

# REPTILES AND FROGS OF BUNTINE AND NUGADONG RESERVES

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## INTRODUCTION

Reptile and frogs were collected on Buntine Nature and Buntine Water Reserves (**BUR**) between 27 August and 6 September 1972, 17-25 May 1973 and 12-16 July 1977. In addition we record material collected by Chris Davidge (Murdoch University) in 1977. Collecting on Nugadong (**NR**), East Nugadong (**ENR**) and Nugadong Forest (**NFR**) Nature Reserves took place between 9-19 June 1975, 27 April-4 May 1976 and 15-21 November 1976. Collecting methods included shooting active reptiles with 0.22 calibre dust shot, searching litter, logs, rubbish and roadside spoil and digging out burrows. In addition searching at night with head torches was carried out. All specimens are in the Western Australian Museum with registration numbers R43597-43664 and R44900-44929 for **BUR** and R50137-50159, R57867-57904, R58110-58240 for the Nugadong series of Reserves.

All specimens were dissected, sexed, their reproductive organs examined and gonads and snout-vent length (SVL) measured. Clutch sizes are referred to as, for example, "2, 1 eggs". This means two eggs were in the left and one in the right oviduct. Stomach contents were collected and identified where possible. Appendices 1 & 2 indicate species present, number collected with vegetation location numbers (where known) which are directly referable to Muir (this report). The annotated list is compiled from data from all 4 Reserves.

## ANNOTATED LIST

### LEPTODACTYLIDAE

#### *Heleioporus albopunctatus*

**BUR, ENR** (8 specimens). In open in mallee and shrubland at night. At Buntine a male was calling from a burrow near a seepage near granite outcrop on 19 May 1973.

#### *Neobatrachus centralis*

**BUR, ENR** (6 specimens). In pit traps in shrubland on loam.

#### *Neobatrachus pelobatoides*

**BUR, NR** (4 specimens). In shallow burrow under sheet of tin in *Melaleuca* shrubland on loam.

#### *Neobatrachus sutor*

**NR, ENR** (6 specimens). In shrubland on gravelly clay loam and in heath on sandy loam.

*Pseudophryne guentheri*

**BUR, NR, ENR, NFR** (12 specimens). Under exfoliated granite, in burrow under sheet of tin in *Melaleuca* shrubland on sandy clay loam, and in mallee formation on loam. At BUR calling on 19 May 1973.

GEKKONIDAE

*Crenadactylus ocellatus*

**BUR: NFR** (3 specimens). In litter in Gimlet (*Eucalyptus salubris*) woodland on light clay; and under exfoliated granite.

*Diplodactylus maini*

**BUR, NR, ENR, NFR** (35 specimens). Active in Salmon gum (*Eucalyptus salmonophloia*) woodland on light clay and in heath and shrubland on sandy loam and gravelly clay loam respectively. One dug from lycosid spider burrow in York Gum (*Eucalyptus loxophleba*) woodland. In April/May females (SVL 40-47 mm) had 3 small follicles (ca 1.0 mm diameter) in each ovary; in November 3 females (SVL 40-49 mm) had a yolky follicle as well as 3 small follicles in each ovary. One November female (SVL 43 mm) had 1, 1 oviducal eggs, ca 13 x 5 mm. Stomach contents of 2 specimens included (a) Lepidoptera—larva and (b) Orthoptera—Gryllidae, spiders—Clubionidae and Pseudoscorpionidae.

*Diplodactylus pulcher*

**BUR, NR, ENR, NFR** (17 specimens). Under exfoliated granite and at night in woodland on light clay and in heath and shrubland on loams, sandy loams and light clays respectively. Three November females (SVL 47-51 mm) had 1, 1 oviducal eggs (ca 14 x 6 mm), 1-4 yolky follicles (ca 2.5 x 2.5 mm) and 1-2 small follicles (ca 1.5 mm) in each ovary. A convoluted oviduct in one specimen which had 2 large yolky follicles (7 x 6 mm) may indicate a clutch laid earlier.

*Diplodactylus spinigerus*

**ENR** (1 specimen). In heath on gravelly clay loam. A November female (SVL 70 mm) had 1, 1 oviducal eggs (ca 16.0 x 9.0 mm).

*Diplodactylus granariensis*

**BUR, NR, ENR, NFR** (48 specimens). In woodland on light clay; and in mallee, heath and shrubland formations on sandy loams. One under exfoliated granite. Six November females (SVL 46-54 mm) had 1, 1 oviducal eggs (ca 14 x 6 mm). Some of these had ovarian follicles of varying size.

*Gehyra variegata*

**BUR, NR, ENR, NFR** (68 specimens). Under exfoliated granite, in dead logs, under bark of dead Jam (*Acacia acuminata*) trees and under cement slab in rubbish tip in heath, also on ground at night in woodland formations on light clays and

shrubland and heath formations on sandy loams and clay loams respectively and in lithic complexes. Four November females (SVL 40-45 mm) had 1, 0 (2) & 0, 1 (2) eggs (4.0 x 4.0, 9.0 x 5.0 & 8.0 x 5.0 respectively). Three others (SVL 45-47 mm) had convoluted left oviducts with large yolky follicles (*ca* 3.0 x 3.0 mm) on their right ovaries. These had probably laid one egg and were due to lay a second, in the manner recorded by Bustard (1970: 61) for *Geyra variegata* in northern New South Wales.

*Heternotia binoei*

**BUR, NR, NFR** (7 specimens). Under exfoliated granite and in granite rubble in woodland. A juvenile (SVL 25 mm) was collected in November.

*Oedura reticulata*

**BUR, NFR** (8 specimens). On trunks of Gimlet (*Eucalyptus salubris*) trees. A juvenile (SVL 37 mm) with no gonadal differentiation apparent was collected in November.

**PYGOPODIDAE**

*Delma australis*

**BUR** (1 specimen). Under roadside spoil.

*Delma grayii*

**BUR** (1 specimen). Active on sandy soil.

*Lialis burtonis*

**NR** (2 specimens). In spinifex (*Triodia scariosa*) clump in woodland/shrubland ecotone on loamy sand.

**AGAMIDAE**

*Amphibolurus maculatus griseus*

**ENR** (4 specimens). In heath on gravelly clay loam and in shrubland on sandy loams. November females (SVL 47-57 mm) had 7-12 ovarian follicles; some were developing into yolky follicles (*ca* 4.0 x 3.0 mm). Two juveniles (SVL 31 mm) were collected in April/May. Stomach contents of one individual included spiders and ants.

*Amphibolurus minor*

**BUR, ENR** (3 specimens). In Elliott trap in heath on sandy loam, and in heath/shrubland on sandy clay loam.

*Amphibolurus ornatus*

**NFR** (4 specimens). Under exfoliated granite.

*Amphibolurus scutulatus*

**BUR, NR, ENR** (9 specimens). Usually active in daytime, once collected in Elliott trap. In woodland on light clay, in shrubland on sandy loam and clay loam; in heath on sandy loam; and in mallee formation on sandy clay loam. One November female (SVL 90 mm) had 2, 2 oviducal eggs (*ca* 19 x 10 mm) and other developing follicles. Stomach contents of two specimens examined included: (a) ants including a large number of individuals of different species, about 90% W/V of total contents), and Pompilidae, Hemiptera, Homoptera, Heteroptera, Coleoptera (Scarabaeidae plus other families), spiders (2 families). (b) ants, Coleoptera (Scarabaeidae, as for (a)), ? Tiphidae, Chilopoda, Araneidea.

*Moloch horridus*

**BUR, NR, ENR** (4 specimens). In shrubland on sandy loam and in mallee on loam. One trapped in an Elliott trap. An April female (SVL 98 mm) had 1, 3 yolky follicles each *ca* 10 x 10 mm. A November female had 2, 3 oviducal eggs each *ca* 20 x 12 mm.

SCINCIDAE

*Cryptoblepharus plagiocephalus*

**BUR, NR** (7 specimens). On dead, fallen timber in Gimlet (*Eucalyptus salubris*) and York Gum (*E. loxophleba*) woodlands on light clay. A November female (SVL 41 mm) had 1, 1 oviducal eggs (*ca* 10 x 4 mm) and 3 small follicles (each *ca* 0.5 mm) in each ovary.

*Ctenotus mimetes*

**NFR** (1 specimen). In sedge, (*Gahnia* affin. *polyphylla*), in mallee formation near granite outcrop.

*Ctenotus schomburgkii*

**NR, ENR** (7 specimens). Active in heath and shrubland on loams, clay loams and gravelly sandy loams with considerable ground cover. One November female (SVL 42 mm) had a developing yolky follicle (*ca* 1.5 x 1.5 mm) with three smaller follicles (< 0.5 mm) in each ovary.

*Ctenotus uber*

**NR** (1 specimen). In leaf litter at base of York Gum (*Eucalyptus loxophleba*) trees on light clay.

*Egernia inornata*

**BUR, ENR** (2 specimens). Dug out of burrows in shrublands on sandy loam. A November female (SVL 74 mm) had 1, 2 oviducal eggs each *ca* 12 x 10 mm.

*Egernia stokesii badia*

**BUR** (1 specimen). In hollow log in Gimlet (*Eucalyptus salubris*) and Salmon Gum (*E. salmonophloia*) woodland on light clay.

*Lerista distinguenda*

**BUR** (1 specimen). Under logs.

*Lerista gerrardii*

**NFR** (1 specimen). In sedge, *Gahnia* affin. *polyphylla* at base of granite outcrop.

*Lerista muelleri*

**BUR, ENR** (5 specimens). Under logs and roadside spoil; in leaf litter and leaf-mould in mallee formation on loam; and in heath on sandy loam.

*Menetia greyii*

**BUR, NR, ENR** (8 specimens). In leaf litter and mould, roadside spoil and spinifex (*Triodia scariosa*). In woodland, heath, shrubland and mallee on sandy loams, clay loams and loams respectively. One November female (SVL 27 mm) had 1, 0 oviducal egg (ca 5.0 x 3.0 mm).

*Tiliqua occipitalis*

**BUR, ENR** (6 specimens). In shrubland and mallee formations on loam soils. The stomach contents of a specimen from Buntine included Coleopteran and Lepidopteran fragments.

*Tiliqua rugosa*

**BUR, NR, ENR** (6 specimens) and **NFR** (1 sighted). In woodland, heath and shrubland on clay loams, sandy loams and loams respectively. Frequently collected in breakback, Elliott and cage traps.

ELAPIDAE

*Pseudonaja nuchalis*

**BUR, NR** (2 specimens). In a *Notomys mitchellii* burrow in shrubland on sandy loam in August/September. A juvenile was collected in June in shrubland on fine sandy loam.

*Denisonia fasciata*

**BUR** (1 specimen). Active at night in Salmon Gum/Gimlet woodland on light clay.

*Denisonia monachus*

**BUR, NR, ENR** (4 specimens). Under exfoliated granite, in roadside spoil, and under rubbish in shrubland on fine sandy loam.

## DISCUSSION

On Buntine and the 3 Nugadong Nature Reserves a total of 5 frog and 31 reptile species were recorded. Most are within their known range, but some are of particular interest. *Ctenotus uber* had only recently been recorded from the wheatbelt, at Wilroy Nature Reserve ca 180 km north north-west of Nugadong (Dell & Chapman 1979). *Lerista gerrardii* had not previously been collected by us on any of 23 wheatbelt reserves examined; however it is known from 10 wheatbelt localities. *Ergenia inornata*, *E. stokesii*, *Amphibolurus scutulatus* and *Denisonia monachus* are infrequently recorded on wheatbelt reserves. Except for *E. stokesii*, these species were recorded at both Buntine and Nugadong, which are separated by 30 km.

It is interesting to compare number of species of reptiles and frogs recorded with reserve size and number of different vegetation formations present:—

	No. spp	area (ha)	No. formations*
BUR	27	3147	5
NR	19	400	4
ENR	18	772	3
NFR	20	ca 624	5

\* Formations described by Muir (this report) include woodland, mallee, shrubland, heath and lithic complex.

These figures suggest that a combination of size and habitat diversity determines number of species present on these reserves.

Table 2 (below) indicates percentages of species in common between any two pairs of reserves. The two most dissimilar reserves are **ENR** and **NFR** which are also the closest, being separated by only several kilometres. This is partially explained by the vastly different habitat characteristics between these reserves with lithic complex and woodland being abundant on **NFR** but absent on **ENR**. The most similar reserves are **BUR** and **ENR**; these are the two largest and they both have extensive shrubland. **ENR** and **BUR** have 51% and 47% of their area as shrubland, respectively.

Table (2) Percentages of reptile and frog species in common between pairs of reserves.

	BUR	NR	ENR	NFR
BUR	—	45.2	51.6	26.7
NR	—	—	46.2	26.0
ENR	—	—	—	19.2

The following species were breeding, i.e. had oviducal eggs, at Nugadong in November 1976: *Diplodactylus maini*, *D. spinigerus*, *Gehyra variegata*, *Amphibolurus scutulatus*, *Moloch horridus*, *Egernia inornata*, *Menetia greyii*,

*Cryptoblepharus plagiocephalus*. Juveniles of *Heteronotia binoei* and *Oedura reticulata* collected in November 1976 were probably recently hatched. A *Moloch horridus* had yolky follicles (ca 10 x 10 mm) in April 1976.

No gravid reptiles were recorded from Buntine; this was almost certainly due to the survey being conducted (27 August-6 September) just prior to the time when reptiles become reproductively active.

# **APPENDIX 1:** Reptiles and Frogs of Buntine Reserve (BUR).

AMPHIBIA	Number collected		Vegetation Location Nos.
LEPTODACTYLIDAE	Aug/Sept 1972	May 1973	
Heleioporus albopunctatus		1	5.2
Neobatrachus centralis	4		
Neobatrachus pelobatooides	3		
Pseudophryne guentheri	3	3	5.2
REPTILIA			
GEKKONIDAE			
Crenadactylus ocellatus	1	1	1.5
Diplodactylus granariensis	10		1.5, 5.1/5.2*
Diplodactylus maini	5	1	1.5
Diplodactylus pulcher	1		5.1/5.2*
Gehyra variegata	21	10	5.1
Heteronotia binoei	2		5.1
Oedura reticulata	5		1.5
PYGOPODIDAE			
Delma australis		1	
Delma grayii		1	
AGAMIDAE			
Amphibolurus minor	2†		3.18/4.7*
Amphibolurus scutulatus	2		3.35
Moloch horridus	1		
SCINCIDAE			
Cryptoblepharus plagiocephalus	5		
Egernia inornata	1		

<i>Egernia stokesii badia</i>	1		1.5
<i>Lerista distinguenda</i>		3	
<i>Lerista muelleri</i>	2†	2	
<i>Menetia greyii</i>		1	1.5
<i>Tiliqua occipitalis</i>	2	1	
<i>Tiliqua rugosa</i>	2		
<b>ELAPIDAE</b>			
<i>Pseudonaja nuchalis</i>	1		3.40
<i>Denisonia fasciata</i>	1		1.5
<i>Denisonia monachus</i>	1	1	3.17, 5.1/5.2*

† Collected by C. Davidge in 1977.

\* Indicates collected in ecotone between location numbers.

## APPENDIX 2. Reptiles and frogs of Nugadong Reserves.

	Reserve No. 12614 (NR)			Reserve No. 20372 (ENR)			Reserve No. 10351 (NFR)		
	No. collected	Vegetation loc. Nos.		No. collected	Vegetation loc. Nos.		No. collected	Vegetation loc. Nos.	
<b>AMPHIBIA</b>									
<b>LEPTODACTYLIDAE</b>									
<i>Heleioporus albopunctatus</i>	A	B	C	A	B	C	A	B	C
				1	3	3			
						3.10,2.5, M2,3.12			
<i>Neobatrachus centralis</i>				2		3.12,3.18			
<i>Neobatrachus pelobatoides</i>	1		3.2						
<i>Neobatrachus sutor</i>	3		3.2, 3.7	3		4.4, 4.6			
<i>Pseudophyrne guentheri</i>	1		3.2	1	3	2.5, M2	1		5.3
<b>REPTILIA</b>									
<b>GEKKONIDAE</b>									
<i>Crenadactylus ocellatus</i>							1		5.3
<i>Diplodactylus granariensis</i>	7	5	1.3,1.5, 3.7, 4.2	8	13	3.2, 3.3, 3.6 4.13, 4.19, 4.9, 4.1, 4.4, 4.6.		5	1.8, 5.0



<i>Diplodactylus maini</i>	3	5	1.3, 3.7 3.8/4.2,*	6	11	3.2/4.3*, 3.3, 4.9, 4.19, 4.13	4	3.1
<i>Diplodactylus pulcher</i>	1	5	4.2, 3.7, 1.3	1	5	4.3/3.2	1	3 5.4, 1.8
<i>Diplodactylus spinigerus</i>						1 4.7		
<i>Gehyra variegata</i>	4	9	3 1.3, 1.5	2	5	4.16, 3.5/ 3.7*, 3.10, 3.16.	1	13 5.0, 1.8
<i>Heteronotia binoei</i>	2	1	1.3				2	5.0
<i>Oedura reticulata</i>								3 1.8
PYGOPODIDAE								
<i>Lialis burtonis</i>	2		1.3/3.3*					
AGAMIDAE								
<i>Amphibolurus maculatus griseus</i>					4	4.11, 3.12, 4.13, 4.9.		
<i>Amphibolurus minor</i>					1	4.1		
<i>Amphibolurus ornatus</i>							3	1 5.0
<i>Amphibolurus scutulatus</i>		2	1.3, 3.8	2	3	3.20, 3.10, 3.12, 4.1, 2.7.		
<i>Moloch horridus</i>	1		3.9	1	1	3.1, 2.7, 3.3		
SCINIDAE								
<i>Cryptoblepharus plagiocephalus</i>	1	1	1.5, 1.3					
<i>Ctenotus mimetes</i>								1 2.2
<i>Ctenotus schomburgkii</i>		1	3.8	5	1	4.11, 4.1, 3.3, 4.8		
<i>Ctenotus uber</i>		1	1.3					
<i>Egernia inornata</i>					1	3.12		
<i>Lerista gerrardii</i>								1 2.2/5.3*
<i>Lerista muelleri</i>				1	1	1 2.5, 4.1		
<i>Menetia greyii</i>	3		4.2, 1.3/3.3*	3	1	2.10, 4.1, 3.12		
<i>Tiliqua occipitalis</i>				2	1	3.3, 2.7		
<i>Tiliqua rugosa</i>	1		1.3, 1.5 4.2, 3.11 3.20	2	1	3.12, 3.18, 3.3, 3.10 4.9 4.11		
ELPAIDAE								
<i>Pseudonaja nuchalis</i>	1		3.5/3.6*					
<i>Denisonia monachus</i>	1		3.5/3.6*		1			

A = June 1975

B = May 1976

C = November 1976

\* Indicates collected in ecotone between location numbers.

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