

Relationships of *Tympanocryptis aurita* Storr, 1981

Geoffrey J. Witten*

Abstract

Several characters of *Tympanocryptis aurita* Storr, 1981 indicate a closer relationship to *Ctenophorus* than to *Tympanocryptis*. However, it possesses other features not present in *Ctenophorus*, and thus should not be placed in that genus. The genus *Cryptagama* is erected to accommodate the species.

Introduction

Storr (1981) described *Tympanocryptis aurita*, so named because of its possession of a tympanum. True *Tympanocryptis* (*sensu* Mitchell 1965) are characterised by a reduced pes phalangeal formula (Cogger 1961; Mitchell 1965), and by the loss of a functional tympanic membrane (Witten 1982a, 1982b). The description of *Tympanocryptis aurita* contradicts the second of these features and Storr did not present data on the first. These and other morphological features were examined in order to determine the relationships of *Tympanocryptis aurita*.

Results

Gross examination of specimens of *Tympanocryptis aurita* revealed that they possess the full pes phalangeal formula typical of the majority of Australian agamids. This has been confirmed with the use of x-rays (Cogger, pers. comm.). Pore morphology, the structure of the labial scales, and the relatively small scales of *Tympanocryptis aurita* also indicate that the species is only distantly related to *Tympanocryptis*. However, the animal is not clearly related to any other agamid genus, necessitating the description of a new genus:

Systematics

Cryptagama gen. nov.

Type Species

Tympanocryptis aurita Storr, 1981: 599-602. Figures 1 and 2.

* Department of Anatomy and Physiology, Phillip Institute of Technology, Plenty Road, Bundoora, Victoria 3083, Australia.

Diagnosis

Limbs and tail short, the tail shorter than snout-vent length. Canthus rostralis absent. Femoral pores in widely spaced series on middle to posterior part of lower surface of thigh, each pore penetrating a scale. Enlarged tubercles scattered across entire dorsal surface, extending onto limbs and tail. Supralabial scales forming denticulate fringe along upper lip. Scales very small, mid-body scale count 140-164. Tympanum large and superficial. Pes phalangeal formula 2.3.4.5.4.

Etymology

The generic name comes from the Greek *kryptos* meaning hidden or secret and the type genus of the family, *Agama*.

Cryptagama aurita (Storr, 1981)

Tympanocryptis aurita Storr, 1981.

Description

The following notes should be considered as additional to those of Storr (1981). The holotype is a mature female. A number of ovarian follicles are present, and the oviduct is opaque and convoluted, possibly indicating previous reproductive activity. The nostril opens almost vertically from the oblique circular opening on the swollen nasal. The pores are very small and a full pore count was not possible. There are about 11 pores in the larger paratype (R64052) and at least 5 in the smaller (R64051). There are 16-17 infralabial scales.

Discussion

Cryptagama almost certainly represents, with *Tympanocryptis cephalus*, a case of parallel evolution. *Tympanocryptis cephalus* is remarkably similar in general appearance, but differs from *Cryptagama* in a number of important characters. *Tympanocryptis cephalus* has a reduced phalangeal formula (Cogger 1961; Mitchell 1965) and has no functional tympanum (Witten 1982a). All members of the *Tympanocryptis* group (genus *Tympanocryptis sensu* Storr 1982; including *T. adelaidensis* and *T. diemensis*) have pores between scales and labials which are longer than deep (Witten 1982a), characters not present in *Cryptagama*.

The removal of *aurita* from *Tympanocryptis* does not affect the definition of the genus given by Storr (1982). The intrascalar pores of *Cryptagama* do not agree with Storr's description of 'each located between 3-5 scales'. Storr's definition of *Tympanocryptis* should be expanded to include the possession of elongate labials, a further character distinguishing *Cryptagama* from it. It should also be pointed out that pores are usually present in female *Tympanocryptis*, although not active. The interscalar position of pores in *Tympanocryptis* makes inactive pores particularly difficult to detect.

The nearest relatives to *Cryptagama* are probably within *Ctenophorus*. *Ctenophorus* and *Pogona* do not have elongate labial scales and often possess posterior

intrascalar pores (pores opening on or near the posterior margin of a scale; Witten 1982a). Both these features, shared with *Cryptagama*, appear to be reliable phylogenetic indicators within the Australian agamids (Witten 1982a). This relationship is supported by data on scale size. All *Tympanocryptis* have mid-body scale counts below 100 (Witten 1982a). *Cryptagama* has up to 164 (holotype), a figure attained elsewhere in the Australian endemic agamids only by some individuals of *Ctenophorus ornatus*, *Pogona barbata* and *Moloch horridus* (Witten 1982a).

Storr's (1982) definition of *Ctenophorus* includes the description '... pores, each located between 4 scales (anterior usually largest)'. This appearance in most *Ctenophorus* is produced by the pore penetrating the posterior margin of a scale, although some *Ctenophorus* do have interscalar pores (Witten 1982a). Storr's definition of *Ctenophorus* should therefore be modified slightly to include both posterior intrascalar pores and interscalar pores.

Although *Cryptagama* appears to be related to *Ctenophorus* and *Pogona* several morphological features suggest it should not be included in *Ctenophorus*. The upper labial 'fringe' of *Cryptagama* is unique among Australian agamids. Only *Moloch* shares the possession of a tail shorter than its snout-vent length. Further, the adaptation of *Cryptagama* to a cryptozoic habit has resulted in a dorsal surface unlike any species of *Ctenophorus*.

Acknowledgements

The co-operation of G.M. Storr, H.G. Cogger and A.J. Coventry is gratefully acknowledged for providing access to the type series of *Tympanocryptis aurita*. Helpful suggestions were made by H.G. Cogger and A.J. Coventry. The manuscript was typed by Gail Birchall.

References

- Cogger, H.G. (1961). An investigation of the Australian members of the family Agamidae (Lacertilia) and their phylogenetic relationships. M.Sc. Thesis, University of Sydney.
- Mitchell, F.J. (1965). The affinities of *Tympanocryptis maculosa* Mitchell (Lacertilia - Agamidae). *Rec. S. Aust. Mus.* 15: 179-191.
- Storr, G.M. (1981). Three new agamid lizards from Western Australia. *Rec. West. Aust. Mus.* 8 (4): 599-607.
- Storr, G.M. (1982). Revision of the bearded dragons (Lacertilia: Agamidae) of Western Australia with notes on the dismemberment of the genus *Amphibolurus*. *Rec. West. Aust. Mus.* 10: 199-214.
- Witten, G.J. (1982a). Comparative morphology and karyology of the Australian members of the family Agamidae and their phylogenetic implications. Ph.D. Thesis, University of Sydney.
- Witten, G.J. (1982b). Phyletic groups within the family Agamidae (Reptilia: Lacertilia) in Australia. pp. 225-228 in: W.R. Barker & P.J.M. Greenslade (eds), *Evolution of the Flora and Fauna of Arid Australia*. Peacock Publications, Frewville, South Australia.