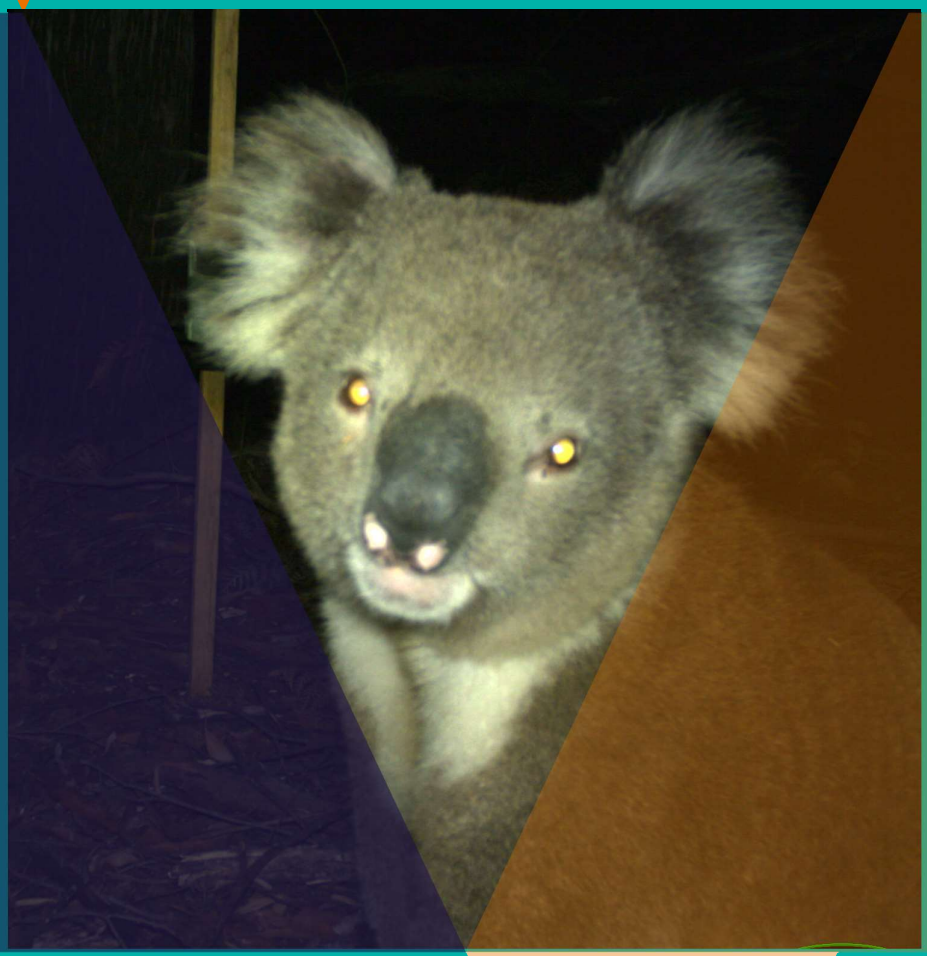
Pre-Harvest Survey Program

Survey Guideline - Camera Trapping (V2)



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Contents

1. Camera Trapping for Terrestrial Mammals

1.1 Context

The high priority species for terrestrial mammal camera trapping are the Spotted-tailed Quoll, Long-footed Potoroo, and Smoky Mouse

The Common Dunnart and the White-footed Dunnart are considered Medium Priority species for targeting in the PHSP. Detection of the Common Dunnart triggers harvesting prescriptions in the Central Highlands only. There are no prescriptions for the White-footed Dunnart in the program area.

Other threatened terrestrial mammal species of Medium to High Priority in the PHSP which may be camera trapped are the Brush-tailed Phascogale, Long-nosed Potoroo, Southern Brown Bandicoot, New Holland Mouse, Broad-toothed Rat, and Swamp Antechinus.

Many other species e.g. Dingo, cat, fox etc may also be observed by terrestrial camera trapping and while not the target of this survey method, these observations are to be reported.

Some of the threatened small mammals detected via camera trapping may not be identifiable to species level. This can be due to a paucity of suitable close-up high-quality images or because some small species can never be identified by camera trap images alone. Where small mammals are detected, the surveyor will advise DELWP. DELWP will determine whether the site will require cage or Elliott trapping to confirm the presence of these species. For example, Common Dunnarts and White-footed Dunnarts can only be distinguished from each other by close physical examination in-hand

1.2 Objectives

To detect high priority threatened terrestrial mammals using camera traps within, and immediately adjacent to, certain coupes in the PHSP.

To use camera traps to detect high priority small mammals. This may trigger the application of other techniques e.g. Elliott trapping, to confirm the identification of species that can't be identified to species level by images alone (e.g. Dunnart sp.).

1.3 Survey effort

Cameras are to be left in place for up to four weeks depending on the target species.

The total number of camera traps deployed per coupe will vary according to the size of the coupe and species being targeted.

Three different types of camera trap stations may be constructed, targeting:

- Spotted-tailed Quolls - 2 camera traps, 300–500 m apart per coupe for 28 days. For coupes less than 20 ha, use 1 camera trap.
- Long-footed Potoroo and other threatened medium-sized mammals – 2 camera traps, 100 m apart in suitable habitat per 20 ha for 21 days, up to a maximum of 4 camera traps per coupe.
- Smoky Mouse and other threatened small mammals – 2 camera traps, 100 m apart in suitable habitat per 20 ha for 14 days, up to a maximum of 4 cameras per coupe.

Two different types of camera will be used:

- infra-red illumination (for medium to large mammals in low-light conditions)
- white flash (to aid in the identification of small mammals in low-light conditions)

Two different types of bait attractant will be used:

- carnivore bait (to attract quolls) consisting of sardines, chicken pieces with fish oil
- standard mammal bait (to attract herbivores / omnivores / mycophagus mammals) consisting of a mix of peanut butter, rolled oats, golden syrup and truffle oil or pistachio essence (for mycophages).

Cameras will be set to take still images (not video).

Carnivore and standard mammal bait (predator and prey) camera trap stations must be separated spatially by at least 500 m.

Two observers may spend up to 20 mins installing each camera at a coupe. This does not include moving between camera sites. The number of cameras installed will vary with the size of the coupe.

At least two visits will be made to each coupe (to deploy and then retrieve cameras) and up to four visits shall be expected (if quoll camera sites are within 500 m of other camera sites and therefore require a separate deployment).

1.4 Staff requirements

A field survey team of at least two people.

At least one team member experienced in the use of automated 'trail' cameras as baited camera traps in wildlife surveys.

Sound, practical knowledge and experience in all aspects of the particular models of survey cameras being deployed.

Understanding of the practical limitations in using camera traps (that are primarily designed to photograph large game animals moving on trails at a distance) for wildlife surveys (detecting small to medium sized animals at small bait stations at close range). It is especially critical that staff understand the shape and spread-angle of the sensor's detection zone for each model of camera used, in order to aim it correctly.

Attention to detail to ensure that survey cameras are correctly set-up, both in terms of correct internal settings and external physical positioning.

Staff may have to buy materials and construct their own bait holder devices.

Be able to recognise potential habitat for the primary target species (i.e. Spotted-tailed Quoll, Long-footed Potoroo, Smoky Mouse and dunnarts). habitat.

1.5 Equipment for the technique

- ☐ Infra-red Reconyx cameras (or approved alternative)
- ☐ White flash Reconyx cameras (or approved alternative)
- ☐ Batteries (that can perform for 3-4 weeks)
- ☐ Memory cards
- ☐ Card viewer (if no inbuilt viewing screen on survey cameras)(can use a digital camera)
- ☐ Bungee cord or similar (to attach cameras to trees)
- ☐ Cable-locks (or similar locking device if desired)
- ☐ Elevated bait holder devices, well aerated (e.g. small custom cages, modified cutlery drainers, PVC pipes with holes, insect/water proof pipe vents, etc) (devices are NOT to be pegged to the ground)
- ☐ Rain covers (for bait holders e.g. stiff plastic, stainless steel termite shields)
- ☐ Poles/stakes/fence droppers (as necessary to elevate cameras and bait holders)
- ☐ Block hammer / steel mallet (to drive in posts/stakes)
- ☐ Bait - carnivore and/or herbivore/mycophagus bait
- ☐
- ☐ Attachment devices for bait holders (e.g. wire)
- ☐ Attachment tools (e.g. pliers)
- ☐ Camera alignment devices (e.g. plastic/timber wedges, custom mounts)
- ☐ 5 m tape measure
- ☐ Vegetation clearing equipment (e.g. secateurs, pruning shears)
- ☐ Small white board and marker / clipboard (with blank paper and texta)
- ☐ 2x GPS
- ☐ 2x hand-held compasses
- ☐ Appropriate spare batteries for all equipment
- ☐ 2x PHSP Camera Trapping Data Sheets on 2x electronic-based pro-formas
- ☐ Back-up hard copies of data sheets on waterproof paper on clipboards x2

1.6 Site preparation

The general location of the survey sites may be pre-determined (e.g. via desktop assessment or CHASS). Contractors are responsible for selecting camera trap sites based on identifying the best available habitat on the coupe for the target species.

1.7 Conducting the survey

All camera surveys:

Ensure that the camera has the correct date and time set.

Use advanced camera settings where possible e.g. high image resolution, multiple pictures per trigger, minimum delay between triggers (without unduly compromising battery life and the unit's ability to function normally for the required survey period).

Ensure that the camera is coded with coupe, site and camera details (e.g. save the first camera photo of small white-board or similar showing coupe number/name, site number and camera number within site).

All cameras in the PHSP are to be set in horizontal orientation facing across the ground (i.e not set vertically / directly facing the ground).

All bait-holders in the PHSP must be elevated to a height to suit the target species (see detail below).

Ideally face the camera approximately south to avoid the rising or setting sun flaring in the lens.

Using the camera's walk test mode, ensure that the camera detects movement either side and in front of the bait station.

Check that the camera is aimed and aligned correctly with the bait station by viewing test images (e.g. using an external image viewer, digital camera). Centre the sensor's detection zone on the base of the bait pole/tree. This may or may not correspond to the centre of the picture frame depending on the model of camera used. The worker must be familiar with this and adjust the alignment accordingly.

Ensure at least 1 m of ground is visible in the test image between the camera and bait so that animals close to the camera are captured. Adjust the height or angle of the camera accordingly.

Remove any vegetation in and around the camera station which may heat up and move in the wind causing the camera to trigger (i.e. false trigger).

Ensure the ground between the camera and bait station is reasonably homogenous to prevent differential heating of some objects (e.g. large rocks vs leaf litter) which could falsely trigger the camera via air movement across the object.

It is advised that camera units be locked against theft (e.g. by deer hunters).

Record the camera trap's location on a GPS and mark the site with flagging tape (this may not be advisable in areas where theft is likely be an issue).

On retrieval of the camera at the end of the survey, trigger the camera (e.g. dismantle the bait station without turning the camera off) so that a time and date-stamped image is saved to determine whether the camera has remained operational for the survey duration.

If no more camera surveys are to be conducted at the site, then remove all flagging tape.

Camera traps for Spot-tailed Quolls:

Survey from May – August (avoid Spring and early Summer)

2 camera traps per coupe, traps set 300–500 m apart. For coupes less than 20 ha, use 1 camera trap.

28-day deployment

Cameras with infrared flash are recommended but white flash units can also be used.

Recommended advanced camera settings (Reconyx cameras or similar): Motion sensor On, Sensitivity High, 3 pictures per trigger, 1 second picture interval, 30 second quiet period (i.e. 30 second delay between successive triggers).

Ensure that the camera is in 24 hr mode (as quolls can be active both day and night).

Bait holder ~ 1 m above the ground, camera sensor ~ 0.5 m above the ground (knee height).

3–4 m between the camera and bait station.

Use a GPS to ensure separation of quoll camera traps from each other i.e. trap stations 300–500 m apart (and 500 m from any other camera trap targeting other species at the same time).

The bait shall be a large fist-sized mass (e.g. chicken drumstick, 2 x opened tins of sardines) inside a well-ventilated holder, preferably protected from the rain.

Pour a small amount of fish oil down the bait tree/pole/stake and around its base to encourage an animal to linger.

Camera traps for medium-sized mammals:

Identification of Long-footed Potoroos, Long-nosed Potoroos, Southern Brown Bandicoots and detection of small mammals

Can conduct surveys at any time of the year (but Autumn is optimal)

Two camera traps per 20 ha, traps set 100 m apart, up to four camera traps per coupe

21-day deployment

Cameras with infrared flash are recommended but white flash units can also be used.

Recommended advanced camera settings (Reconyx cameras or similar): Motion sensor On, Sensitivity High, 5 pictures per trigger, 1 second picture interval, Quiet period–No delay (i.e. no delay between successive triggers)

Ensure that the camera is in 24 hr mode (Southern Brown Bandicoots can be active both day and night)

Bait holder ~ 30 cm above the ground, camera sensor ~ 0.5 m above ground (knee height)

3 m between the camera and bait station

Use a GPS to ensure separation of 100 –120 m between camera traps.

Use a standard mammal bait (peanut butter, rolled oats, golden syrup) that includes a small amount of truffle oil or pistachio essence with a partially fluid 'runny' consistency to hinder desiccation and loss of smell over time.

If tea infusers are used as bait holders (6-8 are recommended) they must be contained within a cage device (as some animals can open them and remove the bait). The ideal tea infusers are perforated, stainless steel, double-spoon type.

Camera traps for small mammals:

If specifically targeting Smoky Mouse, White-footed Dunnarts, Common Dunnarts, New Holland Mouse

Can conduct surveys any time of the year (late-Summer is probably optimal for Smoky Mouse)

Two camera traps per 20 ha, traps set 100 m apart, up to four camera traps per coupe

14-day minimum deployment

Cameras with white flash only

Recommended advanced camera settings (Reconyx cameras or similar): Motion sensor On, Sensitivity High, 5 pictures per trigger, 1 second picture interval, Quiet period–No delay (i.e. no delay between successive triggers)

Bait holder ~ 20 cm above the ground (encourages small mammal to climb onto, or reach up for, the bait holder and thus reveal diagnostic identification features such as tail/body length), camera sensor ~ 30 cm above ground (shin height)

1.5–2.0 m between the camera and bait

NOTE: The brightness of the white flash can vary between camera models. Because the camera is set close to the bait holder it will be necessary to test the white flash brightness in advance for potential overexposure at close range and reduce intensity if necessary (e.g. via settings, tape over the illuminator, etc).

NOTE: The choice of camera model and the correct aiming of the unit is critical when targeting small animals at close range.

Ensure that the camera trap station is clear of all vegetation, rocks etc down to 2-3cm above the ground (particularly near the bait holder) to prevent any small animals being obscured from the camera.

As the camera is set low to the ground ensure that the sensor has a clear view straight to the base of the bait pole (i.e. that the detection zone is not blocked by a rise/bulge in the ground between the sensor and the bait pole).

Use a GPS to ensure separation of 100 – 120 m between camera traps.

Use a standard mammal bait (peanut butter, rolled oats, golden syrup) with a partially fluid 'runny' consistency to hinder desiccation and loss of smell over time.

If tea infusers are used as bait holders (6-8 are recommended) they must be contained within a cage device (as some animals can open them and remove the bait). The ideal tea infusers are perforated, stainless steel, double-spoon type.

1.8 Data reporting requirements

Data requirements are outlined in the Camera Trapping for Terrestrial Mammals data sheet

PHSP data is to be reported in accordance with the procedures outlined in the SOP.

Image processing

- Following retrieval of the cameras, all images are to be downloaded and processed in accordance with the SOP.

DELWP will require the following information:

- Confirmed identification of all the animals detected
- details of the number, type and model(s) of cameras deployed
- camera settings
- GPS coordinates of each camera location and distance between cameras
- details of the type of bait used
- evidence of the length of time the cameras remained operational (which may be less than the full deployment duration due to camera malfunction, battery or storage media exhaustion, blocking of the camera lens or sensor, etc)
- surveys that failed to detect the target species shall also be reported.