

Forest Protection Survey Program

Survey Guideline - Leadbeater Possum Thermal
Imaging (V1)



Acknowledgements

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Photo credit

Cover photo: Louise Durkin Arthur Rylah Institute for Environmental Research 2018

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1. Call Playback and Thermal Imaging for Leadbeater's Possum

1.1 Context

The FPSP will result in the detection of threatened species. This will trigger protection mechanisms for these species which will change the way in which some areas of the landscape are managed.

Some coupes in the FPSP and their immediate surrounds will be subjected to Targeted Surveys for threatened species. Not all coupes will be targeted.

Leadbeater's Possum is a species of high priority for survey in the FPSP. It is listed as Threatened under the Vic. FFG Act and Critically Endangered under the Commonwealth EPBC Act.

The recommended technique for determining the presence/absence of the species at coupes in the FPSP is the deployment of automated camera-traps at baited survey stations for four weeks. This technique is the most reliable for detecting Leadbeater's Possums and can be employed throughout the coupe. But there may be occasions in the program when a quicker assessment of some coupes is required for operational reasons.

1.2 Objectives

To detect the presence or infer the absence of Leadbeater's Possum within accessible parts of the coupe, or immediately adjacent to it in the FPSP when there is insufficient time to employ the recommended camera-trap technique prior to the proposed harvest date.

To use nocturnal playback and/or vocal imitations of calls to draw individuals in for detection via thermal imaging camera and identification via conventional spotlight.

1.3 Survey Effort

This technique is mostly used along tracks due to greater visibility leading to increased likelihood of detection and also because of the difficulty in safely walking through ash forest at night. Off track transects are typically only undertaken where access through the forest is reasonable and the route can be flagged in during the day. As a result, it is not typically possible to survey all parts of the coupe using this technique.

Two workers will perform a survey of approximately 2 hrs at each site. Depending on access, there may be more than one site per coupe.

Two hours is the survey period (per visit) if the species is not detected. Time spent attempting to confirm the identity of individual animals should be considered additional to this given the often difficult and time-consuming nature of identifying Leadbeater's Possum in the field.

The locations of the transects will depend on which areas are accessible. All tracks within or adjacent to the coupe should be searched. If there are areas off track that are accessible (i.e. it is possible to walk relatively easily through it at night) additional transects should be considered, especially in large coupes with large amounts of suitable habitat.

Transect distance will vary according to access conditions and should be greater along tracks than through the bush.

Along tracks workers should aim to cover as much distance as can be surveyed thoroughly within the 2 hr time period. Walk very slowly along the track, continually scanning using the thermal camera. Pause to spend more time searching where there are dense patches of understorey. Walking pace is typically a bit slower than a standard spotlight survey walking pace.

When walking off track rather than walking continually, walk to a point, stop and thoroughly search the area before walking to the next sampling point approximately 20-40 m away (depending on vegetation structure and terrain).

If a Leadbeater's Possum is detected, recommence searching at least 200 m away, as any additional detection within 200 m will be considered a duplicate record and not trigger an exclusion zone. Therefore, to maximise the sampling effort, spread out the sampling points if animals are being detected. If animals are not detected keep sampling continually along the transect for on track, and at regular intervals if off track.

Each transect is to be visited twice on different nights, i.e. one repeat visit of each transect. If Leadbeater's Possums are detected along part of the transect on the first night, this section (i.e. 200 m either side of the detection point) does not need to be re-sampled on the subsequent visit as the prescription has already been triggered.

1.4 Staff requirements

A field survey team of minimum two people.

Be able to visually and audibly detect and recognise Leadbeater's Possum at night. At least one team member must have field experience with this species using the methods described here.

Be experienced with applying the standard spotlighting technique to detect and identify arboreal mammals. At least one team member needs to be experienced, or at least well-trained, in the use of thermal imaging cameras, being familiar with the appropriate settings to use based on the conditions on the night.

Be capable of vocally mimicking Leadbeater's Possum calls for use in the field.

1.5 Equipment list

- | | |
|--|--|
| <input type="checkbox"/> Thermal imaging camera/scope with inbuilt red laser pointer | <input type="checkbox"/> Binoculars |
| <input type="checkbox"/> White-light (plus optional red-light) spotlight or high-power headlamp | <input type="checkbox"/> Appropriate batteries for all equipment |
| <input type="checkbox"/> Call playback equipment with speaker/megaphone | <input type="checkbox"/> Camera with good zoom function (not essential) |
| <input type="checkbox"/> Audio-recording of Leadbeater's Possum alarm calls (and Southern Boobook Owl) | <input type="checkbox"/> FPSP LBP Thermal Imaging Survey Data Sheets on electronic-based pro-forma |
| <input type="checkbox"/> GPS | <input type="checkbox"/> Back-up hard copies of data sheets on waterproof paper on clipboards |

1.6 Site preparation

The location of the transect(s) will be pre-determined (e.g. via desktop assessment or CHASS), and must be within 100 m of the coupe boundary. Further assessment will be undertaken on site once accessibility is determined.

Any available pre-existing tracks through or bordering the coupe should be taken advantage of for surveys.

If the transect must be located away from tracks then it should be marked in the GPS and in advance in the field with reflective flagging tape at sufficient intervals to ensure safe passage at night.

1.7 Conducting the survey

Surveys can be conducted all year round, subject to seasonal access and weather conditions.

Surveys are best conducted when there is no, or little, wind. Nights with strong winds should be avoided.

Sampling can commence any time after dusk (i.e. approximately 30 mins after sunset) and can continue throughout the night.

Upon approach and arrival at the survey site, confirm it as being possible habitat (e.g. not recently harvested).

Ensure the required fields are completed on the data sheet. This should include measures of wind strength and night-light, and the model of thermal camera employed. The Start time should be entered last.

At the start of the transect, turn on GPS tracking.

Adjust the settings on the thermal camera to enable a clear differentiation between the background vegetation and an animal. Depending on how the temperature changes throughout the night these settings may need to be adjusted as the temperature decreases.

One observer should commence using the thermal imaging camera to constantly scan either side of the transect for heat signatures that may be a Leadbeater's Possum. Walk slowly along the transect, with no lights used, pausing as necessary to ensure that the vegetation is thoroughly scanned. The second observer stays nearby, in readiness to use the spotlight if an animal is seen. The white light should only be used to identify an animal that has been detected while using the thermal camera.

Commence imitating the calls of Leadbeater's Possum in the observer is experienced in this technique. If not, or if no animals have been detected using the voice imitation, commence playing a pre-recorded sequence of calls including the listening periods. A recommended sequence of pre-recorded Leadbeater's Possum and owl calls is provided in Appendix 1. All pre-recorded calls should be played at 110% of natural volume.

Stop the playback if any Leadbeater's Possums are seen or heard.

Individuals may be coaxed closer for identification by continuing to imitate Leadbeater's Possum calls.

Once an animal is located the thermal camera operator should indicate the location by activating the laser pointer immediately below the animal. Take care to avoid shining the laser directly at the animal.

The second observer, guided by the laser pointer, should use a spotlight and binoculars to identify the animal. Although a white light may 'spook' the animal more than a red light, it is using quicker and easier to get a species identification using the white light so this is preferred.

Record details of all Leadbeater's Possums and any other arboreal mammals or owl observed) on the data sheet. Record the GPS location on the transect for each animal.

If identification of any animal takes more than a few minutes, then this should not be included in the total transect survey duration. Keep track of approximately how long an identification takes and add this to the expected finish time. It can often take a considerable length of time to get a sufficiently clear look at an animal once it has been detected with the thermal camera to confirm its identification, so if based on the experience of the observer it is thought to potentially be a Leadbeater's Possum continue searching until it is confirmed or can no longer be found.

If time permits, attempt to take high quality photos (or video) of Leadbeater's Possums.

At the end of the transect ensure the end time of the survey is recorded.

Although it is usually difficult at night to determine if the habitat at a site may meet the definition of Leadbeater's Possum Zone 1A or 1B habitat (see Appendix 2), if a high density of live or dead hollow-bearing trees are observed, notify the DELWP Project Manager so that further investigations can be considered.

1.8 Data and reporting requirements

All LBP detections require consideration of zoning requirements which can impact significantly on potential area available for timber harvesting. Leadbeater's Possum (LBP) detections are to be reported to the FPSP team as an interim result as soon as possible, when requested for specific coupes. This requirement is most likely when the proposed harvest date is within 1-2 months of the end of the field survey. The minimum information required to assist this step includes:

- CoupeID,
- CameraID,
- EastingBait,
- NorthingBait,
- CommonName=Leadbeater's Possum where site observed LBP, otherwise Target not found

Please ensure all required information is also recorded in theObsAttributes sheet in the DataEntry template for Camera survey.

Further data requirements are outlined in the LBP data sheet

1.9 Appendix 1. Pre-recorded call sequence

Call Sequence

While continually scanning using the thermal imaging camera, play the following sequence at 110% normal volume (use white light only when an animal is detected to confirm identification):

1. Leadbeater's Possum call
2. 2 minute listen
3. Leadbeater's Possum call
4. Up to 5 minute listen
5. Boobook call
6. Up to 5 minute listen

1.10 Appendix 2. Leadbeater's Possum Habitat

Protection prescriptions are triggered when habitat conforming to Zone 1A or 1B is identified within the Central Highlands Forest Management Area.

Zone 1A Habitat

Where there are more than 10 live mature or senescent hollow-bearing ash trees per 3 ha in patches greater than 3 ha, and each tree is within 100 m of one of the other trees.

In Zone 1A habitat hollow-bearing trees are defined as live mature or senescent trees of Mountain Ash, Alpine Ash or Shining Gum containing hollows.

Zone 1B Habitat

Where there are more than 12 hollow-bearing trees per 3 ha in patches greater than 10 ha and wattle density exceeds 5 m²/ ha.

In Zone 1B habitat hollow-bearing trees are dead, mature or senescent living trees of Mountain Ash, Alpine Ash or Shining Gum containing hollows. As it is not always possible to determine the species of dead trees, any dead tree greater than 1.5 m DBH and 6 m in height are included.

NOTE: This is the latest information and comes from the 2015 DELWP Survey Standard which supersedes that contained in the 2014 DEPI Action Statement for the species following recommendations from the Leadbeater's Possum Advisory Group.

For more detailed instructions on identifying Leadbeater's Possum habitat in field surveys see pages 15 and 16 and Appendices 5 to 8 in:

DELWP (2015) Threatened Species Survey Standard: Leadbeater's Possum. April 2015. Victorian Government.

... available at: https://www.forestsandreserves.vic.gov.au/_data/assets/pdf_file/0026/29276/Survey-standard-for-Leadbeaters-possum-revised-April-2015.pdf