Remote Wildlife Cameras

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General background

The nocturnal and often cryptic behaviour of many Australian mammals often makes it difficult and time consuming to detect their presence in a particular area. Traditional live trapping methods using cage traps and box traps are not only labour intensive but involve significant handling of animals, potentially causing animals a great deal of distress. In more recent years, remote wildlife cameras have become an increasingly popular way to survey fauna which are challenging to detect with more traditional approaches. The use of remote cameras enables species to be detected with minimum interference to the animal. Additionally, while live trapping methods tend to focus on a narrow suite of species, remote cameras are non-discriminatory, capturing images of anything which happens to move through the detection zone in front of the camera.

There are a number of different types of camera available for purchase. One of the more popular types is the Reconyx 500. These cameras are triggered by both movement of the animal and its body heat. Animals are encouraged to come into the "detection zone" of the camera (the area directly in front of the camera in which any movement will cause a photo to be taken) by the placement of bait in front of the camera. Your bait should be appropriate for the animals you are interested in picking up. Although you may be targeting a particular species, or group of species with your bait, non-target animals will often come to investigate as well.

In natural Australian systems typically two types of bait are used. On type, a herbivore bait is designed to attract animals which eat plants, seeds, fungi etc such as native mice, native rats and marsupial mice. Carnivore baits are used to attract carnivorous species. On the mainland of Australia, these species typically include quolls, foxes and cats. These baits are often a combination of meat products like rotten chicken and tuna oil. Note that it is not appropriate to put both a herbivore and a carnivore bait together.

The type of animals (herbivores, carnivores, small, large etc) you are interested in detecting will determine how you set your camera up and what sort of bait you use. Note that for smaller species like rats, mice, antechinus and dunnarts you will need to position your bait reasonably close to the camera. If the bait is too far away the animals will be too small in the images to be able to identify. Contrary to this if the camera is too close to the bait the whole image may be taken up by some unidentifiable body part.

Detailed below are a series of basic steps for setting up remote wildlife cameras for detecting native and introduced species in Australia. A list of equipment required can be found in Table 1.

General Camera Set-up

1. Open your camera and check that the batteries are all there, also check that there is an SD card in the side.
2. Turn on the camera with the black "on/off" switch. On the display you should be able to read how much battery life you have as well as how full the SD card is, the card should hold between 40,000-50,000 photos.
3. Determine which species or group of species you are interested in.
4. Select an appropriate survey area of interest.
5. Select a tree around which to attach your camera. If there are no trees you can use a star picket or fence post.
6. Using the elastic cord attach the camera to the tree approximately 40 cm from the ground for small animals and approximately 80 cm for larger animals. Make sure it is up the right way (Figure 1 & Figure 2).
7. Position your camera so that it is facing south. This will minimise the number of "false triggers" caused by direct sunlight.
8. Tighten the camera cord so that it holds the camera firmly.

Setting up a bait station

1. Your target animals you determine how to set up the bait station.
2. Hammer a tomato stake (or similar, don't use metal star pickets as they can heat up and cause false triggers) into the ground directly in front of the camera at the following distance:
   a. For small to medium sized (possums, gliders) mammals hammer stake in at 1.5-2 m away from camera.
   b. For large animals (kangaroos, wallabies) hammer the stake in at approximately 3 m from the camera.
3. Using garden clippers, clear vegetation from between the camera and the bait station and also behind the bait station. This ensures that vegetation moving in the wind does not trigger the camera

Attaching the bait - herbivores

1. Place pre-made bait (sticky mix of golden syrup, smooth peanut butter and rolled oats) into each of the five tea infusers making sure they are closed shut.
2. Attach a group of five bait filled tea infusers to the wooden tomato stake using tie wire or a cable tie. Position the bait so that the top of the infusers is about 50 cm from the ground.

Attaching the bait – carnivores

1. Place your chicken soaked in tuna oil in the small wire cage. Ensure that your bait is suspended from the top of the cage and is not touching the side of the cage to prevent animals pulling it out.
2. Attach the cage to the wooden tomato stake ensuring that the top of the bait cage is about 80 cm from ground.

Programming the camera – final steps

1. Make sure that the lens of the camera is facing directly at the bait. If the camera is not positioned properly you can angle the camera by placing small sticks at the back of the camera between the camera and the tree/fence.
2. Once you are happy with the angle, open the camera.
3. Turn the Camera using the black ON/OFF switch.
4. Camera will display information about the date and time, the battery capacity (100% full) and the SD card. Check this is correct.
5. Using the <> buttons, scroll across to get to 'WALKTEST'. Press OK and close camera
6. Move to directly behind the bait station and slowly wave your arm in front and to the side of the bait station, mimicking a small animal. This is to determine the area of detection for the camera. There is a light on the front of the camera which will flash red when activated, the intensity of the flashes indicates the strength of the triggering. The camera is not taking images at this time.
7. If you are satisfied that the camera was being activated by movement around the bait station (as indicated by the consistently flashing light), open the camera again.
8. Scroll across using the <> buttons until you reach 'ARM CAMERA'. Press OK and close camera.
9. The cameras red light will flash for 10 seconds, after this time it is activated.
10. Use a white laminated sheet of paper and record your details (site name, your name, date etc) in marker pen. This will provide information which will help you remember where you placed the camera once you have downloaded all of the images.
11. Stand behind the bait station, wave your arm in front of the bait station while holding up laminated sheet so camera can take a photo of it.
12. Camera is now ready to start monitoring
13. Leave the camera undisturbed in position for 7-20 days.

Collecting the camera and images

1. Open the camera. Upon opening the display will light up and tell you how many images it has taken.
2. Detach your camera from the tree/post.
3. Open camera and remove the SD card.
4. Take down the bait station.
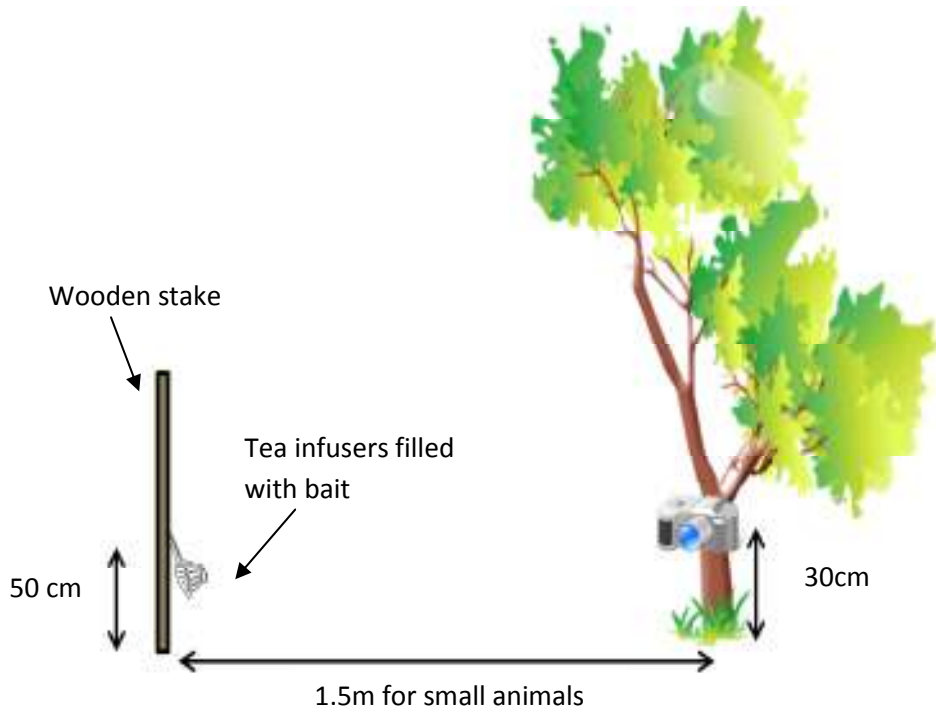5. Download your images onto your computer and see what you find!

Figure 1: Schematic diagram showing approximate position of camera and bait station for detecting **small** herbivorous animals.
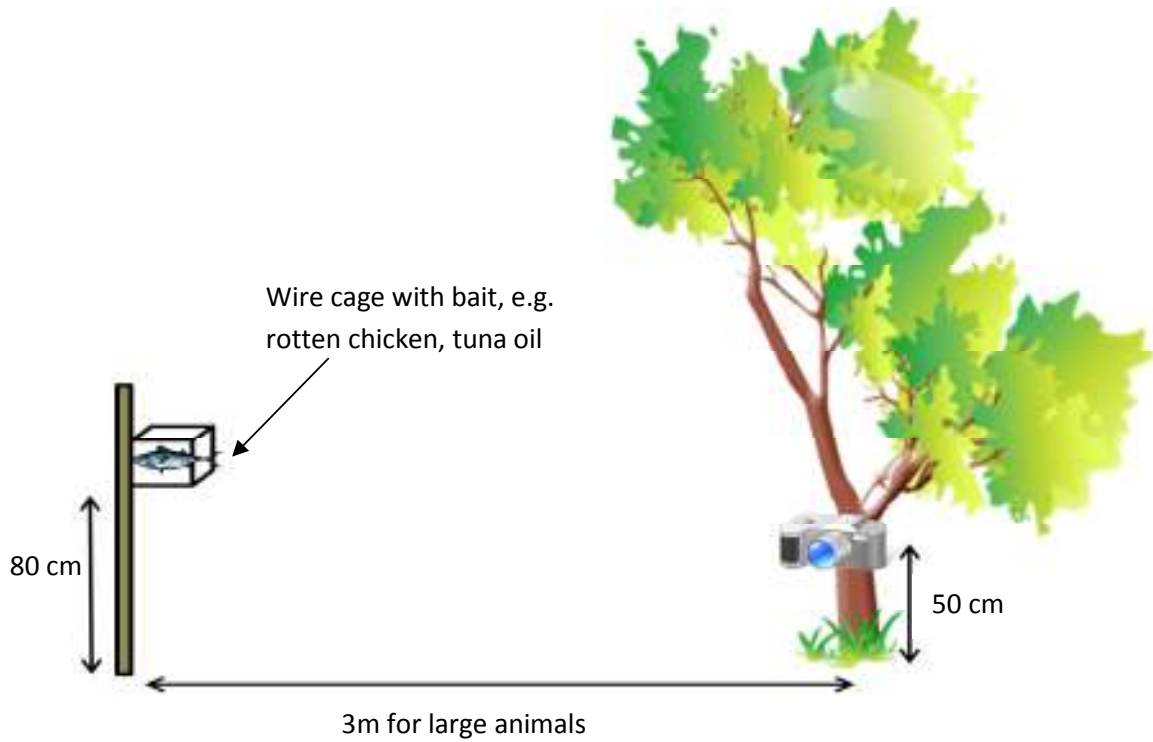

Figure 2: Schematic diagram showing approximate position of camera and bait station for detecting **large** carnivorous animals.