ACT Government

Searching for Antechinus and Common Dunnart in the ACT lowland

By Jenna Ridley, Rory Chanter, Morven McGrath, Chris Malam and Stephanie Pulsford

Acknowledgement of Country

The City and Environment Directorate acknowledges the Ngunnawal people as traditional custodians of the ACT and recognise any other people or families with connection to the lands of the ACT and region.

We respect the Aboriginal and Torres Strait Islander people, particularly our Aboriginal and Torres Strait Islander staff, and their continuing culture and the contribution they make to the Canberra region and the life of our city.

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Contents

Executive Summary

Urbanisation, predation by introduced species and reduced habitat structure due to inappropriate fires regimes has contributed to declines in the extent of small native mammal species across the Australian Capital Territory (ACT) lowlands. Historically, Agile Antechinus (*Antechinus agilis*), Yellow-footed Antechinus (*Antechinus flavipes*) and Common Dunnarts (*Sminthopsis murina*) were detected within inner-city reserves such as Mount Ainslie, Mount Majura and Black Mountain Nature Reserves from surveys in the 1970s (Kukolic, 1990). Surveys in 1999 and 2005 failed to detect small mammals in these same urban reserves. In more recent years, these species have not been detected in those same reserves. With increasing threats to small native mammals such as invasive predators, climate change and future urban expansion, understanding where these species occur within the ACT is essential to inform conservation and management efforts.

This project was developed to determine where small native mammals are persisting within the ACT lowlands. Wildlife cameras were deployed across 10 study areas in 2023, 2024 or 2025. Antechinus species were detected within two study areas, and Common Dunnarts detected were detected in six study areas. To confirm the identity of the antechinus species, follow-up Elliott trapping was undertaken in March 2025. Yellow-footed Antechinus (*Antechinus flavipes*) were identified as present in both study areas - Kowen Escarpment and Rob Roy Nature Reserves. The findings from this project will contribute to ongoing and future efforts to help to strengthen conservation and management actions for small native mammals in the ACT. Future work on small native mammals may explore the drivers of persistence and potential management strategies for antechinus and Common Dunnart within lowland reserves.

1 Introduction

An increase in the global human population and associated urban expansion has led to negative impacts for biodiversity. In Australia these impacts have been widespread and have resulted in native species declines (Bilney, Cooke and White, 2010). Increasing urbanisation and development leads to loss and fragmentation of habitat which has substantive effects on species survival and the genetic resilience of populations. With the projected impacts of anthropogenic climate change and the accumulation of threats such as invasive predatory species (Boer-Cueva et al., 2025), many native species may be unable to persist within peri-urban landscapes.

The Australian Capital Territory (ACT) has a growing human population, with current forecasts expecting the population to have almost doubled between June 2021 (453,558 persons) and June 2060 (784,000 persons) (Chief Minister, Treasury and Economic

Development Directorate, 2022). The increase in people living in the ACT will put additional pressure on native biodiversity. To minimise this pressure, research into improving connectivity between fragmented habitat as well as prioritisation of areas for protection of critical habitat are being undertaken. Current knowledge on the distribution, extent and population trajectory of ecological values is essential to understanding the likely impacts of pressures on biodiversity, and where to prioritise conservation efforts.

Small native mammal species historically recorded within the ACT lowlands include the Agile Antechinus (*Antechinus agilis*), Yellow-footed Antechinus (*Antechinus flavipes*) and Common Dunnart (*Sminthopsis murina*) (Figure 1). These species are all part of the Dasyuridae family and are primarily insectivorous. They have overlapping ranges and similar habitat requirements, which means they face many of the same conservation challenges. Both antechinus species have a similar life history. During the breeding season, males expend all their energy in mating, such that they experience an annual die-off post-breeding. The annual die-off typically occurs over a short timeframe in winter or spring, depending on the species and their geographical location. Information on each antechinus species and their response to threatening processes are limited within the wider literature, particularly for the ACT.

The occurrence of antechinus and dunnarts is likely to be driven by differences in habitat suitability. Agile Antechinus occupy forest habitats within south-eastern mainland Australia (Atlas of Living Australia, 2025) and have been found to respond positively to larger patch sizes and be captured more frequently in areas with coarse woody debris (Johnstone, Lill and Richard D., 2011). Yellow-footed Antechinus are semi-arboreal and their distribution has been linked to the presence of hollow-bearing trees, course woody debris, rocky crevices and leaf litter (Kelly, 2006). Increases in Yellow-footed Antechinus abundance have been observed in areas with large trees and course woody debris (Lada, Mac Nally and Taylor, 2008). Common Dunnarts can also be found in areas with sparser canopy than antechinus and disperse away from areas if the vegetation structure becomes too dense (Monamy and Fox, 2005).

Previous surveys for antechinus spp. and Common Dunnart in the ACT have been inconsistent in frequency and extent. This has contributed to a general lack of understanding of small native mammal distribution in the region. Baseline surveys in the 1970’s detected Common Dunnarts, Agile Antechinus and Yellow-footed Antechinus in at least one of three monitored reserves - Black Mountain, Mount Ainslie or Mount Majura Nature Reserves. However, surveys in 2005 detected no antechinus and only detected Common Dunnart at Mount Ainslie Nature Reserve at low numbers (Buckmaster, Osborne and Webb, 2010). However, citizen science platforms have continued to detect Agile Antechinus throughout southern parts of the ACT (NatureMapr, 2025).

In 2020, a wildlife camera survey for Lace Monitors (*Varus varius*) conducted at Stromlo East recorded a single antechinus. To confirm this finding, small mammal wildlife camera surveys were conducted at Stromlo East and Stromlo West in 2021 (Norris et al., 2022). This survey found Common Dunnarts on eight cameras across the two sites but no antechinus (Norris et al., 2022). Separately, Common Dunnart were detected in Mulligans Flat Nature Reserve in 2013 and in Goorooyarroo Nature Reserve in 2016. Additionally, an Agile Antechinus was trapped at neighbouring Mulligans Flat in 2018 (Y. Leroy, pers comm. 7th June 2018).

This project was developed to improve knowledge on the small native mammal species known to occur within the ACT lowlands. The three focus species were Agile Antechinus, Yellow-footed Antechinus and Common Dunnart. This work builds on previous surveys for small mammals within the ACT (Buckmaster, Osborne and Webb, 2010; Pinner, 2023, Norris et al., 2022).

The project aims to:

1. Establish which woodland reserves contain small native mammals,
2. Determine what factors (e.g. habitat metrics, predator density, connectivity, distance to urban edge, abundance of competitors) are correlated with the presence and persistence of small native mammals,
3. Determine power of detection for native small mammals using different survey methods, and analysis of resource-use for different methods,
4. Trial of methods for improving outcomes for small native mammals in lowland woodlands (such as nest boxes and supplementary habitat features, and habitat restoration to improve habitat quality for small mammals), and
5. Identify what management tools and methods may help enable small native mammal persistence, enhancement, or recolonisation.

This report focuses on the first aim, and part of the second aim. Further work is required to achieve the remaining aims.

2 Methods

2.1 Study Species

The lowland small native mammal community within the ACT has historically consisted of the Common Dunnart (*Sminthopsis murina*), Agile Antechinus (*Antechinus agilis)* and the Yellow-footed Antechinus (*Antechinus flavipes*) (Figure 1). None of these species are currently listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* or the ACT *Nature Conservation Act 2014*. The differences between the Agile and Yellow-footed Antechinus are most reliably determined when animals are in-hand. Both species have a white eye ring, however, the Yellow-footed Antechinus has a more prominent eye ring and a change in fur colour from head (grey) to rump (yellow or rufous) compared to the Agile Antechinus nondescript brown (Figure 1).

Figure 1: Left - Agile Antechinus (Cameron Tyrrell), Middle - Yellow-footed Antechinus (Chris Malam), Right - Common Dunnart (Chris Malam).

2.2 Study Area

The ACT is approximately 235,000 hectares and experiences warm, dry summers and cool, frosty winters. Variation in topography and landscape across the territory can also lead to different climatic conditions between the northern and southern landscapes (DCCEEW, 2024). The ACT has an average rainfall of 741mm, with more rain in the southern areas at higher elevations (DCCEEW, 2024). Each of the study sites were located within the central and northern part of the ACT, where weather conditions are typically drier.

Sites were chosen based on the presence of suitable habitat types for small native mammals, and historical occurrence or local knowledge of the species. We used the ACT Vegetation Map 2023 (Environment, Heritage and Parks, 2025) and elevation spatial layers to inform habitat suitability. Historical records of the species were obtained from previous Office of Nature Conservation (formerly Conservation Research) projects or the ACT Wildlife Atlas. Suitable habitat types included areas within an elevation of 0 to about 750 metres above sea level, and vegetation communities with native canopy present. Placement of survey grids within each study area was guided by the location of target vegetation communities, which included:

- Southern Tableland Dry Sclerophyll Forest,
- Southern Tableland Grassy Woodlands, and
- Modified or Derived areas within native forest types.

Local knowledge was used to further guide the placement of survey grids within Modified and Derived areas.

We surveyed a total 10 sites across the duration of the project Eight within the Canberra Nature Park (CNP) Nature Reserves, managed by the ACT Parks and Conservation Service (PCS), one Offsets Reserve managed by ACT Environmental Offsets, and one site in Western Edge Investigation zone (Table 1; Figure 3). The Western Edge Investigation zone ('Western Edge') is an area proposed for future development and is made up of different land tenures, primarily private property. Western Edge was included to the project due to its proximity to previous small native mammal detections and the presence of suitable habitat.

Table 1: Ten sites were surveyed as part of this project. The table contains basic site details, including the total number of survey grids and wildlife cameras deployed at each site.

Site	Area (hectares)	Land custodian	Survey year	Number of grids	Total cameras deployed
Aranda Nature Reserve	104	PCS	2024	1	White-flash: 12 Infrared: 4
Black Mountain Nature Reserve	434	PCS	2024	5	White-flash: 60 Infrared: 20
Callum Brae Nature Reserve	143	PCS	2023	2	White-flash: 24 Infrared: 8
Kinlyside Offset Reserve	228	PCS Offsets	2025	3	White-flash: 36 Infrared: 12
Kowen Escarpment Nature Reserve	466	PCS	2023	4	White-flash: 48 Infrared: 16
Mount Ainslie Nature Reserve	637	PCS	2024	5	White-flash: 60 Infrared: 20
Mount Majura Nature Reserve	502	PCS	2025	6	White-flash: 72 Infrared: 24
North Gungahlin Woodlands	1,167	PCS	2023	6	White-flash: 72 Infrared: 24
Rob Roy Nature Reserve	2,017	PCS	2023	6	White-flash: 72 Infrared: 24
Western Edge	-	Multiple	2025	7	White-flash: 84 Infrared: 28

Survey grids were pre-mapped within the study areas using Esri ArcGIS Pro 3.1 based on the previously described factors and size of the study sites (Table 1). Survey grids were placed more than 50 metres away from major roads or tracks where possible, and all survey grids were at least 500 metres apart to ensure independence. In the first year of surveys (2023), each survey grid had 24 survey points, spaced 50 metres apart in a 4 x 6 configuration (Figure 2). In 2023, detection success of different methods were tested by interspacing cameras and footprint tunnels (Pinner, 2023; Figure 2). Two grids in the North Gungahlin Woodlands were arranged into a 12 x 2 grid composition instead due to habitat suitability and spatial constraints (Pinner, 2023).

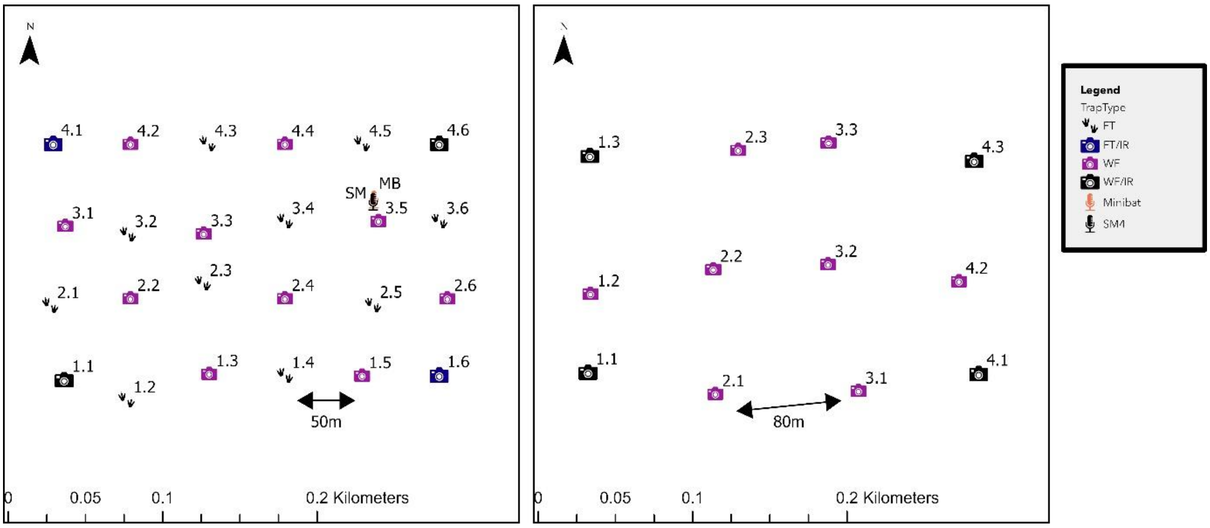


Figure 2: Layout of survey grids for small native mammals in year one (2023; left) and survey years two and three (2024, 2025; right).

Wildlife cameras were found to be more effective at detecting the target species in the first year of this project and therefore footprint tunnels were not used in subsequent monitoring years (Pinner, 2023). Therefore, the last two years of surveys (2024 and 2025) used a grid of 12 cameras in a 3 x 4 configuration with each camera spaced ~80 m apart. The decision to change the distance between cameras was based on a preliminary power analysis (these results are not provided in this report).

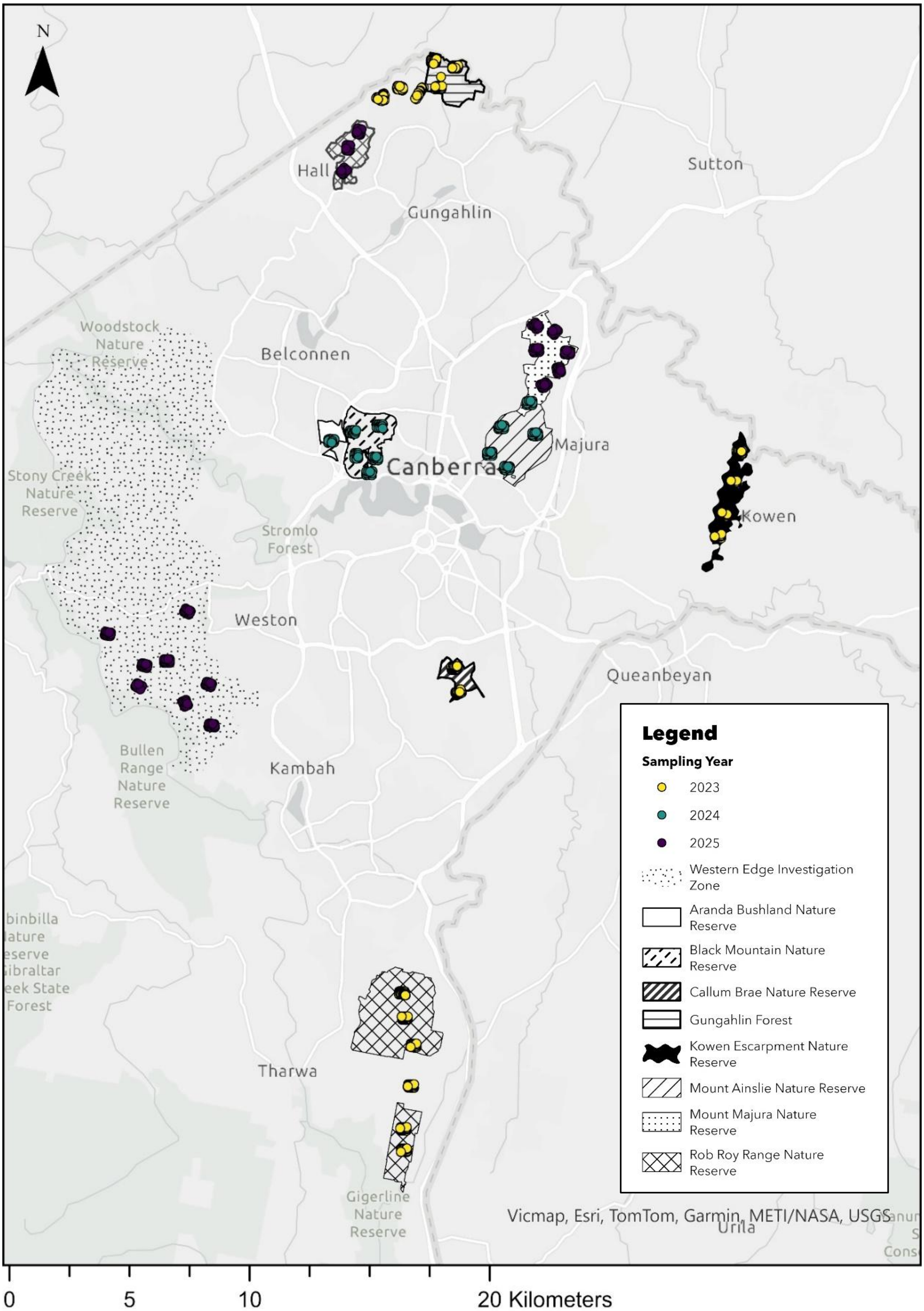


Figure 3: Small native mammal survey grids in each survey year, 2023 (yellow), 2024 (green) and 2025 (purple).

2.3 Camera Deployment

Wildlife cameras were deployed for a minimum of two weeks during Autumn in each survey year. This timing was important to ensure that it was prior to the antechinus male die off to increase the potential for detection. We used Reconyx HP2W Hyperfire 2 and Reconyx Hyperfire white flash cameras (WF) in conjunction with a Browning Infrared cameras (IR). White flash cameras were set to trigger with no delay (Rapidfire) on a high sensitivity setting. This was to increase the chance of detecting the target small native mammal species. All white-flash cameras were deployed about 1 metre off the ground and attached with straps to trees close to the corresponding mapped grid point (Figure 4). Each grid point location was updated with actual camera location, and collection date was recorded once deployed. All white-flash cameras were oriented facing downwards, with a cork tile pegged to the ground within the camera field of view (Figure 4). Each cork tile was baited with peanut butter and tuna oil. We attempted to centralise the bait on the cork tile so that an animal would come into the centre and trigger the camera. In the first year of survey, a bait ball was contained within a tea strainer. The bait ball consisted of rolled oats, peanut butter and fish oil, formed into an approximately 5 cm ball. Each camera grid also had four infrared cameras, one on each corner of the survey grid (Figure 2). Infrared cameras faced outwards and were attached to trees with a strap. Infrared cameras were setup to target larger vertebrate species that may not be captured by downward-facing cameras, or that may be spooked by a white-flash.

Figure 4: Wildlife camera set-up in situ. Left: Mount Ainslie Nature Reserve, Right: Black Mountain Nature Reserve.

2.4 Image Processing

Cameras were collected from each survey grid at least 14 days after their deployment. Esri ArcGIS FieldMaps was used to obtain information about each wildlife camera during collection, including: date of collection, any camera issues, and problems with camera setup or disappearance of the baited cork tile. All image data from the SD cards were transferred onto hard drives. Images were then processed using image processing software:

- step 1 - AddaxAI (previously 'EcoAssist') (van Lunteren, 2023), and
- step 2 – Timelapse (Greenberg, 2023).

2.4.1. Image Processing Step 1

Addax AI uses artificial intelligence software to separate images into different categories: "image with human", "image with vehicle" or "image with animal". Each image is assigned a level of confidence between 0 and 1. This confidence level indicates how likely the software has accurately assigned each category. All images that were not assigned a category were assumed to be blank. Images were uploaded to AddaxAI using a laptop with 16GB graphics card (NVIDIA GeForce RTX 4090) to enable fast processing. The output of this process is a .json file that was saved into each camera folder containing the raw images.

2.4.2. Image Processing Step 2

Timelapse software (Greenberg, 2023) was then used after producing the AddaxAI .json file. All images were loaded into timelapse, along with the .json file from AddaxAI. The AddaxAI file assigns each image with the confidence level, and we excluded all images between 0.0 and 0.20. All images classified with a confidence interval between 0.20 and 1.00 was independently verified by a suitable expert. Each image was uploaded within its folder structure and had automatic metadata attached including, when image was taken, relative folder path, image number and trigger number for each sequence (e.g. 1 of 3, 2 of 3). For each image containing an animal, an assignment of '1' against the corresponding species category was allocated within TimeLapse software. Where no animal was present in the image, all species categories are assigned a zero. This project focused on presence (1) and absence (0); the data does not reflect whether multiple individuals were seen in the same image.

2.5 Elliott Trapping

Elliott trapping was undertaken at two reserves in response to antechinus detections during camera monitoring in 2023. These study areas were Kowen Escarpment Nature Reserve and Rob Roy Nature Reserve. Trapping was required to confirm the species identity through close inspection. We deployed Elliot traps in a 4 x 6 grid based on where antechinus were detected during earlier wildlife camera surveys (Figure 5), in Kowen Escarpment from 17th March 2025, and in Rob Roy from 24th March 2025 for a three nights period per reserve.

Figure 5: Elliott trapping grids with individual trap locations (yellow squares) overlayed with the 2023 antechinus spp. detections (orange circles) in Kowen Escarpment (Left) and Rob Roy Range (Right).

Elliott traps were set two to three hours before sunset each day, when daytime temperatures began to cool. Traps were set against shrubs, a tree or a form of cover. Each trap was covered by a plastic sleeve to protect the inside from water or moisture ingress. Each trap contained a bait ball (oats, peanut butter and sardines) and microfibre pillow bedding to increase warmth and security for the captured animal. Traps were checked early the following morning, after sunrise but before daytime temperatures got too high. Traps were cleared and closed each morning, with the bait removed. Daytime trap closure was to ensure that animals, particularly reptiles, did not become trapped during the daytime, as this would present a welfare concern. Bait balls were also removed from traps during the day to minimise ant infestation. Where there were large numbers of ants, particularly large ant species, the traps were relocated during trap setting.

2.6 Data Cleaning and Analysis

All image data was collated and cleaned in R Studio using the dplyr (Wickham et al., 2023), readr (Wickham et al., 2024), tidyverse (Wickham et al., 2019), lubridate (Grolemund and Wickham, 2011) and stringr (Wickham, Software and PBC, 2023) packages. All three years of data, 2023, 2024 and 2025 was combined and formatted for consistency to assist with comparative analysis. Site details were also attached to the to the image data using a unique site code for future identification. The site details included the duration of any adverse issues associated with each camera, such as (1) the camera malfunctioned and stopped recording, or the SD card became full, or (2) more than one-third of the baited cork tile was not within the camera field of view, or was removed (e.g. by a fox).

Camera data was only collected for one two-week period from each site. The mean number of nights detected was chosen as an index of activity by each target and non-target species across study sites. This metric infers a difference in activity; however, it does exclude problem periods and therefore not all deployment times will be the same for each study site.

2.7 Ethics Statement

This project was approved by the UC Animal Ethics Committee (Protocol AEC 12079) and was undertaken on Ngunnawal land.

3 Results

3.1 Target Species

Over the course of this project, data was obtained from a total 9,126 white flash camera trap nights and 3,219 Infrared camera trap nights. Target small native mammal species were detected on white flash wildlife cameras only. Common Dunnarts were detected at six sites, and antechinus spp. were detected at two of the 10 sites (Figure 6).

Due to malfunctions or other issues, some cameras did not obtain data across the full fourteen-day period. Wildlife cameras that were active fewer than five days were excluded from analyses.

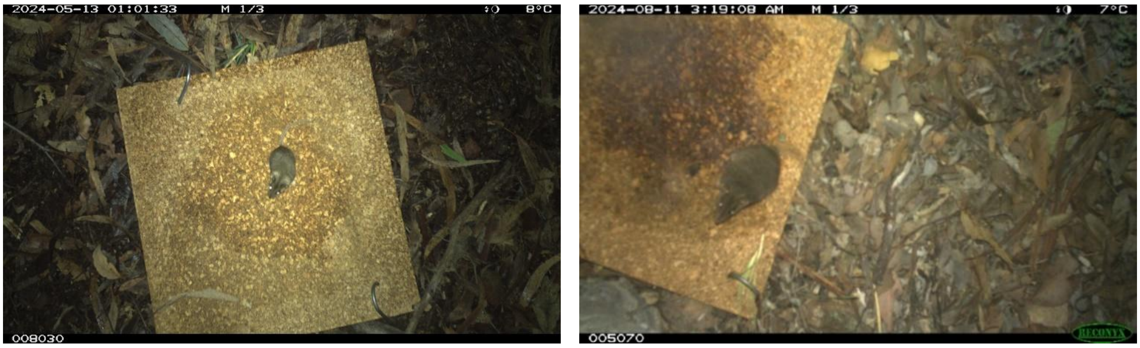
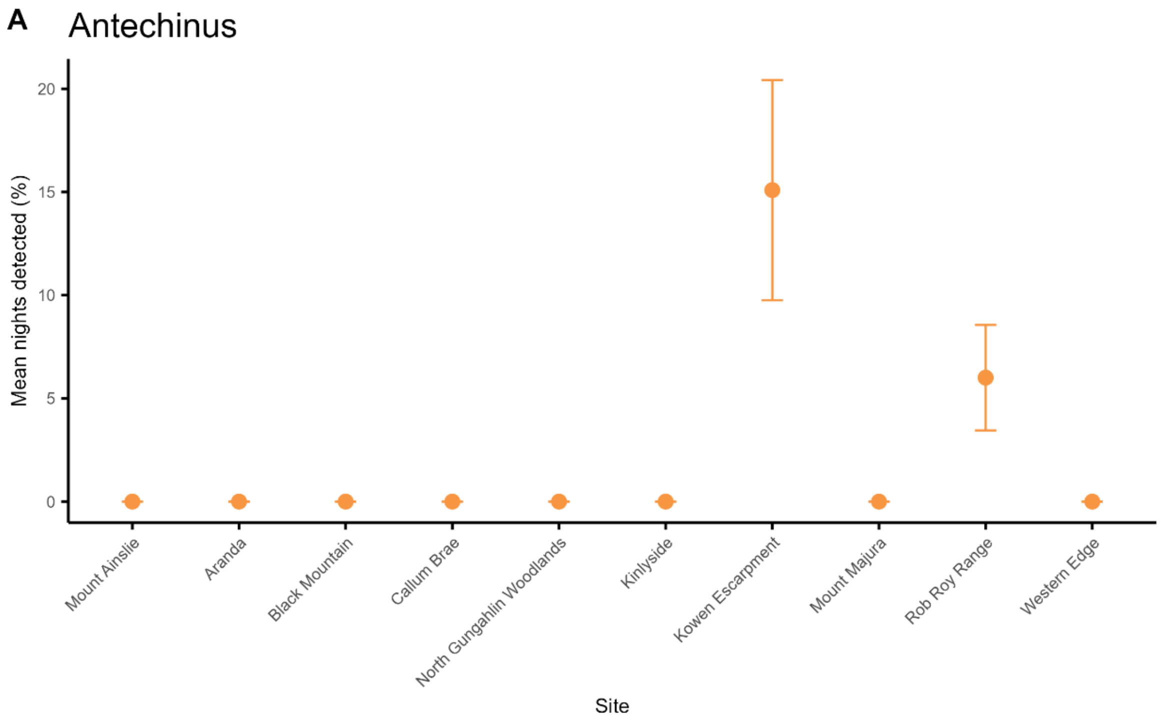


Figure 6: Left - Common Dunnart (*Sminthopsis murina*) and, Right - antechinus (Species unknown) detected on white-flash cameras.

Antechinus were detected in both the Kowen Escarpment and Rob Roy Range Nature Reserves. In Kowen Escarpment, they were detected on 33 unique white-flash cameras spread across the four grids within the reserve for an average of 15% nights cameras were recording (Figure 7; Supplementary Figure 1). In Rob Roy, they were detected on 30 unique cameras spread across the six grids within the reserve for an average of 6% nights cameras were recording (Figure 7; Supplementary Figure 1).

Common Dunnarts were detected at survey grids in Kinlyside (4 unique cameras), North Gungahlin Woodlands (31 unique cameras), Kowen Escarpment (3 unique cameras), Mount Ainslie (5 unique cameras), Mount Majura (18 unique cameras) and Rob Roy (11 unique cameras) nature reserves (Figure 7). Where antechinus were also detected, the data indicates

Common Dunnarts had a lower average of nights detected (Kowen 0.4%, Rob Roy 1%), than where only Common Dunnarts were detected (Kinlyside 2%, Mount Majura 3%, North Gungahlin Woodlands 6%). The exception was for Mount Ainslie Nature Reserve which only had Common Dunnart and a low rate of detection (0.6%).



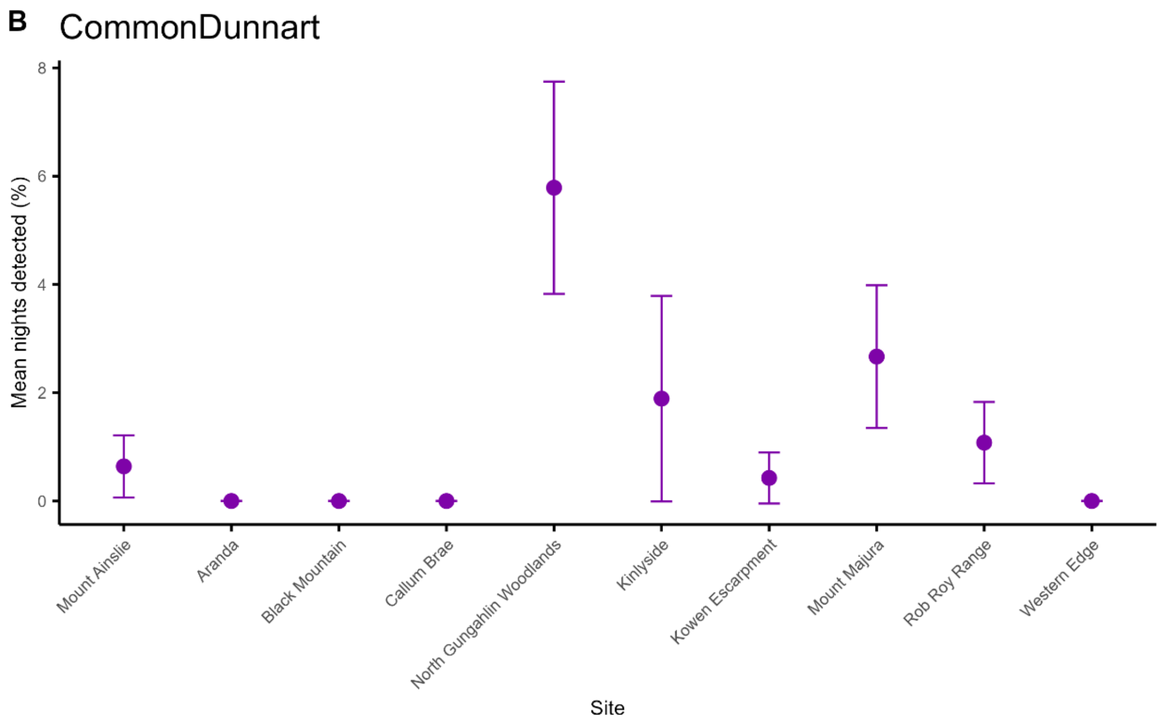


Figure 7: Mean number of nights a) Antechinus spp. and b) Common Dunnarts were detected on white-flash cameras at each surveyed study site. Error bars were calculated based on a 95% confidence interval.

3.2 Elliot Trapping

Elliott trapping was undertaken in Kowen Escarpment and Rob Roy Nature Reserves following the detection of antechinus in both reserves during camera surveys. A total of 240 trap nights were undertaken in each nature reserve. Yellow-footed Antechinus were confirmed as present in both nature reserves, with a total three individuals trapped in Kowen Escarpment, and four in Rob Roy (Table 2). No other species were captured during trapping surveys. All captures were adult individuals, and their weights ranged from 16 to 22 grams.

Table 2: Elliott trapping results from March 2025 trapping survey in Kowen Escarpment and Rob Roy nature reserves.

Site	Check one	Check two	Check three	Total individuals
Rob Roy Range	Male: 1	Male: 1* Female: 1	Male: 1	Male: 2 Female: 1
Kowen Escarpment	Female: 1	Female: 1	Male: 1 Female: 2*	Male: 1 Female: 3

* Individual was recaptured from a previous day. Number of asterisks denotes number of recaptured individuals.

3.3 Non-target species

We detected a range of other native species during wildlife camera surveys in the ACT lowlands. Detected animals included birds, macropods (kangaroos and wallabies), reptiles (lizards and snakes), possums, echidnas (*Tachyglossus aculeatus)* and Inland Sugar Gliders (*Petaurus notatus*) (Figure 8). Macropods were the most often observed (Figure 8).

3.4 Invasive species

Wildlife cameras detected several invasive species, including, cats (*Felis catus*), sambar deer (*Rusa unicolor*), red foxes (*Vulpes vulpes*), black and brown rats (*Rattus* spp.), house mice (*Mus musculus*), pigs (*Sus scrofa*), goats (*Capra hircus*), and rabbits/hares (Figure 9). Larger species were primarily captured on the outward facing Infrared cameras, whereas smaller species were more easily identified on white-flash cameras (Figure 9). Foxes were prevalent at all study sites, and in many cases, were observed removing the baited cork tiles.

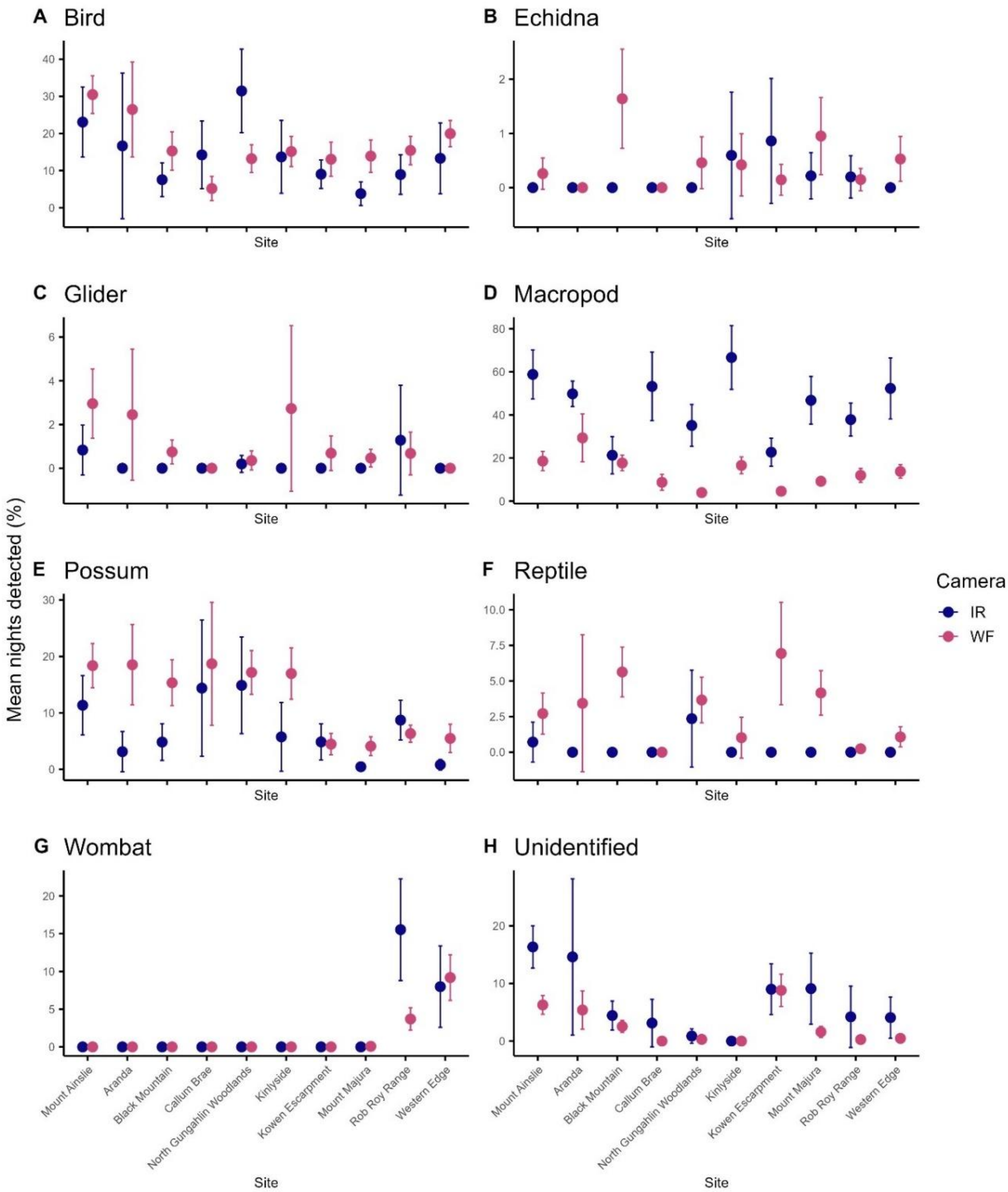


Figure 8: The mean number of nights detected for all non-target native species at every study site captured on white flash (pink) and Infrared (blue) cameras. Unidentified includes all species that were not pictured clear enough to identify and may be native or non-native.

4 Interpretation of Findings

This study has confirmed that Common Dunnarts and Yellow-footed Antechinus are persisting within ACT lowland areas. Yellow-footed Antechinus were previously thought locally-extinct within the ACT peri-urban reserves (Buckmaster, Osborne and Webb, 2010). Their persistence has critical implications for the conservation management of the species, and contributes to overall knowledge for the species. While we were unable to confirm the presence of Agile Antechinus, this does not signify this species is absent from ACT lowlands. Yellow-footed Antechinus and Agile Antechinus have been found to occupy slightly different habitats, with the latter found in the moist and wetter forests that are more prevalent in southern ACT. Recent sightings of Agile Antechinus within Tidbinbilla Nature Reserve indicate this species continues to persist within the ACT (NatureMapr, 2025).

The findings of this project are an important step towards understanding where small native mammal species are persisting within the ACT, and what may be impacting upon their distribution. We did not detect any small native mammals within Aranda, Black Mountain, or Callum Brae Nature Reserves. This finding supports earlier findings, suggesting that these species have become increasingly rare or lost from inner-city reserves, such as Black Mountain. The reasons for this loss are not well understood but our results suggest that Common Dunnart and antechinus are more likely to be found in the larger, more connected and potentially more intact nature reserves (Supplementary Materials Figure 1).

Antechinus within Kowen Escarpment and Rob Roy Nature Reserves were previously found to have a positive association with tussock cover and coarse woody debris (Pinner, 2023), which is consistent with the wider literature. Vegetation surveys were not conducted in 2024 or 2025, and detailed vegetation mapping is not available for all study areas. Therefore, confirmation of any vegetation or habitat associations for the Common Dunnart was not included as part of this work. Future efforts could investigate the habitat requirements for Common Dunnart and Yellow-footed Antechinus more broadly within the ACT reserves.

Habitat complexity is critical for Yellow-footed Antechinus persistence (Flanagan-Moodie, 2018). Fire, both planned and unplanned, is therefore a primary threat to the species due to potential to remove hollow-bearing trees and leaf litter, which provide essential refugia for this species. However, planned fire management plays an important role in maintaining habitat requirements or needs of other ecological values, and to manage fuel hazard levels. It is important that ecologists, land managers and fire practitioners in the ACT continue to collaborate on the best approach to manage competing interests.

The provision of supplementary habitat or shelter, and invasive species control are some approaches that have been explored to improve post-fire survival of small native mammals. Supplementary habitat or shelter is typically deployed where fire has affected the availability of vegetation that would otherwise be occupied by a species. Knowledge on the effectiveness of supplementary habitat as a management tool is somewhat limited. Available studies do, however, recommend that restoring fallen timber is critical for Yellow-footed Antechinus populations (Lada, Mac Nally and Taylor, 2008). A recent study on pre- and post-fire microhabitat selection found that native Bush Rats (*Rattus fuscipes*) selected areas with ferns, shrubs and unburnt vegetation (Lees *et al.*, 2021). These studies indicate that the provision of habitat or shelter, especially post-fire, may increase the survival of small native mammals. Future investigations might therefore consider the effectiveness and design of habitat supplementation (e.g. adding coarse woody debris) to post-fire or cleared landscapes. Improved understanding of fine-scale habitat drivers and preferences will be important to guide the effective placement of such added features.

Invasive species were observed on many of the wildlife cameras deployed as part of this project. This is likely in part due to having baited camera points which will have attracted species that respond well to scented lures, such as foxes. For larger herbivores such as pigs and deer, it is likely that outward facing cameras captured the natural movements of these populations. Information on the presence and activity of vertebrate pest species detected will be used to prioritise future control efforts.

Our findings support the use of wildlife cameras for the detection of small native mammal species as an initial baseline study within reserves. White-flash cameras were found to reliably detect both Common Dunnarts and antechinus, unlike footprint tunnels which only detected antechinus in the first year of this work (Pinner, 2023). The use of white-flash cameras was also important for identifying non-native small mammal species such as black rats, brown rats and house mice. These species are likely competitors of small native mammals and therefore understanding their abundance could assist future conservation efforts.

Conclusion

The presence of Common Dunnart and Yellow-footed Antechinus within ACT lowlands as determined by this study and building from the work by Norris et al. (2022) and Pinner (2023) highlights the capacity for these species to persist within peri-urban environments. This is an exciting and significant result for the ACT, particularly for the Yellow-footed Antechinus, which was thought to be locally extinct. These findings provide land managers in the ACT with the opportunity to make informed decisions about the conservation management of these species. These opportunities could include guidance on the provision of supplementary habitat, improved fire management and invasive species control. Future monitoring of native small mammal populations could track population persistence over time, improve species knowledge and evaluate the impact of disturbance events (e.g. fire, urbanisation).

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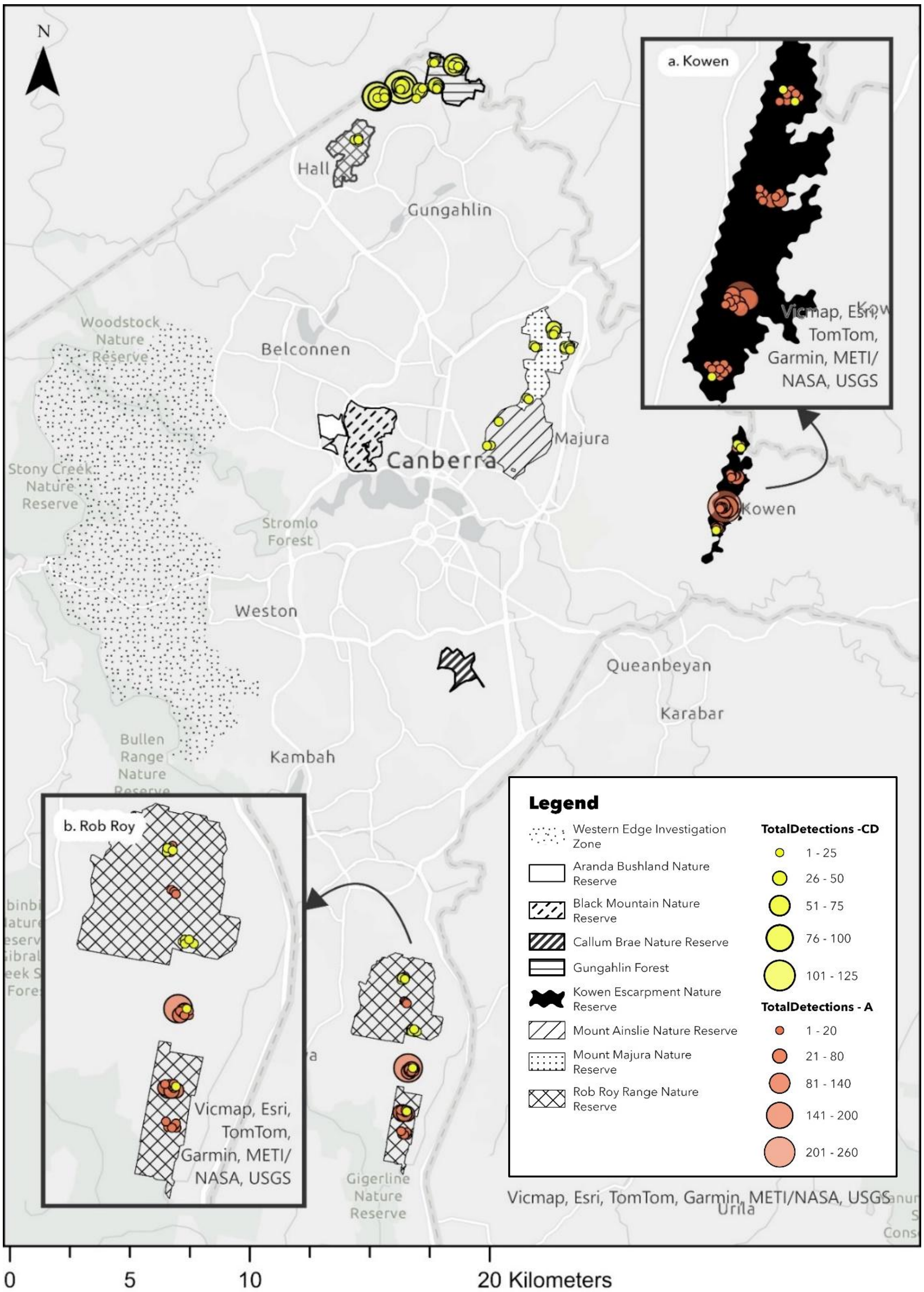
Supplementary Materials



Supplementary Materials Figure 1: Raw detections of Antechinus spp. (Orange) and Common Dunnarts (Yellow) on white-flash cameras at all study sites. An increase in circle size indicates an increase in number of detections. The data used in this figure includes all raw data of these species and therefore should be interpreted cautiously.

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