

Des Page

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Cc: Allison Treweek
Subject: Bundendore north - Little Whip Snake Survey Report
Attachments: SMEC Bundendore Nth Little Whip Snake Survey Report FINAL.pdf

Hi Damon / Des,

Please find attached Little Whip Snake survey report. No snakes found. Sites mostly lack fauna diversity. Lots of frogs though.

Regards

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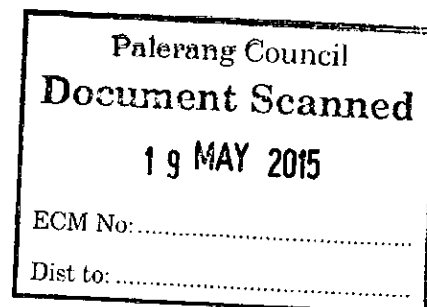
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North Bungendore Little Whip Snake Survey FINAL REPORT

1 May 2015



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1. INTRODUCTION

1.1. Background

SMEC was engaged by Link Management Pty Limited to undertake a Little Whip Snake in North Bungendore in April 2015. The locations of the study site are shown in Figure 1.

A standard methodology was used in the surveys as outlined by OEH. In summary roof tile transects were used, and the number of transects lines were determined on the pre

vious flora and fauna assessment conducted by Mills & Associates (2011). Tiles generally had a settling in period of four months and were then checked once a week for three weeks in April. The location and attributes of any captured lizards were recorded. Presence of other species was also noted.

1.2. Little Whip Snake

1.2.1. Habitat and ecology

The Little Whip Snake (*Parasuta flagellum*) is light tan to brown colour, black head, except for a light cream or white bar in front of eyes (Cogger 2014). They reach a length of 45cm (OEH 2014). Lips cream or light brown. No ventral stripe and have an unmarked white belly. Scales are smooth in 17 scales rows at mid body (Cogger 2014). The Little Whip Snake is primary nocturnal and feeds on small lizards.

Habitat preference is eucalypts woodlands and associated grasslands, particularly stony hills (OEH 2014). They shelter under rocks and logs that are partially embedded in the soil.

1.2.2. Distribution

The Little Whip Snake is found within the area with natural temperate grasslands and grassy woodlands in south eastern NSW. The distribution is bounded by Crookwell in the North Bombala in the south, Tumbarumba to the west and Braidwood to the east (OEH 2014). They are known in the Monaro region and have been identified at Turallo Nature Reserve (NPWS 2009, OEH 2014).

1.2.3. Legislation

The Little Whip Snake has been declared vulnerable under the *Threatened Species Conservation Act 1995*. It is not listed under the *Environmental Protection Biodiversity Conservation Act 1999*.

1.3. Study Area

The study area is a parcel of land that adjoined the northern side of the existing Elmslea Estate on the northern edge of the town of Bungendore. It covers the area between Tarago Road to the west, the railway in the east and the Elmslea Estate to the south.

The site is degraded grazed land with dominated exotic species. Four sites have been identified which support native grasslands but are small (less than one hectare) (Mills & Associate 2011).



Figure 1. Location of Little Whip Snake survey sites.

2. METHODS

2.1. Initial site inspections and vegetation assessment

Prior to transect placement and surveying for Little Whip Snake, each location identified by Mills and Associates (2011) and OEH was walked over and visually assessed for their suitability as locations for transect lines. Locations were chosen based on the presence of native grassland forming native grass species, particularly Spear grasses (*Austrostipa* spp.) and Wallaby grasses (*Rytidosperma* spp). Three transects lines were placed. A 'normal site' was chosen to demonstrate the main vegetation type within the site. This was requested by OEH at project inception.

At each transect line site, vegetation type was recorded.

2.2. Tile placement

The Little Whip Snake survey was completed according to OEH advice. Artificial shelters, specifically variegated roof tiles, were used for the surveys, which provide an attractive shelter and thermoregulation sites for Little Whip Snake and other reptiles. Vegetation was removed under each tile and a small cup-sided hole was dug underneath to provide thermo-regulation levels for the snake.

The tiles were placed in a 100 m transect line, 5 metres apart, resulting in 20 tiles per transects. The survey window is from September to May. This survey was set up in December 2014 and undertaken in conducted in April of 2014. OEH guidelines require the shelters be checked three times within a four week period.

Transects lines were placed at the site on 18th December 2014 and rechecked on 24th February 2015 as per OEH advice, to ensure the tiles have not been broken by cattle.

2.3. Little Whip Snake Monitoring

Durng a monitoring event each tile was turned over to check for Little Whip Snake presence. Where a Little Whip Snake was found under the tile, the animal was to be caught by a qualified ecologist with venomous snake handling experience and training. The Little Whip Snake was to be measured using a tape measure (total length) and photographed.

Any other fauna under the tiles were to be identified and recorded.

2.4. Survey pack-up

Tiles will be packed up and taken to the concrete recycling facility in mid May 2015.

3. RESULTS

3.1. Survey summary and habitat

Four transects were surveyed in April 2015. Surveys took place from 5th April to 25th April. Transect one had native grass species present at the time of tile placement but had become a planted field for crops and was extensively covered by non-native vegetation. Transect two and three were within native grassland identified by Mills and Associates (2011). The 'normal' area had a mixture of native and exotic species.

Vegetation assessment results are shown in Appendix 1.

No Little Whip Snake was found in any of the three surveys.

A number of non-target fauna were identified. Discussion of the ecological context to the results is included in section 5.

3.2. Little Whip Snake Results

No Little Whip Snake was identified during the survey period.

3.2.1. Site Vegetation

Transect 1

Predominantly exotic, plough for farming use.

Dominated by Scotch Thistle (*Onopordum acanthium*), sheep sorrel (*Acetosella vulgaris*), Goose grass (*Galium aparine*), Fleabane (*Conyza* sp.), Hoary Mustard (*Hirschfeldia incana*) and Catsear (*Hypochaeris radicata*).

Some native species include Tall Speargrass (*Austrostipa bigeniculata*) was present.

Transect 2 (Native Grassland)

Dominated with Tall Speargrass (*Austrostipa bigeniculata* and *Austrostipa scabra*) and wallaby grasses (*Rytidosperma* spp.), bluebells (*wahlenbergia* sp.), common everlasting (*Chysocephalum apiculatum*).

Exotics include Scotch Thistle (*Onopordum acanthium*), Saffron Thistle (*Carthamus lanatus*), Catsear (*Hypochaeris radicata*), Century (*Centaureum erythraea*), Chilean Needle Grass (*Nassella neesiana*) and Clover (*Trifolium* sp.).

Transect 3 (Native grassland)

Dominated with Tall Speargrass (*Austrostipa bigeniculata* and *Austrostipa scabra*) and wallaby grasses (*Rytidosperma* spp.), bluebells (*wahlenbergia* sp.), common everlasting (*Chysocephalum apiculatum*).

Exotics include Scotch Thistle (*Onopordum acanthium*), Saffron Thistle (*Carthamus lanatus*), Catsear (*Hypochaeris radicata*), Century (*Centaureum erythraea*), Chilean Needle Grass (*Nassella neesiana*) and Clover (*Trifolium* sp.).

Transects 4 (Normal site)

Mixed native and exotic.

Austral Rush (*Juncus australis*), Saffron Thistle (*Carthamus lanatus*), Scotch Thistle (*Onopordum acanthium*), Catsear (*Hypochaeris radicata*), Wallaby Grass (*Rytidosperma* sp.) and Weeping grass (*Microlaena stipoides*).

3.2.2. Survey timing and conditions

Survey dates and weather conditions are outlined in Table 1.

Table 1. Date, time and weather conditions of the three Little Whip Snake surveys.

Survey No.	Date	Survey Time	Temperature during surveys	Weather conditions
1	5 th April 2015	1030 - 1131	18 ^o C	Partly cloudy, light breeze, 5/8 cloud cover. Last rain 18 th March (3.8mm). Minimum temp. 6.4 ^o C, maximum 23 ^o C.
2	12 th April 2015	1315-1436	21 ^o C	Partly cloudy, light breeze, 5/ cloud cover. Last rain 8 th April (53.2mm). Minimum temp. 6.9 ^o C, maximum 21.9 ^o C.
3	25 th April 2015	833-951	11 ^o C	Sunny, no breeze, 3/8 cloud cover. Last rain 20 th April (2.2mm). Minimum temp. 4.9 ^o C, maximum 16.7 ^o C

3.2.3. Non-target Fauna

Table 2. Non-target fauna observations for the site

Species name	Common name	Records
<i>Hemiergis decresiensis</i>	Three-toed Skink (Figure 6)	2
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog (Figure 7)	130
<i>Limnodynastes dumerilii dumerilii</i>	Eastern Banjo Frog (Figure 8)	6
<i>Crinia signifera</i>	Common Eastern Froglet (Figure 9)	1

4. DISCUSSION & CONCLUSION

4.1. Summary

No Little Whip Snake were recorded during the surveys.

This species have been found 15km northeast of Bungendore identified by Mills and Associates (2011) desktop assessment and in Turallo Nature Reserve three kilometres south of Bungendore. The Turallo site is high quality Natural Temperate Grasslands with west-facing slopes and several drainage lines (NPWS 2009). The Bungendore North site has drainage lines and slopes, there are a no rocks and logs on the site which is usually a habitat requirement for the Little Whip Snake (Cogger 2014).

The non-target species are common within the area. Frog species such as the Spotted Marsh Frog is often found in disturbed areas and often the first species to colonise dams (Cogger 2014). Eastern Banjo Frogs are normally found on loamy soils and frequently found in grassy areas (Cogger 2014). Common Eastern Froglet can be found in a wide range of habitats which includes both open and disturbed areas (Cogger 2014).

The only reptile that was identified, the three-toed skink is common within the area and often found under rocks. However, this species is more common in woodlands compared to grassland habitats (Howland *et al.* 2014). The low number of reptiles could indicate poor habitat for reptiles however, reptile surveys are usually conducted in spring and the time of year for this survey is not usually suitable for the survey of other reptiles besides the Little Whip Snake. Also the low number of three-toed skinks suggests that the area is not suitable for reptile species that utilise rocks for shelter such as the Little Whip Snake.

4.2. Conclusions and Recommendations

The site is not habitat for Little Whip Snake due to lack of suitable habitat. This species is unlikely to be impacted by the development of this site. Further assessment for the Little Whip Snake is not required for this development proposal.

5. PHOTOGRAPHS



Figure 2. Transect 1 showing typical tile set up. This section has been modified by agricultural development.



Figure 3. Transect 2. This area was classified as native grassland surrounded by exotic vegetation.



Figure 4. Transect 3. The area was dominated by tall speargrass however, this area is being taken over by Chilean needle grass.



Figure 5. Transect 4 ('normal site'). This was a mixture of native and exotic vegetation.



Figure 6. A Three-Toed Skink found in Transect 1. Only two reptiles were identified within this survey.



Figure 7. Many Spotted Marsh Frogs were found during the survey.



Figure 8. Eastern Banjo Frog found in Transect two



Figure 9. Eastern Common Froglet found in Transect 4.



Figure 10. Three Spotted Marsh Frogs and one Banjo Frog found in Transect 2. This was a common site under the tiles with several frogs present.

6. REFERENCES

Cogger, H. G. (2014). *Reptiles and Amphibians of Australia*. Collingwood: CSIRO Publishing

Howland, B., Stojanovic, D., Gordon, I.J., Manning, A.D., Fletcher, D., & Lindenmayer, D.B. (2014) Eaten Out of House and Home: Impacts of Grazing on Ground- Dwelling Reptiles in Australian Grasslands and Grassy Woodlands. *PLoS ONE*, vol. 9, no. 12, pp. 1-25.

Mills, K., & Associates (2011). *Flora and Fauna Assessment, North Bungendore Palerang Council*. Report prepared for Don Fox Planning, Pennant Hill, July.

NSW National Parks and Wildlife Service (2009). *Turallo Nature Reserve Plan of Management*. Department of Environment and Climate Change.

Office of Environment and Heritage (2014). *Little Whip Snake*. NSW Government, Accessed 1 May 2015

< <http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10774>>

APPENDIX A SURVEY DATA

Array	Tile	Survey 1	Survey 2	Survey 3
1	14	Three-toed skink		
1	20			2X Spotted Marsh Frog
2	2			Spotted Marsh Frog
2	4			Eastern Banjo Frog
2	5			3X Spotted Marsh Frog
2	6			Spotted Marsh Frog
2	8			2X Spotted Marsh Frog
2	9			2X Spotted marsh Frog
2	11			Spotted Marsh Frog
2	12			Spotted Marsh Frog
2	13			1 Eastern Banjo Frog and 1 Spotted Marsh Frog
2	14			Spotted Marsh Frog
2	15			2X Spotted Marsh Frog
2	16		3X Spotted Marsh Frog and 1 Eastern Banjo Frog	1 Spotted Marsh Frog and 1 Eastern Banjo Frog
2	18			4X Spotted Marsh Frog
2	20			2X Spotted Marsh Frog and 1 Eastern Banjo Frog
3	1			Spotted Marsh Frog
3	2		3X Spotted Marsh Frog	8X Spotted Marsh Frog
3	3		2X Spotted Marsh Frog	4X Spotted Marsh Frog
3	4			2X Spotted Marsh Frog
3	5			2X Spotted Marsh Frog
3	6		2X Spotted Marsh Frog	

3	7			2X Spotted Marsh Frog
3	8		2X Spotted Marsh Frog	4X Spotted Marsh Frog
3	9		Spotted Marsh Frog	
3	10		2X Spotted Marsh Frog	3X Spotted Marsh Frog
3	11		3X Spotted Marsh Frog	2X Spotted Marsh Frog
3	12		2X Spotted Marsh Frog	
3	13		Spotted Marsh Frog	
3	14		2X Spotted Marsh Frog	5X Spotted Marsh Frog
3	15			3X Spotted Marsh Frog
3	16			3X Spotted Marsh Frog
3	17			4X Spotted Marsh Frog
3	18		3X Spotted Marsh Frog	2X Spotted Marsh Frog
3	19			Spotted Marsh Frog
3	20			3X Spotted Marsh Frog
4	1			Spotted Marsh Frog
4	3		1 Spotted Marsh Frog and 1 Three-toed skink	Spotted Marsh Frog
4	6		Spotted Marsh Frog	
4	8			Spotted Marsh Frog
4	9			Eastern Common Froglet
4	10			Spotted Marsh Frog
4	12		Spotted Marsh Frog	Spotted Marsh Frog
4	14			Spotted Marsh Frog
4	15		2X Spotted Marsh Frog	Spotted Marsh Frog
4	18		3X Spotted Marsh Frog	2X Spotted Marsh Frog

4	19		3X Spotted Marsh Frog	4X Spotted Marsh Frog
4	20		3X Spotted Marsh Frog	2X Spotted Marsh Frog

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