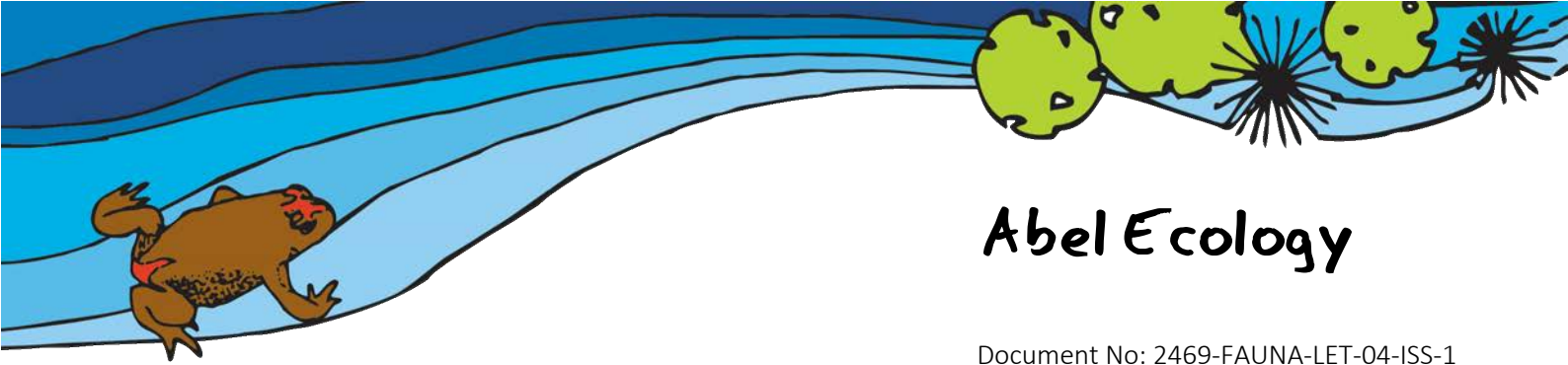




Abel Ecology

Document No: 2469-FAUNA-LET-04-ISS-1

24 July 2023

Chris Buscal
Snow Hydro Ltd
PO Box 332
Cooma NSW 2630

Attention: Chris Buscall

Dear Chris,

RE: Review of Lobs Hole Road fauna underpass remote camera monitoring for the period of 17 March 2023 to 15 April 2023.

This letter presents the results of a review of remote camera photos of fauna detected using purpose-built road underpasses along Lobs Hole Ravine Road, Cabramurra NSW. Fauna underpasses along Lobs Hole Ravine Road were installed in response to potential direct impact on threatened small mammal populations through actions of vehicle strike in relation to Snowy Hydro 2.0 construction works, utilisation of the road. Monitoring of the fauna underpasses is guided by procedures outlined by Snowy 2.0 Main Works – Biodiversity Management Plan (BMP) (Revision I, dated 12 Oct 2020), Table 5-1 - BM02, BM03, and BM22, Appendix B and Appendix G.

There are six (6) fauna underpasses along Lobs Hole Ravine Road, each with two (2) remote Reconyx cameras, one at each entrance to the underpass. This is a total of twelve (12) cameras. There is one (1) monitoring period presented here and this period is based on when the camera SD cards were retrieved and downloaded by Snowy Hydro Limited (SHL) staff.

Monitoring period:

- 17 March 2023 - 15 April 2023.

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1.1 BioNet Atlas of NSW Wildlife website search

Because direct trapping of fauna is not scheduled to occur to identify animals in the hand through accurate morphometric measurement, and also because views of lateral and ventral angles of animals is limited, records from the BioNet Atlas of NSW Wildlife website were accessed using the following search criteria to cross-reference local species records and locations:

Licensed Report of all Valid Records of Exotic listed or Native listed fauna for a 20 x 22 km square centred on the site (selected area [North: -35.74°, West: 148.32°, East: 148.54°, South: -35.94°]). Records since 1 January 1990 until 27 June 2023 returned a total of 6,512 individual records from 247 fauna species. Of these records, species unlikely to use the fauna underpasses or not of interest were eliminated from the results. The cleaned results are presented in Table 1 and Table 2.

Data from the BioNet Atlas website holds records from a number of custodians. The data are indicative only and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°). Copyright the State of NSW through the Office of Environment and Heritage.

The species in Table 1 and Table 2 have been considered in analysis of underpass photos.



Table 1. Bionet records search results of relevant small mammals likely to use fauna underpasses in the locality.

<i>Scientific Name</i>	Common Name	Bionet records for locality since 1 Jan 1990	NSW status	CommWlth. status
<i>Pseudomys fumeus</i>	Smoky Mouse	33	CE, P	E
<i>Mastacomys fuscus</i>	Broad-toothed Rat	96	V, P	V
<i>Cercartetus nanus</i>	Eastern Pygmy-Possum	61	V, P	-
<i>Rattus fuscipes</i>	Bush Rat	157	P	-
<i>Antechinus mimetes</i>	Mainland Dusky Antechinus	29	P	-
<i>Antechinus agilis</i>	Agile Antechinus	198	P	-
<i>Antechinus stuartii</i>	Brown Antechinus	1	P	-
<i>Perameles nasuta</i>	Long-nosed Bandicoot	6	P	-
<i>Mus musculus</i> *	House Mouse	45	I	I
<i>Rattus rattus</i> *	Black Rat	11	I	I
<i>Oryctolagus cuniculus</i> *	Rabbit	422	I	I
<i>Vulpes vulpes</i> *	Red Fox	125	I	I
<i>Felis catus</i> *	Feral Cat	49	I	I

Key

P = Protected

V = Vulnerable

E = Endangered

E1 = Endangered Species

CE = Critically Endangered

I = Introduced*



Table 2. Bionet records search results of relevant amphibian and reptile species likely to use fauna underpasses in the locality.

Scientific Name	Common Name	Bionet records for locality since 1 Jan 1990	NSW status	CommWlth. status
<i>Crinia signifera</i>	Common Eastern Froglet	35	P	
<i>Pseudophryne bibronii</i>	Bibron's Toadlet	5	P	
<i>Limnodynastes dumerilii</i>	Eastern Banjo Frog	13	P	
<i>Litoria booroolongensis</i>	Booroolong Frog	60	E1,P	E
<i>Litoria verreauxii</i>	Verreaux's Frog	5	P	
<i>Litoria verreauxii alpina</i>	Alpine Tree Frog	34	E1,P	V
<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	17	P	
<i>Anepischetosia maccoyi</i>	Highlands Forest-skink	5	P	
<i>Ctenotus robustus</i>	Robust Ctenotus	10	P	
<i>Ctenotus taeniolatus</i>	Copper-tailed Skink	3	P	
<i>^Cyclodomorphus praealtus</i>	Alpine She-oak Skink	37	E1,P,2	E
<i>Egernia cunninghami</i>	Cunningham's Skink	1	P	
<i>Egernia saxatilis</i>	Black Rock Skink	6	P	
<i>Eulamprus heatwolei</i>	Yellow-bellied Water-skink	2	P	
<i>Eulamprus kosciuskoi</i>	Alpine Water Skink	9	P	
<i>Eulamprus sp.</i>	Unidentified Eulamprus	1	P	
<i>Eulamprus tympanum</i>	Southern Water-skink	12	P	
<i>Lampropholis delicata</i>	Dark-flecked Garden Sunskink	4	P	
<i>Lampropholis guichenoti</i>	Pale-flecked Garden Sunskink	15	P	



Scientific Name	Common Name	Bionet records for locality since 1 Jan 1990	NSW status	CommWlth. status
<i>Pseudemoia entrecasteauxii</i>	Tussock Cool-skink	21	P	
<i>Pseudemoia pagenstecheri</i>	Tussock Skink	137	P	
<i>Pseudemoia spenceri</i>	Trunk-climbing Cool-skink	2	P	
<i>Tiliqua nigrolutea</i>	Blotched Blue-tongue	10	P	
<i>Amphibolurus muricatus</i>	Jacky Lizard	5	P	
<i>Intellagama lesueurii</i>	Eastern Water Dragon	5	P	
<i>Austrelaps ramsayi</i>	Highland Copperhead	12	P	
<i>Austrelaps superbis</i>	Lowland Copperhead	1	P	
<i>Drysdalia coronoides</i>	White-lipped Snake	18	P	
<i>Notechis scutatus</i>	Tiger Snake	2	P	
<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake	1	P	
<i>Pseudonaja textilis</i>	Eastern Brown Snake	2	P	

Key

P = Protected

V = Vulnerable

E = Endangered

E1 = Endangered Species

CE = Critically Endangered

I = Introduced*



The presence / absence results of the 17 March 2023 - 15 April 2023 monitoring period are illustrated below in Table 3.

Table 3. Results from reporting period 17 March 2023 - 15 April 2023.

Underpass Location	Species detected	East	West
1	Smoky Mouse	-	-
	Broad-toothed Rat	-	-
	Bush Rat	●	●
	Agile Antechinus	●	-
	House mouse	●	●
	<i>Lampropholis delicata</i> Garden Skink	-	●
	<i>Austrelaps ramsayi</i> Highlands Copperhead	●	●
	White-browed Scrubwren (<i>Sericornis frontalis</i>)	●	-
2	Smoky Mouse	No data	-
	Broad-toothed Rat	No data	-
	Agile Antechinus	No data	●
	Bush Rat	No data	●
	House mouse	No data	●
	<i>Austrelaps ramsayi</i> Highlands Copperhead	No data	●
	<i>Notechis scutatus</i> Tiger Snake	No data	●



Underpass Location	Species detected	East	West
3	Smoky Mouse	-	-
	Broad-toothed Rat	-	-
	Agile Antechinus	-	●
	Bush Rat	●	●
	House mouse	●	-
	<i>Lampropholis delicata</i> Garden Skink	●	-
	<i>Lampropholis guichenoti</i> Grass Skink	●	-
	<i>Austrelaps ramsayi</i> Highlands Copperhead	●	●
	<i>Notechis scutatus</i> Tiger Snake	-	●
4	Smoky Mouse	-	-
	Broad-toothed Rat	-	-
	Bush Rat	●	●
	Agile Antechinus	-	●
	House mouse	●	●
	<i>Austrelaps ramsayi</i> Highlands Copperhead	●	●
5	Smoky Mouse	-	-
	Broad-toothed Rat	-	-
	Bush Rat	●	●
	Agile Antechinus	●	●



Underpass Location	Species detected	East	West
6	Smoky Mouse	-	-
	Broad-toothed Rat	-	-
	Bush Rat	●	●
	Agile Antechinus	●	●
	<i>Lampropholis guichenoti</i> Grass Skink	-	●
	House mouse	●	●
	White-browed Scrubwren (<i>Sericornis frontalis</i>)	●	●
	Rabbit	●	●



2 Discussion

With a reasonable level of confidence, no presences of Smoky Mouse or Broad-toothed Rat were recorded using the underpasses during the 17 March 2023 - 15 April 2023 reporting period. Species recorded that are similar in size and shape were Agile Antechinus, House Mouse and Bush Rat. All mouse sized individuals recorded were brown to light-brown in colour (Figure 19 and Figure 20), no image recorded provided the diagnostic features to confirm the present of Smoky Mouse. Similarly, the Bush Rats (Figure 5, Figure 6 and Figure 7) caught on camera were quite dark brown as opposed to descriptions of lighter coloured individuals from reference text. All views of rat feet were pink or white in colour, and no views of dark coloured rat feet were captured to indicate a different *Mastacomys* / *Rattus* species. Juvenile Bush Rats were detected (Figure 7), and these individuals are similar in size and colourisation to Broad-toothed Rat. The body size difference between the smallest and largest rat recorded is significant, however not diagnostic. No image recorded provided the diagnostic features to confirm the present of Broad-toothed Rat. This conclusion also reflects the spatial distribution of public species records for Broad-toothed Rat and Bush Rat within the Snowy Hydro 2.0 project area.

Broad-toothed Rat and its preferred habitat has not previously been recorded along Lobs Holes Ravine Road (EMM 2020; BMP 2020). Reference text supports the argument for sharp habitat and distribution boundaries between the Bush Rat and Broad-toothed Rat indicating there could be very little distribution overlap between the two species. The main driver for this observation is argued by reference text to be distinct habitat features favoured by Broad-toothed Rat being absent from the immediate surroundings of Lobs Holes Ravine Road. Testing this hypothesis through live trap survey and habitat mapping would benefit Snowy Hydro's understanding of the Broad-toothed Rat use of the project site.

As could be expected, species richness decreased within the underpasses as the average air temperature at the site during the day decreased, being the natural transition from summer into autumn. This was particularly noticeable in reptile species. The level of fauna activity, from species that previously used the underpasses regularly (e.g. Bush Rat) was again similar to other reporting periods. Eastern Pygmy-Possum (Figure 1 and Figure 2) was not detected during this reporting period. The most frequently detected species using the underpasses during the reporting period was Bush Rat (Figure 5 and Figure 6) and Agile Antechinus. As of this reporting period, we have decided to revise our identification of Brown Antechinus *Antechinus stuartii* to Agile Antechinus *Antechinus agilis*. The revision would equally apply to previous reporting periods where we have identified Brown Antechinus. The reference text indicates that without genetic testing, and detailed survey effort through trapping and morphometric measurement, the two species would appear identical in a vertical photograph of the animal from above. The animal size range and colourisation of both species overlap significantly. In line with the Bionet records that are heavily weighted towards Agile Antechinus, and the reference text indicating the distribution of Brown Antechinus being further north of the project site, we have decided to make this change in species identification.



This reporting period resulted in the detection of six (6) native species:

- Agile Antechinus (Figure 3 and Figure 4),
- Bush Rat (Figure 5, Figure 6 and Figure 7),
- *Lampropholis delicata* Garden Skink,
- *L. guichenoti* Grass Skink,
- *Austrelaps ramsayi* Highlands Copperhead (Figure 13 and Figure 14), and
- *Notechis scutatus* Tiger Snake (Figure 16 and Figure 17).

Use of the underpasses by these species is a positive outcome and is an event that SHL should strive to maintain and improve. Reptile species make a significant contribution to the species richness of the species list.

Species previously reported:

- Eastern Pygmy-Possum (Figure 1 and Figure 2),
- *Tiliqua nigrolutea* Blotched Blue-tongue (Figure 8),
- *Egernia saxatilis* Black Rock Skink (Figure 9),
- *Eulamprus tympanum* Southern Water-skink (Figure 10),
- *Acritoscincus duperreyi* Eastern Three-lined Skink (Figure 11),
- *Amphibolurus muricatus* Jacky Lizard (Figure 12),
- *Austrelaps superbus* Lowland Copperhead (Figure 15), and
- *Pseudonaja textilis* Eastern Brown Snake (Figure 18),

Incidental records of White-browed Scrubwren within the underpass entrances were interesting and unexpected. Small birds are not expected to forage or to go beyond the entrance to pass through the underpass. Four (4) species of reptile were also interesting observations; the skinks and snakes are using the underpass as habitat. Both reptile groups would use the underpass as shelter and the snake species would also use the underpass for hunting the skinks. Snakes preying on mice could not be ruled out. A dramatic image (Figure 22) of a mature Highlands Copperhead preying upon an immature Highlands Copperhead (cannibalism) was a rare and exciting (not unknown) moment for one of the cameras to capture.

Rabbit/s (Figure 21) were recorded from one underpass (#6) during this monitoring period. Rabbit was previously recorded at underpass #4 and #6. The underpass would offer temporary shelter to rabbits.

We are pleased to report no feral predators (red fox and cats) were detected 'within' the underpass entrances during this reporting period, and this coincided with a reduction in the frequency of detection of House Mouse (Figure 19 and Figure 20). It is unclear if introduced predators were able to move freely through the underpasses and the presence of a grill (shadow) was detected in photos from Underpass 4 East and Underpass 6 West. The presence of foxes and cats appears to be linked to the presence of House Mouse, as no foxes or cats have been recorded in the underpasses since 21 June 2022, as previously reported. The design of the underpasses was to have obstructive habitat within the underpasses to facilitate threatened fauna movement



through the underpasses and to exclude feral predators. This design feature is currently being real-world tested by onsite feral predators. Previously we recommended that a site inspection is made to determine if improvements can be made to deny predator entry into the underpasses past the camera positions. It would appear the addition of a grill on the outside of the fauna underpass entrances has helped to deter feral predators, as the detection frequency of potential prey species has not decreased during this reporting period.

Previous detection of a significant amount of water from some of the fauna underpasses (Underpass 1 West, Underpass 4 West, Underpass 5 West, and Underpass 6 West), we think can now be downgraded as an issue. Good drainage is evident at present, and all underpasses are drying out within three or four days after a significant rain event. The water while present is not likely to be a significant deterrence to Smoky Mouse and Broad-toothed Rat from using the underpasses for any significant length of time. Management of run-off water may be needed in the future at mentioned underpasses, we recommend monitoring of this issue to determine if management action is required. Underpass 6 East is the only underpass with a significant amount of loose gravel inside the entrance that could be removed.

This monitoring period is the first where a measuring tape has been placed in each of the underpass photo frames. The placement of measuring tape within the photo frames of the underpass cameras has been an ongoing recommendation to capture a scale on the fauna being observed within the underpasses. We provide the following comments for improvement.

Underpass 1 West, Underpass 3 East, and Underpass 3 West - the rock holding the measuring tape is taking up too much of the photo frame and is obscuring the measuring tape. Ideally, we want the animals measured against the measuring tape, not the rock holding the tape. One benefit we see from a rock obstacle within the photo frame is that it gives the animals opportunity to reach out with their limbs to climb the obstacle, providing more clear views of feet for the observer. However, the obstacle cannot be too tall, as this places the animal outside the focal range of the camera, meaning the photos generated will not be in focus. We recommend providing a smaller holding rock, or moving the existing rock outside the photo frame, or securing / gluing the tape against the surface of the culvert.

Underpass 4 East - the measuring tape is just outside the photo frame and has been covered in stormwater silt obscuring the legibility of the tape.

No measuring tape is observable in:

- Underpass 2 East
- Underpass 4 West
- Underpass 5 East
- Underpass 6 East, and
- Underpass 6 West.

We believe the measuring tape to be outside the photo frame on these cameras.

The placement of rock and measuring tape is acceptable on **Underpass 1 East, Underpass 2 West, and Underpass 5 West.**



We acknowledge the placement of a free-standing measurement tape held down by a rock, as a first step towards fulfilling previous recommendations towards gaining a scale of animals. We would be happy to discuss with SHL adaptive measures if the wording of our recommendations cannot be achieved fully in practice. Based on the measuring tapes that are easily observable, the photo frame of each camera is approximately 18 cm long by 27 cm wide (the length and width measurement to be the same corresponding parallel measurements to the underpass, same orientation). It is discernible that the width of the photo frame does not capture the entire width of each underpass, as on multiple occasions, animals hugging the wall of the underpass, can squeeze past the camera without being (clearly) observed in the photos. The motion sensor of the camera is still sensitive enough to detect the movement of the animals past the camera, but delivering photos that appear to be false triggers, when actually the animals are just out of frame. Creative ‘funnelling’ of animals into the middle of the underpass, could be achieved through careful placement of high rock obstacles down either sidewall of the underpass, just outside the photo frame of the cameras. This adaptive measure hopes to reduce the level of false triggers. Noting a House Mouse can squeeze through a gap larger than a 20-cent piece; the rock obstacle would have to be tight fitting against the culvert wall.

It is essential that the area of the underpass within the photo frame of the cameras be cleared of debris (e.g., habitat rocks) so the animals are ‘in-focus’ when the photo/s are taken. The removal of habitat rocks this reporting period generated many in-focus images of fauna, and we would maintain our recommendation that >90% of the photo frame of the cameras be cleared of debris. Underpass 5 & 6 have washed-in silt and crushed rock, that we would recommend removing, particularly if rulers and tags are to be installed for reference, within photos taken for review of fauna presence. It is essential that cover (e.g., habitat rocks) are maintained or increased to strongly inhibit predator movement through the underpasses and provide habitat connectivity for native fauna.

To improve the success of the fauna underpass monitoring program the installation of plastic measuring tape or metal rulers (30cm) is recommended within the photo frame of the cameras. This is to ensure we capture a reliable scale of the animals using the underpasses. A marking (paint or tag) to indicate the direction of the underpass entrance within the photo frame of the remote cameras is recommended. Additionally, a marking (paint or tag) within the photo frame of the cameras to indicate which underpass camera the photo was taken at is also recommended. These recommendations have been made previously, and from what we can determine have not yet been fully implemented.

A successful movement will be determined through an animal being detected on both cameras at around the same time period. The success of this performance criteria has not been analysed or reported here.



3 Conclusion

The six (6) fauna underpasses are functioning as a corridor for small mammal and reptile movement. The target species - Smoky Mouse and Broad-toothed Rat have not yet been recorded utilising the underpasses. Eastern-Pygmy Possum *Cercartetus nanus* was not recorded during this reporting period. As of this reporting period, we have decided to revise our identification of Brown Antechinus *Antechinus stuartii* to Agile Antechinus *Antechinus agilis*.

Broad-toothed Rat and its preferred habitat has not previously been recorded along Lobs Holes Ravine Road. Reference text supports the argument for sharp habitat and distribution boundaries between the Bush Rat and Broad-toothed Rat indicating there could be very little distribution overlap between the two species. The main driver for this observation is argued by reference text to be distinct habitat features favoured by Broad-toothed Rat being absent from the immediate surroundings of Lobs Holes Ravine Road. Testing this hypothesis through live trap survey and habitat mapping would benefit Snowy Hydro's understanding of the Broad-toothed Rat use of the project site.

The detection of six (6) (fourteen [14] previously) native species using the underpasses is a positive outcome, and this is an event that SHL should strive to maintain and improve.

No items of significant concern were detected during the monitoring period reported here. The presence of feral predators, which appear to be focusing on the underpasses during periods of a high or dispersing House Mouse population have not been detected since 21 June 2022. We do encourage adaptive management to address issues raised in regard to placement of measurement tape and holding rocks.



4 Recommendations

For the continued monitoring of six (6) fauna underpasses along Lobs Hole Ravine Road, Cabramurra NSW, the following recommendations are made in accordance with the Snowy Hydro Limited document Snowy 2.0 Main Works – Biodiversity Management Plan (BMP), Biodiversity Monitoring Program and Fauna Strike Mitigation Strategy:

1. Presence and pressure from feral predators has not been detected at any fauna underpass since 21 June 2022. We continue to recommend a site inspection is made to determine if improvements can be made to deny predator entry into the underpasses past the camera positions. It would appear the addition of a grill on the outside of the fauna underpass entrances has helped to deter feral predators.
2. The installation of plastic measurement tape or metal rulers (30 cm) is recommended within the photo frame of the remote cameras. This is to ensure we capture a reliable scale of the animals using the underpasses. We recommend two (2) rulers running parallel to the underpass, one on either side of the photo frame. Rulers and glue were provided to SHL (Emily Martin) by Abel Ecology for installation 1 July 2022. It is unclear if this recommendation has been fully implemented. Please note issues raised in the discussion of this report on the execution of this recommendation. Adaptive management is required on most underpass cameras to fulfil the recommendation. We recommend providing a smaller holding rock, or moving the existing rock outside the photo frame, or securing / gluing the tape against the surface of the culvert. The measurement tape on all cameras will require regular cleaning of washed-in silt and dust.
3. A marking (paint stencil or tag) to indicate the direction of the underpass entrance within the photo frame of the remote cameras. Additionally, a marking (paint stencil or tag) within the photo frame of the remote cameras to indicate which underpass camera the photo was taken at. It is unclear if this recommendation has been implemented.
4. Continue small terrestrial mammal presence/absence monitoring as per Table 5-2 of site BMP (2020) in the vicinity of the fauna underpasses.
5. Continue feral animal presence/absence monitoring as per Table 8-1 of site BMP (2020).
6. Implement Smoky Mouse and Broad-toothed Rat pest animal mitigation strategies as per Table 5-3 of site BMP (2020).

Yours faithfully,

Mark Mackinnon

Abel Ecology



Figure 1. Remote camera image of Eastern-Pygmy Possum *Cercartetus nanus* recorded using a fauna underpass (#3 East) along Lobs Hole Ravine Road, Cabramurra NSW during January 2023.



Figure 2. Remote camera image of Eastern-Pygmy Possum *Cercartetus nanus* recorded using a fauna underpass (#3 West) along Lobs Hole Ravine Road, Cabramurra NSW during December 2022.



Figure 3. Remote camera image of Agile Antechinus *Antechinus stuartii* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.



Figure 4. Remote camera image of Agile Antechinus *Antechinus stuartii* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.



Figure 5. A regular user of the fauna underpasses along Lobs Hole Ravine Road, Cabramurra NSW is the Bush Rat *Rattus fuscipes*.



Figure 6. A regular user of the fauna underpasses along Lobs Hole Ravine Road, Cabramurra NSW is the Bush Rat *Rattus fuscipes*.



Figure 7. Is this a Broad-toothed Rat or a juvenile Bush Rat? We think it is a juvenile Bush Rat but we could be wrong without a different angle of view.



Figure 8. Remote camera image of *Tiliqua nigrolutea* Blotched Blue-tongue recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during December 2022.



Figure 9. Remote camera image of *Egernia saxatilis* **Black Rock Skink** recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.



Figure 10. Remote camera image of *Eulamprus tympanum* **Southern Water-skink** recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during January 2023.



Figure 11. Remote camera image of *Acritoscincus duperreyi* Eastern Three-lined Skink recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during January 2023.



Figure 12. Remote camera image of *Amphibolurus muricatus* Jacky Lizard recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during January 2023.



Figure 13. Remote camera image of Highlands Copperhead *Austrelaps ramsayi* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during [February 2023](#).



Figure 14. Remote camera image of Highlands Copperhead *Austrelaps ramsayi* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during [March 2023](#).



Figure 15. Remote camera image of *Austrelaps superbus* Lowland Copperhead recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.



Figure 16. Remote camera image of *Notechis scutatus* Tiger Snake recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during February 2023.



Figure 17. Remote camera image of *Notechis scutatus* Tiger Snake recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during January 2023.



Figure 18. Remote camera image of *Pseudonaja textilis* Eastern Brown Snake recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.



Figure 19. Remote camera image of House Mouse *Mus musculus* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during May 2022.



Figure 20. Remote camera image of House Mouse *Mus musculus* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during April 2022.



Figure 21. Remote camera image of Rabbit *Oryctolagus cuniculus* recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during September 2022.

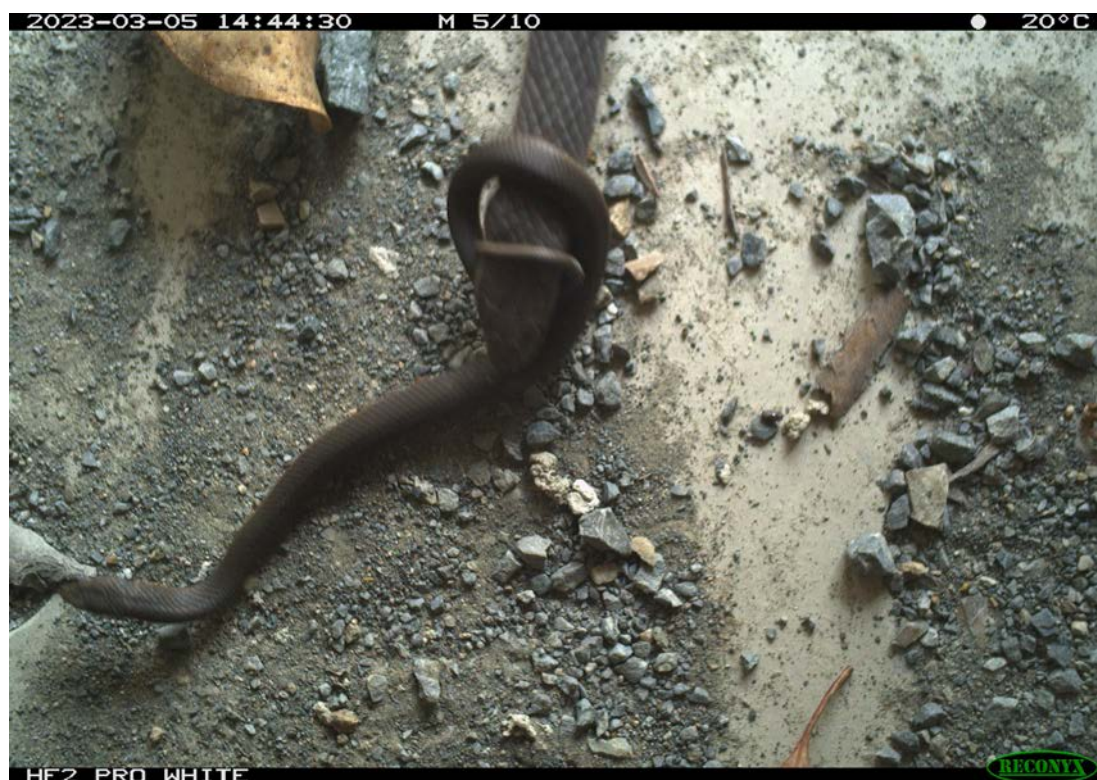


Figure 22. Remote camera image of cannibalism (Copperhead snakes) recorded using a fauna underpass along Lobs Hole Ravine Road, Cabramurra NSW during March 2023.