

THE HERPETOFAUNA OF THE BIMBLE BOX-PINE WOODLANDS OF THE COBAR PENEPLAIN, WESTERN NSW

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INTRODUCTION

The Cobar Peneplain is one of eighty biogeographic regions identified in Australia (Thackway & Creswell, 1995) and lies within the Central West of New South Wales, occupying over 73,000 square kilometres, or approximately one-tenth of the area of New South Wales (NPWS, 2000). It includes parts of the Western and Central Divisions, extending from near Bourke in the north, through to Griffith in the south, and includes the towns of Nymagee, Cobar, Nyngan, Condobolin and Lake Cargelligo. Only 2.49% of the bioregion is protected by conservation reserves (NPWS, 2003).

Currently the region largely supports dense shrub woodlands, with a shrubby understorey or herbs and grasses (CVMC, 2006). The most extensive vegetation community is bimble box-pine woodland (*Eucalyptus populnea* spp. *bimblii* – *Callitris glaucophylla*). Throughout much of its range, bimble box-pine woodland forms communities with and/or intergrades with other species such as red box (*Eucalyptus intertexta*), ironwood (*Acacia excelsa*), wilga (*Geijera parviflora*), belah (*Casuarina cristata*), rosewood (*Alectryon oleifolius*), leopardwood (*Flindersia maculosa*) and, infrequently, brigalow (*Acacia harpophylla*) (CVMC, 2006).

Despite bimble box-pine woodland being widespread, the paucity of published papers on the herpetofauna in this vegetation community suggests that little is known on distribution and status in the Cobar Peneplain Bioregion. Much of the knowledge of the herpetofauna of the region has been collected from within the mallee vegetation communities of the southern and western portions (Caughley, 1985; Cogger, 1969; Hallinger,

1993; Henle, 1987; Olsson *et al.*, 2005; Sass & Wilson, 2006; Schlesinger *et al.*, 1997).

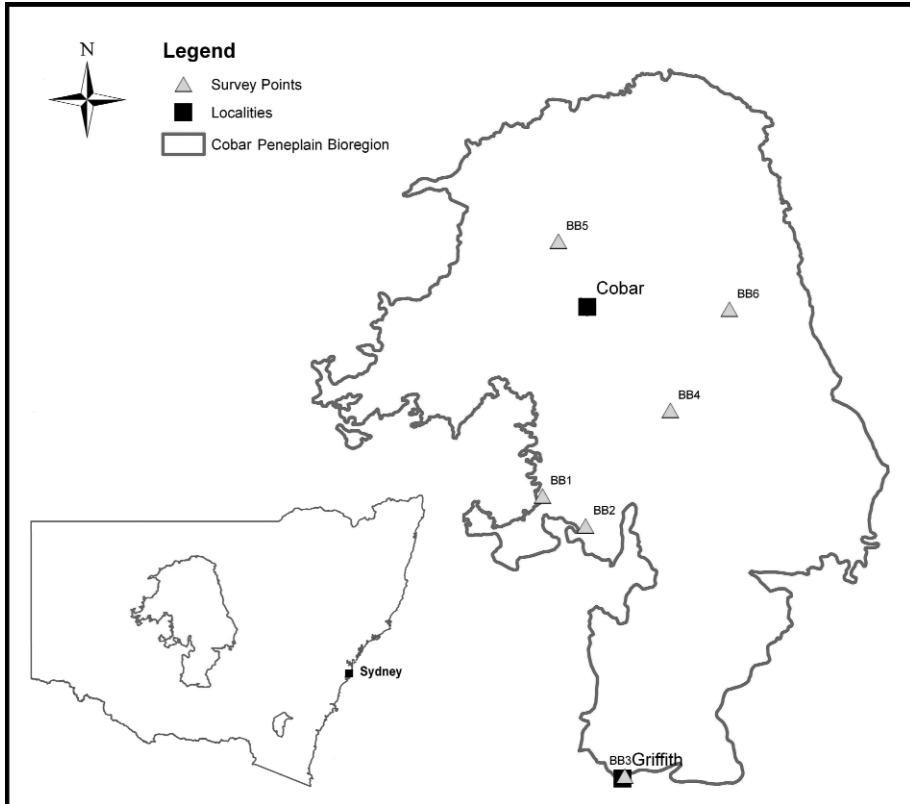
The aim of this paper is to document the herpetofauna that occur within bimble box-pine woodlands of the Cobar Peneplain bioregion from records of the authors and by conducting a review of previous literature relevant to this vegetation community. The conservation status of some species is also discussed.

METHODS

The Cobar Peneplain region is well known to both authors, who have conducted numerous reptile surveys there since the 1980s. More specifically, six sites have been the subject of extensive herpetofauna surveys on numerous occasions, and their data provides an extensive list of species identified over a wide variety of seasons, years and micro-environmental conditions. These were at Yathong Nature Reserve (BB1), Nombinnie Nature Reserve (Sass, 2006; BB2), 2 km north of Griffith (BB3), 5 km south of Nymagee (BB4), 50 km north of Cobar (BB5) and 50 km east of Cobar (BB6) (Figure 1). This wide variation in both environmental conditions and spatial distribution provides a comprehensive list of herpetofauna species that have been recorded in this vegetation community within the bioregion. Each of the six locations was characterised by bimble box-pine woodland (*Eucalyptus populnea* spp. *bimblii* – *Callitris glaucophylla*) with scattered stands of red box (*Eucalyptus intertexta*). Lower shrubs were dominated by budda (*Eremophila mitchelli*) and turpentine (*Eremophila sturtii*) whilst forbs and grasses were dominated by native species.

Each study site was also characterised by different land management regimes. Of the six

Figure 1. Location of the Cobar Penneplain Bioregion and the survey locations



sites, two are nature reserves under the management of the Department of Environment and Climate Change (DECC) (BB1, BB2), one site is crown land (BB3) and the remaining three are on private property (BB4, BB5, BB6) (Figure 1). Data collected from these sites was undertaken using various methods including pitfall traps using 20 L buckets and drift fences, Elliot traps baited with a mixture of peanut butter, honey and rolled oats, systematic searches where active animals were located visually, while inactive animals were located by lifting loose rocks, viewing hollow logs, searches of rock and tree crevices, old sheets of corrugated iron and leaf litter. Frog species were identified by spotlighting, listening for calls and conducting call playback to

encourage non-calling frogs to respond at drainage lines, earthen tanks and domestic water tanks. Not all methodologies were used at every site. Opportunistic records were also collected by the authors while driving through this vegetation community before, during and after surveys.

Searches were made of scientific journal databases, the world-wide web, and other relevant data where surveys have been undertaken specifically in bumble box-pine woodland to provide additional information on the herpetofauna of the region.

Discussions with land managers and farm workers were undertaken to determine addi-

tional species that may not have been encountered during surveys. Due to the difficulties that inexperienced people have in identifying many species of reptile and frog, only species that are easily identified were considered.

Nomenclature and common names follow Swan *et al.* (2004) and Anstis (2002) except for *Lerista muelleri* and *Cryptoblepharus carnabyi*. *Lerista muelleri* has recently been revised, and the species in New South Wales is now *Lerista timida* (Hutchinson, 2008). Similarly, the population previously assigned to *Cryptoblepharus carnabyi* in inland New South Wales is now either *Cryptoblepharus pannosus* or *C. australis* (Horner, 2007). As we have not been able to examine specimens of *Cryptoblepharus* from the study sites since these two species were described, all records have been grouped as *Cryptoblepharus* sp. in this paper.

RESULTS

Collation of the authors' records identified a total of 33 species of reptile and 10 species of frog within bumble-box woodlands of the Cobar Penneplain Bioregion (Table 1).

During our search of the literature, two large-scale fauna studies were identified from within a large number of vegetation communities of the Cobar Penneplain bioregion including bumble box-pine woodlands (Masters & Foster, 2000; NPWS, 2001). These studies found 25 species of reptile and 8 species of frog within bumble-box pine woodlands (Table 2).

Discussions with land managers and farm workers during 2003 surveys at BB4 revealed the presence of three additional reptile species: *Morelia spilota metcalfei*, *Vermicella annulata* and *Acanthophis antarcticus*. All three species are considered by the authors to be easily identifiable by persons unfamiliar with reptiles, and so it is with a high level of accuracy that these data can be included.

The inclusion of data from all of these sources

brings the total number of species recorded in bumble-box pine woodlands to 40 species of reptile and 11 species of frog (Table 2).

DISCUSSION

The diverse landscape and vegetation of the Cobar Penneplain bioregion is already known to support a wide variety of vertebrate fauna species (NPWS, 2003). This study has identified that the bumble box-pine woodlands of the bioregion support a high level of diversity of herpetofauna species with 51 species recorded to date (Table 2).

Five species of reptile (two species of lizard - *Ctenophorus pictus*, *Egernia modesta*, and three species of snake - *Acanthophis antarcticus*, *Pseudonaja textilis*, *Vermicella annulata*) and two species of frog (*Crinia parinsignifera*, *Uperoleia rugosa*) were only recorded at single locations. Sadlier and Pressey (1994) reviewed the herpetofauna of western NSW and identified *Egernia modesta* and *Acanthophis antarcticus* as likely to be of conservation concern.

Ctenophorus pictus is widespread through the region but is more usually associated with mallee/spinifex habitats or shrublands. The single record occurred at BB5, and only one individual was sighted. Rocky outcrops dominated the area where this individual was sighted, which is unusual for this species. Despite additional searches, no further individuals were recorded. It is likely that this species occurs only in very low abundance at scattered bumble-box pine woodland locations across the bioregion.

Egernia modesta is distributed through the northern tablelands south to the Hunter Valley and also on the north-west slopes. At the western limit of the species distribution isolated populations occur near Walgett and at Yathong Nature Reserve. The Yathong individuals were found on the Merrimurri Range in 1980. Since then extensive field work in this Reserve across a range of other habitats has failed to record further individuals of *E. modesta*, and it would appear it is most likely

Table 1. Reptiles and frogs recorded by the authors in bimple box-pine woodland of the Cobar Penneplain.**BB1 = Yathong NR, BB2 = Nombinnie NR, BB3 = Griffith, BB4 = Nymagee, BB5 = Cobar, BB6 = Hermidale (* = recorded by authors, A = anecdotal record).**

Scientific name	Common name	BB1	BB2	BB3	BB4	BB5	BB6
REPTILIA							
Gekkonidae							
<i>Diplodactylus vittatus</i>	Eastern Stone Gecko				*		*
<i>Gehyra dubia</i>	Dubious Dtella	*					
<i>Gehyra variegata</i>	Common Dtella	*		*	*	*	*
<i>Heteronotia binoei</i>	Prickly Gecko	*	*		*	*	*
<i>Rhynchoedura ornata</i>	Beaked Gecko		*		*		
<i>Strophurus intermedius</i>	Southern Spiny-tailed Gecko	*	*	*	*	*	*
<i>Underwoodisaurus milii</i>	Thick-tailed Gecko	*			*		
Varanidae							
<i>Varanus gouldii</i>	Sand Goanna		*	*	*		*
<i>Varanus varius</i>	Lace Monitor	*	*		*	*	*
Agamidae							
<i>Amphibolurus nobbi coggeri</i>	Nobbi Dragon		*		*		
<i>Ctenophorus pictus</i>	Painted Dragon					*	
<i>Pogona vitticeps</i>	Central Bearded Dragon	*	*	*	*	*	*
Scincidae							
<i>Cryptoblepharus</i> sp.	Wall Lizard	*	*	*	*	*	*
<i>Ctenotus allotropis</i>		*	*		*		
<i>Ctenotus regius</i>	Royal Ctenotus					*	
<i>Ctenotus robustus</i>	Robust Ctenotus	*	*		*	*	*
<i>Ctenotus schomburgkii</i>			*			*	
<i>Egernia modesta</i>		*					
<i>Egernia striolata</i>	Tree Skink	*			*	*	*
<i>Lerista timida</i>	Three-toed Lerista	*		*	*		*
<i>Lerista punctatovittata</i>	Spotted Lerista	*			*		*

Scientific name	Common name	BB1	BB2	BB3	BB4	BB5	BB6
REPTILIA							
Scincidae (cont.)							
<i>Menetia greyii</i>	Common Dwarf-skink				*	*	
<i>Morethia boulengeri</i>	Boulenger's Morethia	*	*	*	*	*	*
<i>Tiliqua scincoides</i>	Eastern Blue-tongue	*	*	*	*		*
<i>Tiliqua rugosa</i>	Shingleback	*	*	*	*	*	*
Pythonidae							
<i>Morelia spilota metcalfei</i>	Inland Carpet Python	*			A		A
Elapidae							
<i>Acanthophis antarcticus</i>	Common Death Adder				A		
<i>Demansia psammophis</i>	Yellow-faced Whipsnake				*		*
<i>Pseudechis australis</i>	Mulga Snake				*	*	*
<i>Pseudonaja nuchalis</i>	Western Brown Snake	*			*		*
<i>Pseudonaja textilis</i>	Eastern Brown Snake				*		
<i>Suta dwyeri</i>	Dwyer's Black-headed Snake	*	*		*	*	*
<i>Vermicella annulata</i>	Bandy-bandy				A		
AMPHIBIA							
Hylidae							
<i>Litoria caerulea</i>	Green Tree Frog				*	*	*
<i>Litoria peronii</i>	Peron's Tree Frog	*	*		*	*	*
<i>Litoria rubella</i>	Desert Tree Frog	*	*		*	*	*
Myobatrachidae							
<i>Crinia parinsignifera</i>	Eastern Sign-bearing Frog			*			
<i>Limnodynastes fletcheri</i>	Fletcher's Frog						*
<i>Limnodynastes interioris</i>	Giant Bullfrog				*		*
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog				*		*
<i>Neobatrachus sudelli</i>	Painted Burrowing Frog		*	*	*	*	*
<i>Notaden bennettii</i>	Holy Cross Toad		*	*	*		
<i>Uperoleia rugosa</i>	Wrinkled Toadlet						*

Table 2. Reptiles and frogs recorded in bimple box-pine woodland across the Cobar Penneplain by the authors (SaSw), NPWS (2001) and Masters and Foster (2000) (NPMF)(* = Recorded).

Scientific name	Common name	SaSw	NPMF
REPTILIA			
Gekkonidae			
<i>Diplodactylus tessellatus</i>	Tessellated Gecko		*
<i>Diplodactylus vittatus</i>	Eastern Stone Gecko	*	*
<i>Gehyra dubia</i>	Dubious Dtella	*	*
<i>Gehyra variegata</i>	Common Dtella	*	*
<i>Heteronotia binoei</i>	Prickly Gecko	*	*
<i>Lucasium damaeum</i>	Beaded Gecko		*
<i>Lucasium steindachneri</i>	Box-patterned Gecko		*
<i>Rhynchoedura ornata</i>	Beaked Gecko	*	
<i>Strophurus intermedius</i>	Southern Spiny-tailed Gecko	*	*
<i>Underwoodisaurus milii</i>	Thick-tailed Gecko	*	*
Varanidae			
<i>Varanus gouldii</i>	Sand Goanna	*	*
<i>Varanus tristis tristis</i>	Black-headed Monitor		*
<i>Varanus varius</i>	Lace Monitor	*	*
Agamidae			
<i>Amphibolurus nobbi coggeri</i>	Nobbi Dragon	*	*
<i>Ctenophorus nuchalis</i>	Central Netted Dragon		*
<i>Ctenophorus pictus</i>	Painted Dragon	*	
<i>Pogona barbata</i>	Eastern Bearded Dragon		*
<i>Pogona vitticeps</i>	Central Bearded Dragon	*	*
Scincidae			
<i>Cryptoblepharus sp.</i>	Wall Lizard	*	*
<i>Ctenotus allotropis</i>		*	*
<i>Ctenotus leonhardii</i>			*
<i>Ctenotus regius</i>	Royal Ctenotus	*	
<i>Ctenotus robustus</i>	Robust Ctenotus	*	
<i>Ctenotus schomburgkii</i>		*	
<i>Egernia modesta</i>		*	

Scientific name	Common name	SaSw	NPMF
REPTILIA			
Scincidae (conf.)			
<i>Egernia striolata</i>	Tree Skink	*	*
<i>Lerista timida</i>	Three-toed Lerista	*	*
<i>Lerista punctatovittata</i>	Spotted Lerista	*	*
<i>Menetia greyii</i>	Common Dwarf-skink	*	
<i>Morethia boulengeri</i>	Boulenger's Morethia	*	*
<i>Tiliqua scincoides</i>	Eastern Blue-tongue	*	
<i>Tiliqua rugosa</i>	Shingleback	*	*
Pythonidae			
<i>Morelia spilota metcalfei</i>	Inland Carpet Python	*	
Elapidae			
<i>Acanthophis antarcticus</i>	Common Death Adder	*	
<i>Demansia psammophis</i>	Yellow-faced Whip Snake	*	
<i>Pseudechis australis</i>	Mulga Snake	*	*
<i>Pseudonaja nuchalis</i>	Western Brown Snake	*	
<i>Pseudonaja textilis</i>	Eastern Brown Snake	*	
<i>Suta dwyeri</i>	Dwyer's Black-headed Snake	*	
<i>Vermicella annulata</i>	Bandy-bandy	*	
AMPHIBIA			
Hylidae			
<i>Litoria caerulea</i>	Green Tree Frog	*	*
<i>Litoria latopalmata</i>	Broad-palmed Prog		*
<i>Litoria peronii</i>	Peron's Tree Frog	*	*
<i>Litoria rubella</i>	Desert Tree Frog	*	*
Myobatrachidae			
<i>Crinia parinsignifera</i>	Eastern Sign-bearing Frog	*	
<i>Limnodynastes fletcheri</i>	Fletcher's Frog	*	*
<i>Limnodynastes interioris</i>	Giant Bullfrog	*	*
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog	*	*
<i>Neobatrachus sudelli</i>	Painted Burrowing Frog	*	*

Scientific name	Common name	SaSw	NPMF
AMPHIBIA			
<i>Myobatrachidae (cont.)</i>			
<i>Notaden bennettii</i>	Holy Cross Toad	*	
<i>Uperoleia rugosa</i>	Wrinkled Toadlet	*	

limited to stony outcrops of the range. Considering that the species is regarded as being of conservation concern in the Western Division (Sadler & Pressey, 1994) and that the Yathong population is disjunct from other known populations, further investigation as to the current status of the Yathong population should be given the highest priority. Natural resource managers of this reserve should have the highest regard for the presence of this species on the Merrimerriva Range when considering any actions that may impact on its survival such as fire management and feral goat control.

Acanthophis antarcticus is known only from a very old record at Cobar (Swan *et al.*, 2004) and anecdotal accounts from workers at site BB4. This species is apparently very uncommon in the region and possibly only survives in isolated rocky outcrops that have not been degraded by feral goats. Extensive searches were undertaken during two week-long surveys over one year where a landholder reported seeing a large (~1 m) individual, with no success. However, De Vis' Banded snakes (*Denisonia devisi*) are sometimes mistaken by land owners as young death adders, so unsupported reports need to be treated with caution.

Pseudonaja textilis was only recorded from one of the six sites investigated. It is widespread throughout New South Wales although there are very few records from the Cobar Penepplain (Swan *et al.*, 2004). Given that there is no shortage of Western Brown Snake records from the region perhaps this species is genuinely uncommon.

Vermicella annulata is probably uncommon in the region, although its cryptic habits make it notoriously difficult to locate. Despite this,

extensive surveys by the authors over a long period of time in the bioregion have not revealed this species within bumble box-pine woodland. Indeed, the single record of this species was provided by a landholder.

Both species of frog (*Crinia parinsignifera* and *Uperoleia rugosa*) would appear to be on the edge of their natural distribution within the bioregion (Anstis, 2002). In this case, it would be expected that such species would occur in low abundance and scattered populations.

This paper presents an updated inventory for herpetofauna across the most widespread vegetation community of the Cobar Penepplain bioregion. The relatively high diversity of herpetofauna suggests that bumble box-pine woodland should not be underestimated in terms of landscape-scale biodiversity conservation. The presence of *Egernia modesta* in the bioregion should be regarded as significant and warrants urgent further investigation.

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