

BRIEF COMMUNICATION

EARLY HOLOCENE FROGS FROM THE TANTANOOLA CAVE, SOUTH AUSTRALIA

Five extant species of frogs are represented in the Quaternary record of the southeast of South Australia<sup>1</sup>, constituting one of the best known components of the Australian Quaternary frog fauna<sup>2</sup>. Here we report a further site and add one more species.

In 1982 a quantity of fossil vertebrates and invertebrates was recovered from a pocket of sandy clay fill at the entrance to the Tantanoola Tourist Cave at Tantanoola, S.A. The material was uncovered in the process of excavation of the floor of the entrance to permit wheelchair access. Included in the vertebrate material were 185 frog ilia. Here we report the identity of the ilia and place them in the context of the Australian Quaternary record.

of the species (Fig. 1). The size ranges of modern individuals are 31.1-39.5 mm (males) and 32.0-47.2 mm (females)<sup>3</sup>, hence the fossil material clearly is comparable in size.

The faunal composition is almost identical to that represented at Victoria Cave and Henschke's Quarry Cave near Naracoorte, S.A.<sup>1</sup> *Litoria ewingi*, *Limnodynastes tasmaniensis*, *L. dumerilii* and *Crinia signifera* are common to the three sites. A single *Geocrinia laevis* from Victoria Cave is not represented at Tantanoola, whilst a single *Neobatrachus pictus* at Tantanoola is not represented at the other sites, so increasing to six the number of taxa in the fossil record of the southeast.

TABLE 1: The frog ilia recovered at Tantanoola Cave\*

Species	Total Ili	Left Ili	Right Ili	Registration Numbers
<i>Limnodynastes tasmaniensis</i>	137	66	71	P32111, P32239
<i>Limnodynastes dumerilii</i>	2	1	1	P32237
<i>Crinia signifera</i>	42	24	18	P32112, P32240
<i>Neobatrachus pictus</i>	1	1	0	P32241
<i>Litoria ewingi</i>	2	0	2	P32238
unidentifiable	1	0	1	
Totals	185	92	93	

\*All specimens are deposited in the South Australian Museum.

It has been suggested that the accumulation of so many frogs in cave deposits does not reflect the use of caves as diurnal or seasonal refuges, but rather is a consequence of the disgorgement of pellets by owls which are predators of frogs<sup>1</sup>.

The age of the material as determined by C<sup>14</sup> dating of charcoal is 9860 ± 190 years B.P. The analysis was undertaken by Beta Analytic Inc. (Beta reference 54010; F.W.A. "Area 2").

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<sup>1</sup>Tyler, M. J. (1978) "Amphibians of South Australia." (Handbooks Committee, Adelaide).

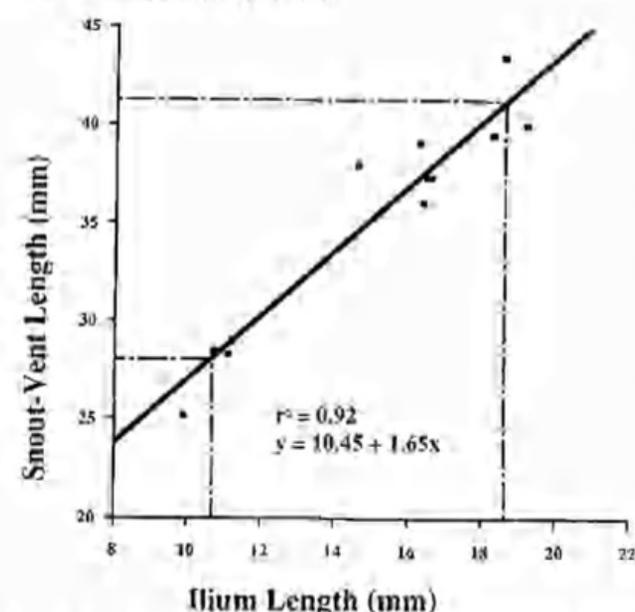


Fig. 1. Length of ilia of *Limnodynastes tasmaniensis* plotted against snout to vent length. Assumed snout to vent length of largest and smallest representatives of the fossil material indicated by broken lines. t-value for slope 10.395,  $p < 0.001$ . For  $x = 18.6$ ,  $y = 41.1$  (95% confidence limits = 37.8-44.4). For  $x = 10.6$ ,  $y = 27.9$  (95% confidence limits = 25.4-30.4). Of the 21 complete ilia in the sample  $\bar{x} = 13.6$  mm, S.D. = ± 1.7, range 10.6-18.6 mm, median 13.4 mm.

Five species were collected at Tantanoola. They, and the quantities involved are listed in Table 1. From the maximum number of left or of right ilia in each sample it is apparent that a minimum total of 100 individual specimens is included. The very large number of *Limnodynastes tasmaniensis* Günther recovered permits an accurate extrapolation of the size of the individuals compared with modern representatives

<sup>1</sup>Tyler, M. J. (1977) Trans. R. Soc. S. Aust. 101 (3), 85-89.

<sup>2</sup>Tyler, M. J. (1989) "Australian Frogs." (Viking O'Neil, Melbourne).



Tyler, Michael J., Aslin, Fred W, and Bryars, Simon. 1992. "Early Holocene frogs from the Tantanoola Cave, South Australia." *Transactions of the Royal Society of South Australia, Incorporated* 116, 153–153.

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