

Yea-link Road, Toolangi State Forest

297-826-0002

LEADBEATER'S POSSUM DETECTION REPORT

Report on Leadbeater's Possum (*Gymnobelideus leadbeateri*) detection within VicForests scheduled logging coupe 297-826-0002

Abstract

VicForests' scheduled logging coupe 297-826-0002 was investigated to assess the presence/absence of Leadbeater's Possum individuals within or adjacent to State Forest scheduled for logging in accordance with "Prescription 2 – Protection of recorded locations" as defined in "*New Restoration Forest Management Prescriptions to Conserve Leadbeater's Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria*"¹ and "*Planning Standards for timber harvesting operations in Victoria's State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014*"².

This investigation's recommendations relies on the prescriptions developed as a result of the work of:

"Researchers at The Australian National University [who] have worked in the montane ash forests of the Central Highlands of Victoria for 30 years. [Their] work has spanned studies of the habitat requirements and population viability of arboreal marsupials (including Leadbeater's Possum), populations of large old trees, forest dynamics, fire dynamics, logging impacts and numerous other investigations documented in more than 165 peer-reviewed scientific articles and seven books (reviewed in Lindenmayer 2009). The prescriptions in this report are based on that body of research, together with new data from on-going research on the impacts of the 2009 fires on Leadbeater's Possum and its habitat in montane ash forests."

At least one Leadbeater's Possum individual was identified during this investigation. This investigation concludes that VicForests, within coupes 297-826-0002 has scheduled logging in an area of forest currently inhabited by the critically endangered Leadbeater's Possum.

The methodology employed and the results of the investigation and the reports conclusions are detailed below.

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Date of Investigation 15/06/2014 – 27/06/2014

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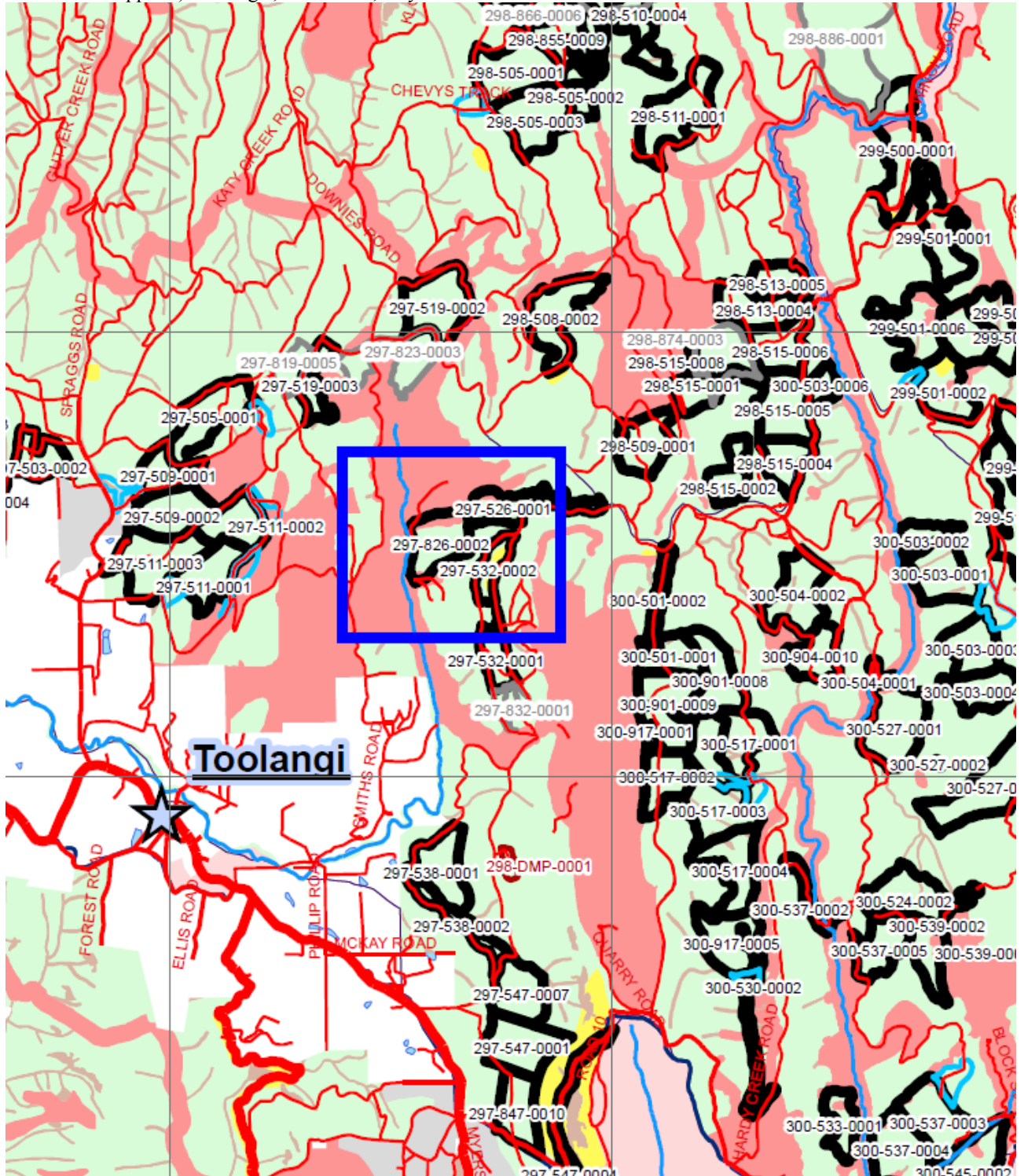
1 Lindenmayer, D.B., Blair, D., McBurney, L. and Banks, S., *New Restoration Forest Management Prescriptions to Conserve Leadbeater's Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria (Version 2)*, Australian National University, Canberra, ACT, Australia, July 2013, p. 15

2 The State of Victoria Department of Environment and Primary Industries (now Department of Environment, Land, Water and Planning) "*Planning Standards for timber harvesting operations in Victoria's State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014*", 2014

Location details

Within VicForests scheduled logging coupe 297-826-0002 off Yea-link Road in the Toolangi State Forest.

Figure A. Detail from: "Approved Timber Release Plan 2013-2016 Change Map; July 2014 (with all approved amendments applied) Toolangi", VicForests, July 2014



* Investigation location within blue box.

Method 1 (method used: Song Meter – Remote audio recording)

Song Meter (remote audio recording) [15/06/2014 – 27/06/2014]

Survey technique:

- “Song Meter [SM2]”³ (remote audio recording)
- Global Positioning System (GPS) for recording location of Song Meter deployment.

Location:

- “YLSM201”: “Leadbeater's Possum detection location”; 55 H 367793//5847662 (GDA//UTM)
- See “Results 4” Figures 3-4. “Leadbeater's Possum detection location” for further details.

Method used:

1. The “Song Meter” was placed at the above location on the 15/06/2014.
2. The “Song Meter” recorded audio from approximately 30 minutes before sunset (or 16:36-8) to 60 minutes after sunrise⁴ (or 07:00[am]) from the evening of 15/06/2014 to the morning of 27/06/2014.
3. The “Song Meter” was retrieved on the 27/06/2014.
4. The audio recordings were subsequently analysed using “recognisers” generated from training data gathered from various locations through the automated “Batch Processing” functions of the “Song Scope” audio software. Following this process the bulk of the audio recordings were searched manually to identify the presence of Leadbeater's Possum calls.⁵
5. Details of species' vocalisations detected through this process are further detailed in this reports “Results” section, with a link to a compiled audio file of the Leadbeater's Possum vocalisations recorded, photographic presentation of this information as captured by analysis under “spectrographic” visualisation (i.e. graphical representation of the species' calls as frequency over time)⁶, and investigation location maps.

Further results of these surveys, including location details and further information are provided below in this report's “Results” and “Discussions” sections.

3 See: <http://www.wildlifeacoustics.com/products/song-meter-sm2-birds> for further details.

4 Sunset and Sunrise according to: <http://www.ga.gov.au/geodesy/astro/sunrise.jsp>

5 See: <http://www.wildlifeacoustics.com/images/documentation/Song-Scope-Users-Manual.pdf>

6 See: <http://www.wildlifeacoustics.com/resources/publications> for links to further information.

Method 2 (analysis/recommendations)

From: “*New Restoration Forest Management Prescriptions to Conserve Leadbeater’s Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria*”⁷

“2. Strengthened protection of locations known to support Leadbeater’s Possum

Background scientific information:

A key part of the conservation of any organism is to protect individuals where they are known to occur. Recent (currently unpublished) analyses of time series data on arboreal marsupials gathered from 1997 to 2012 indicates that the probability of occurrence of Leadbeater’s Possum on a site is significantly influenced by their prior occurrence of the species at a site. This indicates that animals have a long-term site affinity – a result consistent with earlier work on the long-term occupancy of hollow-bearing trees by the species (Lindenmayer 1991).

Recommended Management Action:

Long-term site affinity by Leadbeater’s Possum suggests that it is important to protect sites where the species has been recorded in the past 15 years. The protection of these known locations is particularly important given the crucial role of animals from these remaining populations in assisting the recolonisation of previously burned areas. Given the estimated home range of Leadbeater’s Possum, coupled with colonial social organisation of the species (Smith 1984), we suggest that a logging exclusion area (i.e. an area excluding both clearfelling and thinning) be established around the known locations of the species. A 1 km buffer is proposed, based on sensitivity of the species to landscape-level disturbance (Lindenmayer et al. 1993A, 2013a).

All distribution records of Leadbeater’s Possum and associated buffers must be mapped and the subsequent spatial data lodged on the Government Geographic Information System to ensure they are clearly identified and delineated as areas from which logging is excluded.

If Leadbeater’s Possum has not been detected at a location within the previous 15 years, then that location would revert to Zone 1 habitat for subsequent protection, provided that meets the requirements of Prescription 1.

Prescription 2:

- 2.1 All locations where Leadbeater’s Possum has been recorded present in the past 15 years will be protected by a 1 km buffer from which logging (both clearfell and thinnings) is excluded.**
- 2.2 All distribution records of Leadbeater’s Possum and associated buffers must be mapped and lodged on the Government Geographic Information System. No logging should proceed in a given forest block until the collation of all location records of Leadbeater’s Possum has been completed. The Government of Victoria should seek records from all reputable sources such as Field Naturalist Groups, universities and other organisations responsible for gathering high-quality field surveys in montane ash forests.”**⁸

⁷ David B. Lindenmayer, David Blair, Lachlan McBurney and Sam Banks, *New Restoration Forest Management Prescriptions to Conserve Leadbeater’s Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria*, Version 2: July 2013, Fenner School of Environment and Society, Australian National University, Canberra, ACT, Australia, Version 2, July 2013

⁸ *ibid*, p. 4-5

Method 3 (analysis/recommendations)

From: “*Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014*”⁹

“4. Biodiversity

4.2 Fauna – fixed zoning

4.2.1 Statewide

4.2.1.1 Plan management actions for rare and endangered fauna in accordance with Table 3 (Fixed FMZ rules for fauna) below.

4.2.1.2 Maintain FMZ schemes for rare and endangered fauna in accordance with Table 3 (Fixed FMZ rules for fauna) below

Table 3 Fixed FMZ rules for fauna.¹⁰

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
Central Highland FMAs	Leadbeater's Possum	<i>Gymnobelideus leadbeateri</i>	Protect 30 % of Ash forest from timber harvesting operations in each LMU considering the following factors for selection of retained patches: - the aim to retain patches least likely to burn during bushfires; - the aim to retain patches of the oldest age class that will develop into old growth the quickest; and - the aim to retain patches that will consolidate other patches that may develop into old growth. Note preference should be given to meeting the 30 % target from conservation reserves or SPZs followed by areas informally reserved via timber harvesting exclusion areas in the Code.		
			Establish and maintain SPZs of 200 m radius centred on each verified Leadbeater's Possum colony found since 1998 that is not located within forest areas severely impacted by the 2009 wildfire (Exclude colonies within Fire Severity classes 1 and 2)		

4.3 Fauna - detection based zoning

4.3.1 Statewide

4.3.1.1 Apply the management actions outlined in Table 4 (Detection based FMZ rules for fauna) below for zoned rare or threatened fauna.

4.3.1.2 Implement FMZ amendments and reviews in accordance with Table 4 (Detection based FMZ rules for fauna) below for new verified rare or threatened fauna records and FMZ amendment requirements outlined in section 2.

Table 4 Detection based FMZ rules for fauna.¹¹

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
Central Highland FMAs	Leadbeater's Possum	<i>Gymnobelideus leadbeateri</i>	Establish a SPZ of 200 m radius centred on each verified Leadbeater's Possum colony.		The effectiveness of this action in supporting the recovery of the Leadbeater's Possum will be reviewed after two years of surveying (commencing July 2014) or once 200 new colonies are located whose exclusion zones impact the GMZ or SMZ, whichever comes first.

⁹ *Planning Standards*, pp. 16, 17, 21, 22, 36, 39

¹⁰ *Planning Standards*, “Table 3 Fixed FMZ rules for fauna”, p. 21-22

¹¹ *Planning Standards*, “Table 4 Detection based FMZ rules for fauna”, p. 39

Results(1-4) – Figures 1., Figure 2(a-h)., Table 1., Figures 3. and 4.

Summary

- 1. This investigation detected the Leadbeater's Possum within VicForests scheduled logging coupe 297-826-0002 and adjacent to coupe 297-526-0001.**
- 2. The Leadbeater's Possum vocalisations were recorded more than 250 times on 8 out of twelve recording sessions between the 18/06/2014 and the 26/06/2014.**
- 3. Each of these calls were made in close proximity to the Song Meter (“YLSM201”) recording location.**
- 4. These 250 Leadbeater's Possum vocalisations were made persistently throughout many of the recording session (i.e from dusk till dawn).**

Results 1.

5. The following “Figure 1.” is a link to an audio file compilation of the 251 Leadbeater's Possum vocalisations recorded within the >180 hour Song Meter recording session undertaken within this investigation between the 15th and 26th June 2014 (see “Result's 3.”).

Figure 1. Compiled Leadbeater's Possum vocalisations; Song Meter; 15/06/14 – 26/06/14; 55 H 367793//5847662

[CLICK HERE FOR WEB LINK TO LEADBEATER'S POSSUM AUDIO RECORDING](#)

Results 2.

6. Figures 2(a-h). [pp. 7-9] created in “*Song Scope 4.1.3A*”¹² are screen captures of a Leadbeater's Possum vocalisation from each of the recording sessions in which the species was recorded. These images show the “spectrographic visualisation” of each call. That is, the recorded frequency of the Leadbeater's Possum vocalisation presented over time.
7. The caption associated with each image, for Figures 2(a-h)., details the following information:
“Figure number/ID”; “Species”; “Recording Type/Method Used”; “Month/Year”; “day of the month”; “day of the week”; “recording date and commencement time”; “recording session”; “time of vocalisation displayed offset from audio file start”; “GPS location in GDA/UTM position format”

Results 3.

8. “Table 1. Yea-link Road Song Meter (SM2) Audio Recordings - Summary of Leadbeater's Possum detections” (p. 10.) summarises each of the Leadbeater's Possum recordings obtained showing when each individual vocalisation was recorded over the 12 recording sessions including basic statistics on the number of Leadbeater's Possum detections obtained within each “time slot” and “time bracket”.

Results 4.

9. Figure 3. and 4. [pp. 11-12] displays the recording locations for the “Song Meter” remote audio recording survey as well as the relevant VicForests scheduled logging coupe extents, nearby Forest Management Zoning, and other basic features.
10. The recording location of the Leadbeater's Possum vocalisations is labeled “YLSM201”.

12 See: <http://www.wildlifeacoustics.com/products/song-scope-overview>

Results 2 - Figures 2(a-c).

Figure 2(a). Leadbeater's Possum; Song Meter; 16/06/14; Mon; 20140616_163600; 2; 09:12:12; 55 H 367793//5847662

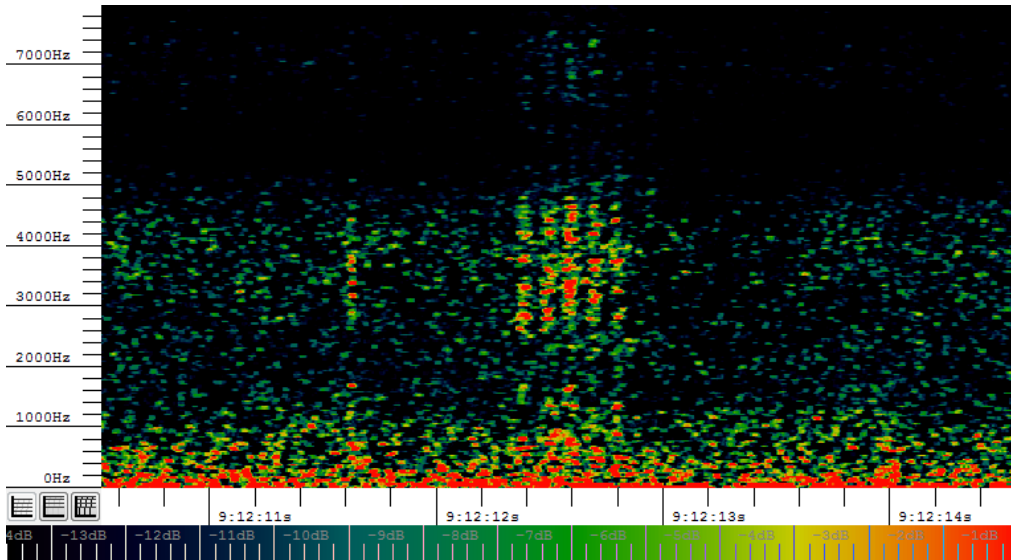


Figure 2(b). Leadbeater's Possum; Song Meter; 18/06/14; Wed; 20140618_163600; 4; 08:22:39; 55 H 367793//5847662

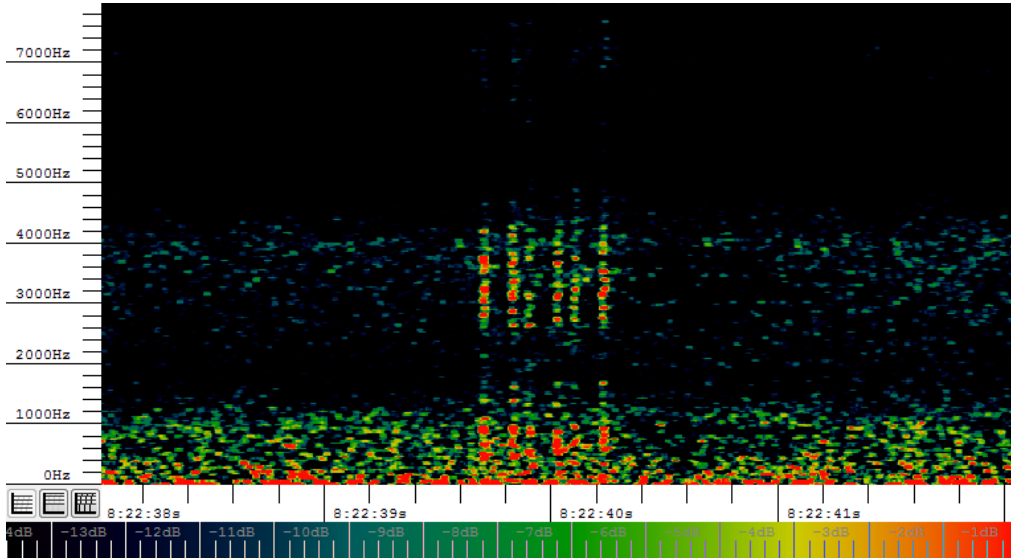
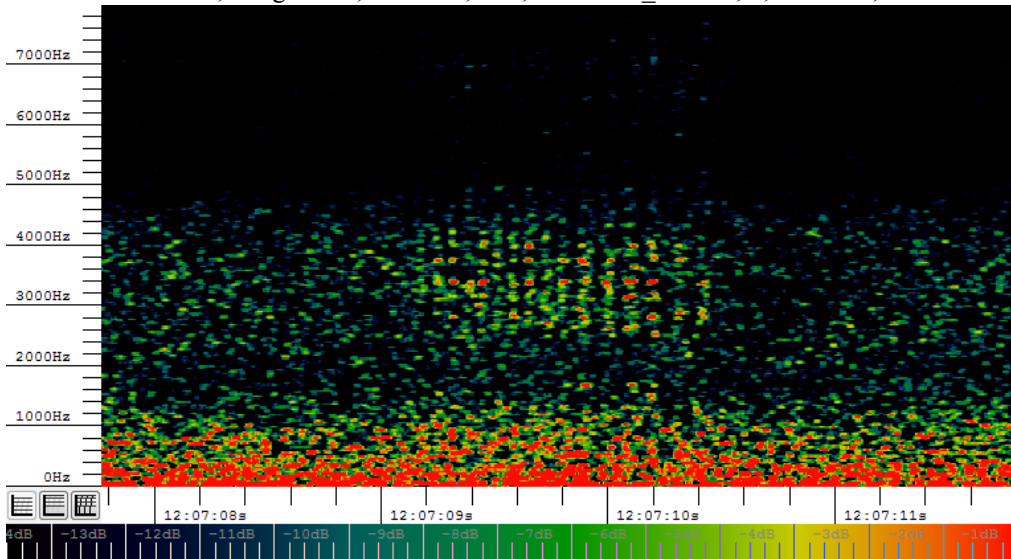


Figure 2(c). Leadbeater's Possum; Song Meter; 19/06/14; Thu; 20140619_163600; 4; 12:07:08; 55 H 367793//5847662



Results 2 - Figures 2(d-f).

Figure 2(d). Leadbeater's Possum; Song Meter; 20/06/14; Fri; 20140620_163700; 6; 07:20:29; 55 H 367793//5847662

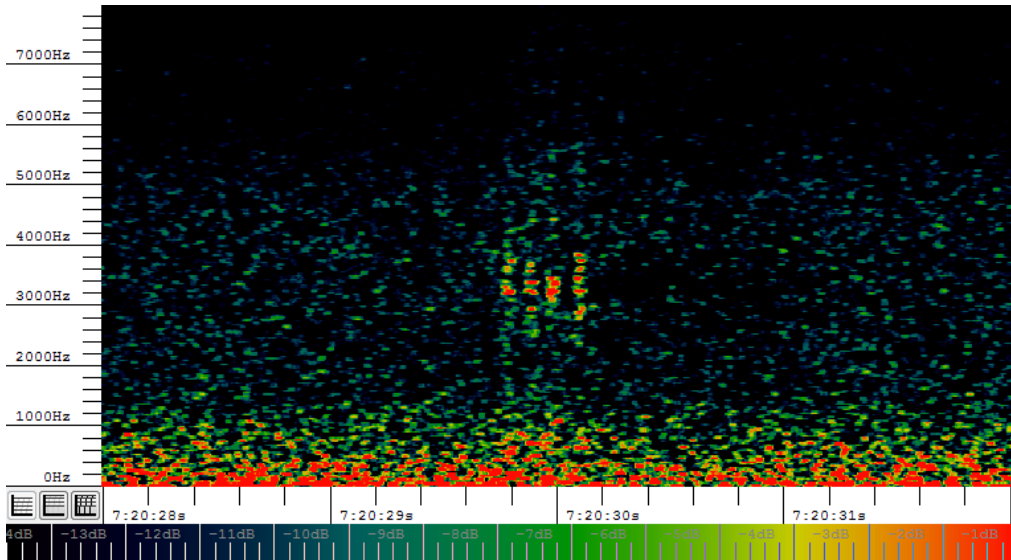


Figure 2(e). Leadbeater's Possum; Song Meter; 23/06/14; Mon; 20140623_163700; 9; 01:09:42; 55 H 367793//5847662

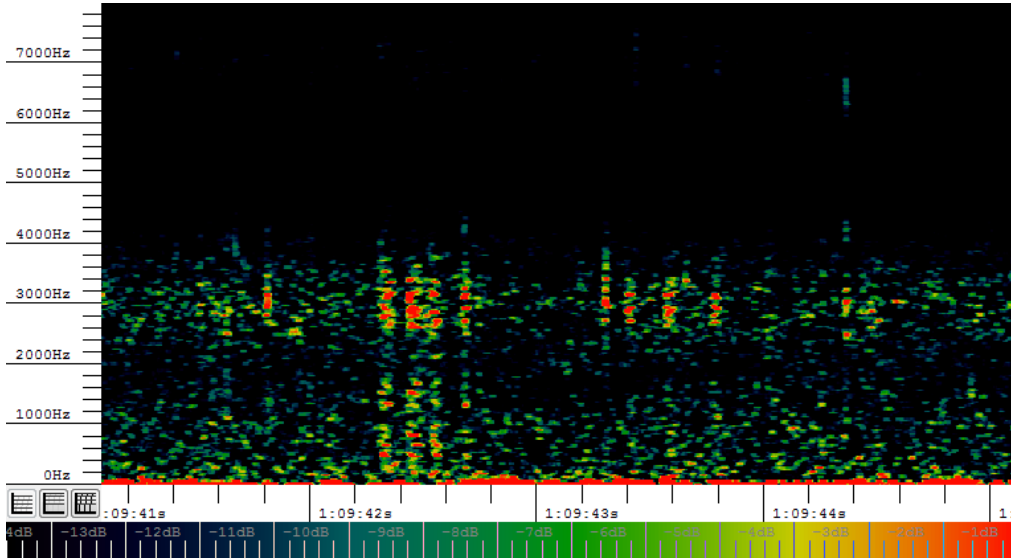
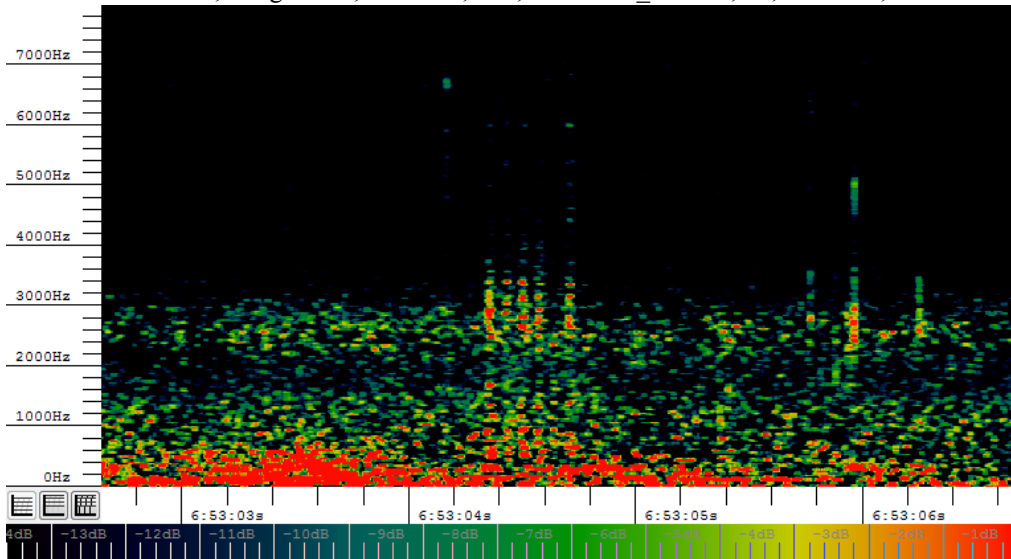


Figure 2(f). Leadbeater's Possum; Song Meter; 24/06/14; Tue; 20140624_163800; 10; 06:53:04; 55 H 367793//5847662



Results 2 - Figures 2(g-h).

Figure 2(g). Leadbeater's Possum; Song Meter; 25/06/14; Wed; 20140625_163800; 11; 09:13:03; 55 H 367793//5847662

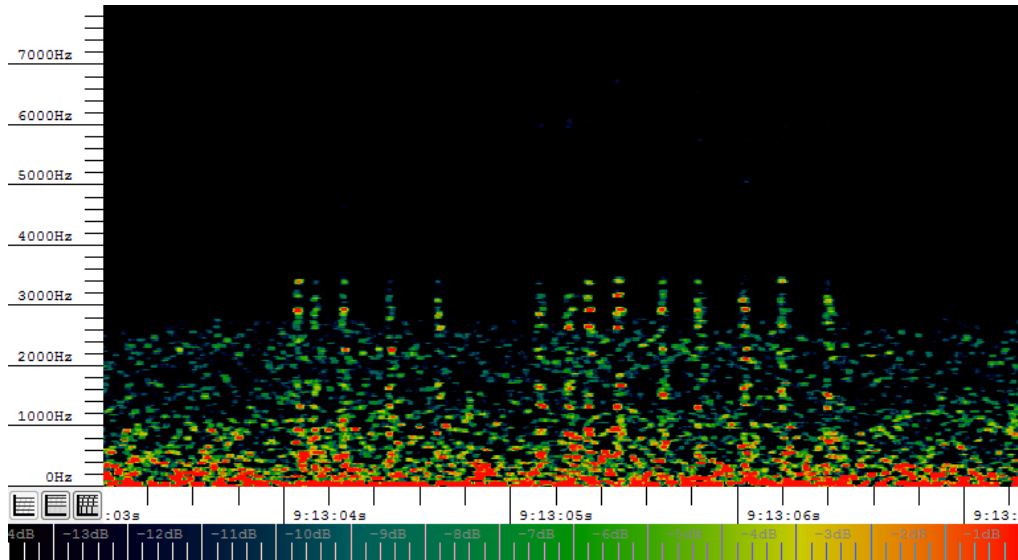
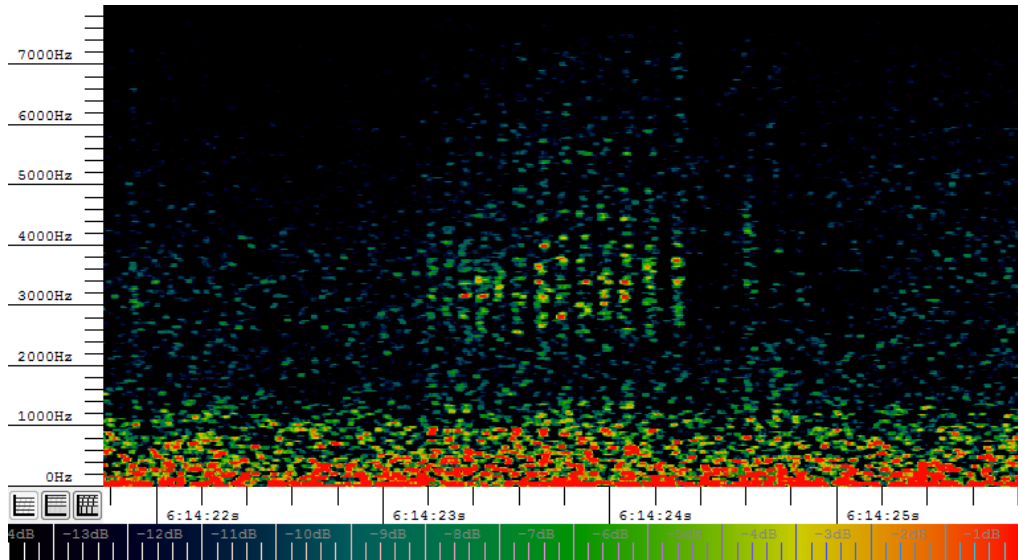
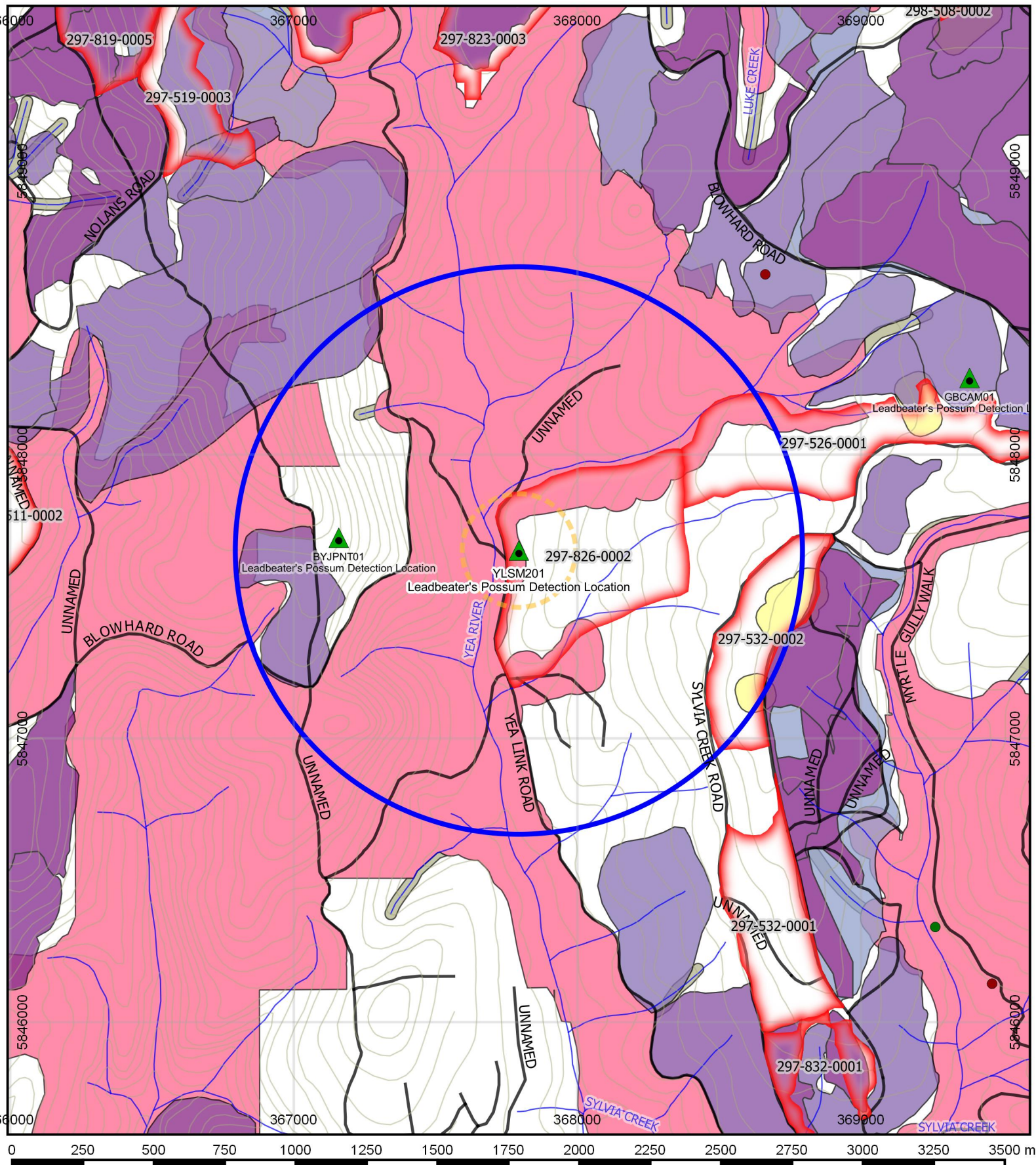


Figure 2(h). Leadbeater's Possum; Song Meter; 26/06/14; Thu; 20140626_163800; 12; 06:14:23; 55 H 367793//5847662



Results 4. Figure 3. Yea-link Road Leadbeater's Possum Detection; LBP recommended 1km and indicative 200m buffers; Forest Management Zoning [DEPI, June, 2014]; Prior logging history since 1970 [DEPI; December, 2013]; Roads, Watercourses, Contours



Legend					
	Leadbeater's Possum Record [FFRC report]		LBP Record [VBA25]		Roads
	1km Buffer on YLSM201 (FFRC LBP record - this report)		LBP Record [VBA100]		Code of Forestry Practice
	Indicative 200m buffer on YLSM201		TRP_2014-08-22		Special Protection Zone
			Contours		Special Management Zone
			Watercourses		General Management Zone

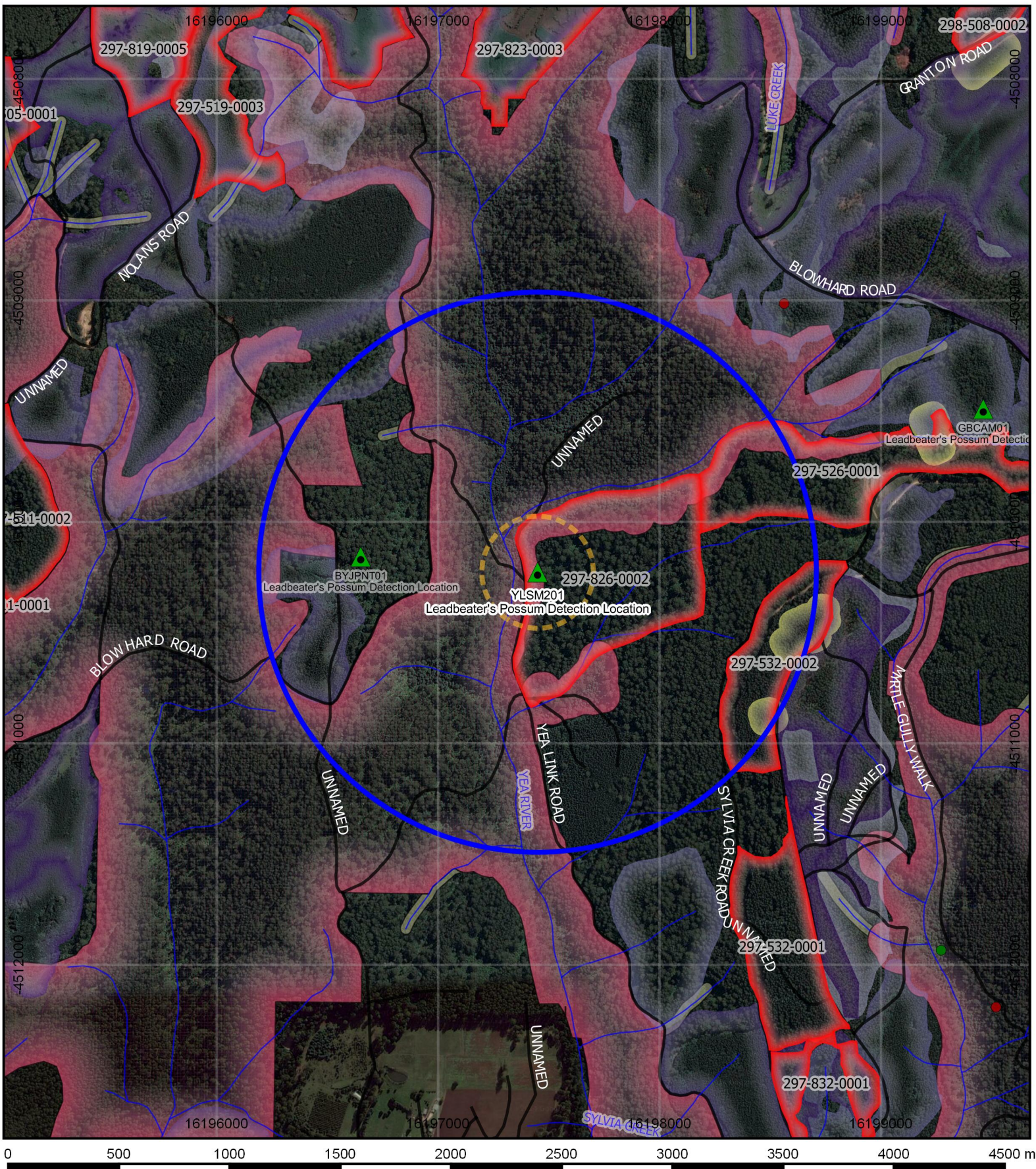
Prior Logging History [LASTLOG25]

- 196970
- 197980
- 198990
- 199900
- 200910
- 201011

Projection: EPSG: 28355
GDA94/MGA Zone 55

Map Scale:
1:17,500

Results 4. Figure 4. Yea-link Road Leadbeater's Possum Detection; LBP recommended 1km and indicative 200m buffers; Forest Management Zoning [DEPI, June, 2014]; Prior logging history since 1970 [DEPI; December, 2013]; Roads, Watercourses; Satellite



Legend		
Leadbeater's Possum Record [FFRC report]	1km Buffer on YLSM201 (FFRC LBP record - this report)	Forest Management Zones [FMZ100; DEPI; June 2014]
LBP Record [VBA25]	TRP_2014-08-22	Code of Forestry Practice
LBP Record [VBA100]	Watercourses	Special Protection Zone
Indicative 200m buffer on YLSM201	Roads	Special Management Zone
		General Management Zone

Prior Logging History [LASTLOG25]
196970
197980
198990
199900
200910
201011

Projection: EPSG: 3857 WGS 84 Pseudo Mercator	
Map Scale: 1:22,500	

Discussion/Conclusion/Recommendations

“New Restoration Forest Management Prescriptions to Conserve Leadbeater’s Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria”¹³

Prescription 2:

- 2.1 All locations where Leadbeater's Possum has been recorded present in the past 15 years will be protected by a 1 km buffer from which logging (both clearfell and thinnings) is excluded.
- 2.2 All distribution records of Leadbeater's Possum and associated buffers must be mapped and lodged on the Government Geographic Information System. No logging should proceed in a given forest block until the collation of all location records of Leadbeater's Possum has been completed. The Government of Victoria should seek records from all reputable sources such as Field Naturalist Groups, universities and other responsible organisations responsible for gathering high-quality field surveys in montane ash forests.¹⁴

and: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”¹⁵

4.2 Fauna – fixed zoning:

Table 3. Establish and maintain SPZs of 200 m radius centred on each verified Leadbeater’s Possum colony found since 1998 that is not located within forest areas severely impacted by the 2009 wildfire (Exclude colonies within Fire Severity classes 1 and 2)¹⁶

4.3 Fauna - detection based zoning

Table 4. Establish a SPZ of 200 m radius centred on each verified Leadbeater’s Possum colony.¹⁷

Leadbeater's Possum detection record

1. Leadbeater's Possum was recorded between the 15/06/2014 and 27/06/2014 at “YLSM201” at the following location: 55 H 367793//5847662 (GDA//UTM) as described in the preceding “Method Used” section and displayed in the preceding “Results Figure 3.” sections.
2. Figure 3. shows the location of “YLSM201” as well as this location “buffered” with a 200m (the dashed orange circular polygon) and 1km buffer (the solid blue circular polygon).
3. Figure 3. shows “YLSM201” (and thus the Leadbeater's Possum detection location) falling within VicForests scheduled logging coupe 297-826-0002.

“Planning Standards” – Fauna – fixed zoning 4.2 and Fauna - detection based zoning 4.3

4. All logging operations must be excluded from the area of forest within coupe 297-826-0002 that falls within the 200m “dashed orange circular polygon” buffer around the Leadbeater's Possum record obtained at “YLSM201”.

13 David B. Lindenmayer, David Blair, Lachlan McBurney and Sam Banks, *New Restoration Forest Management Prescriptions to Conserve Leadbeater’s Possum and Rebuild the Cover of Ecologically Mature Forest in the Central Highlands of Victoria*, Version 2: July 2013, Fenner School of Environment and Society, Australian National University, Canberra, ACT, Australia, Version 2, July 2013, p. 2-4

14 *ibid*, p. 4-5

15 *Planning Standards*, pp. 16, 17, 21, 22, 39

16 *Planning Standards*, “Table 3 Fixed FMZ rules for fauna”, p. 21-22

17 *Planning Standards*, “Table 4 Detection based FMZ rules for fauna”, p. 39

“New Restoration Forest Management Prescriptions” – Prescription 2; 2.1 and 2.2

5. Figure 3. shows that the 1km buffer surrounding “YLSM201” (and the Leadbeater's Possum record) covers the entirety of VicForests scheduled logging coupe 297-826-0002 and large parts of scheduled logging coupes 297-526-0001 and 297-532-0002.
6. **Logging (both clearfell and thinnings) should be excluded from the entirety of coupe 297-826-0002 and those parts of coupes 297-526-0001 and 297-532-0002 that fall within the 1km buffer around the Leadbeater's Possum record obtained at “YLSM201”.**
7. To ensure that Leadbeater's Possum colony's, their nest trees and their foraging habitat is not destroyed in the context of logging operations, VicForests (and the Department of Environment, Land, Water and Planning must require) that site inspections for Potential [active] Nest Trees within and adjacent to all scheduled logging coupes are conducted prior to logging and that appropriate presence/absence surveys for the species are conducted prior to the commencement of logging by appropriately qualified and independent persons, and that all sites where Leadbeater's Possum are detected are protected by a 1km buffer from which logging (both clearfell and thinnings) is excluded.

