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A NEW SPECIES OF *LERISTA* (LACERTILIA: SCINCIDAE) FROM NORTHERN QUEENSLAND, WITH REMARKS ON THE ORIGIN OF THE GENUS

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With 34 described species (Cogger 1975), *Lerista* is the second largest genus of lizards in Australia, and like the largest genus — the scincid genus *Ctenotus* with 53 described species — it is widespread in the arid, semi-arid and seasonally dry parts of the continent. In contrast to the large, surface dwelling species of *Ctenotus,* however, the species of *Lerista* are small, attenuate forms with reduced or non-existent limbs and cryptozoic to fossorial habits.

As a result of the painstaking work of Dr Glen Storr of the Western Australian Museum, the alpha taxonomy of both genera in the western half of the continent is well known. In the eastern half, however, the alpha taxonomy of the two genera is still poorly known and several species await description in both groups. Both taxa are important to our understanding of how lizards have evolved in the vast arid regions of Australia (see for example Pianka's [1972] use of *Ctenotus* in his zoogeographical analysis of Australian desert lizards), and a sound and complete taxonomy of the two groups is therefore greatly to be desired.

The purpose of this paper is to describe a new species of *Lerista* from northern Queensland that is unusual in being legless and to comment on the origin of the genus.

Lerista ameles n.sp.

(Fig. 1)

HOLYOTYPE. Queensland Museum J 30004. Collected 19.7 km west of the junction of the Kennedy and Gulf Highways along the Gulf Highway, northeastern Queensland on 22 June 1977 by Allen E. Greer. This specimen was formerly A.M. R 63192.

DIAGNOSIS. *Lerista ameles* amd the recently described *apoda* (Storr 1976) are the only species of *Lerista* that are limbless. *L. ameles* differs most noticeably from *apoda* in having the eye well developed but small and protected by a movable lower eyelid instead of vestigial below a fixed head scale; the frontoparietals and interparietal distinct instead of fused into a single scale, and the snout bluntly rounded in lateral view instead of wedge-shaped.

DESCRIPTION. In general appearance *ameles* is a small, limbless skink of nearly uniform dark but slightly shiny coloration.

Rostral wider than long, with an acute posteriorly projecting medial apex; nasals very large, in broad medial contact; nostril placed well forward in nasal; supralabials five, first much the largest, third below centre of eye; frontonasal much wider than long; prefrontals widely separated; loreals two; frontal about as wide as long; supraoculars two, first in contact with frontal; supraciliaries two, first projecting in front of first supraocular and second projecting behind; lower eyelid movable, with a transparent window; frontoparietals distinct, just barely touching medially; interparietal distinct, much larger than either frontoparietal, with a parietal eye spot located just posterior of centre; parietals in broad contact behind interparietal, each bordered on its posterolateral edge by the anterior nuchal and the very large upper secondary temporal; two pairs of transversely enlarged nuchals; external ear opening small but distinct; infralabials four; mental only slightly wider than long; postmental wider than long, in contact with only first infralabial and followed by two lateral and one medial chin scales.

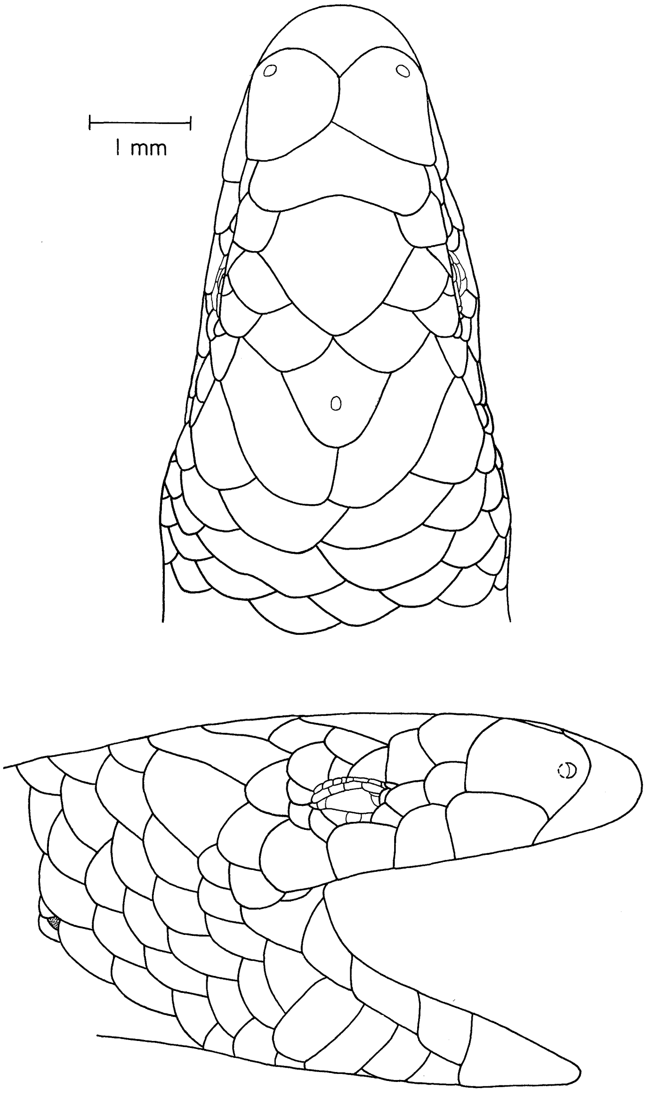

Fig. 1. Top and lateral view of the head of the holotype of *Lerista ameles* (Q.M. J 30004).

Body scales smooth, in 18 longitudinal rows at midbody; medial pair of preanals much larger than neighbouring scales; medial subcaudals equal in size to more lateral subcaudals.

Snout-vent length = 58 mm; unregenerated section of tail = 52 mm, regenerated section = 1.5 mm; limbs totally lacking but a slight depression just anterolateral to the vent probably indicates the former position of the rear legs.

Dorsum dark silvery grey with a slightly darker longitudinal stripe through each of the six most dorsal rows; sides and venter dark brown (hence sides and venter darker than dorsum). Rostral, nasal, first supralabial, mental and first infralabial with the slightly thickened epidermis and greyish suffusion typical of many burrowing skinks.

ETYMOLOGY. The name of the species derives from the Greek roots for "without" (*a*) and "legs" (*melos*).

DISTRIBUTION. The species is known to date only from the type locality which is approximately 33 km east of Mt. Surprise along the Gulf Highway.

Fig. 2. Map showing the type and only known locality for *Lerista ameles*.

HABITAT. The only known specimen of *ameles* was collected from under a large rock lying in a shallow, soil-filled depression on the top of a low sparsely vegetated granite outcrop. The outcrop was surrounded by the weathering olivine basalt of the McBride Plateau which is centred to the ESE of the type locality. The basalt field carries a medium height open *Eucalyptus* woodland savanna (eM$_2$G of Carnahan 1976) whereas the granite outcrop carries a distinctive vegetation of scattered low trees, shrubs and vines.

Although the single specimen of *ameles* came from the light coloured granite outcrop, the species' generally dark colour may in fact be a case of substrate matching with the more extensive surrounding basalt fields.

The Origin of the Genus *Lerista*

The most structurally primitive species of *Lerista* living today is undoubtedly *microtis* (Storr 1971), a species which is distributed along the coast of southcentral and southwestern Australia. The characters that mark this species as primitive are as follows; fore and rear limbs present and pentadactyl; lower eyelid movable; nasals separated medially (some individuals); prefrontals present; loreals two; supraoculars four, first two in contact with frontal; supraciliaries present, and frontoparietals and interparietal distinct (Greer 1974).

Another feature which marks *microtis* as primitive is the linear contact between the supraciliaries and supraoculars. This is in contrast to the zig zag contact due to the interdigitation of the supraciliaries and supraoculars evident in all other *Lerista* that retain supraciliaries (e.g., Fig. 1). A linear contact between the supraciliaries and supraoculars is probably primitive for lygosomines in that it is by far the most common pattern in the group and it occurs in all of the more generally primitive taxa, e.g., *Mabuya*.

There is only one aspect of the biology of *microtis* that is clearly derived within the genus *Lerista*, and that is its viviparity (Greer 1967). Most other *Lerista* as far as is known are oviparous, and this is almost certainly the primitive mode of reproduction for the genus. Hence in order to envisage a reasonable hypothetical common ancestor for all living *Lerista*, one may think of an oviparous *microtis*-like form.

The attenuate body, relatively short legs and very distinct dark lateral stripe of this hypothetical ancestor makes it very similar to a small group of *Sphenomorphus* in northern Australia (*crassicaudus, darwiniensis, pumilus* and an undescribed species from just west of the Atherton Tableland) and southern New Guinea (*crassicaudus* and *fragilis*). The species in this group are all members of the *fasciatus* species group of *Sphenomorphus* (Greer and Parker 1967 and 1974) and may be called the *crassicaudus* subgroup.[1]

The similarities outlined above between the hypothetical ancestor of *Lerista* and the *crassicaudus* subgroup suggest that the two groups may have shared a common ancestor. If this is true, *Lerista* could be considered to be the more derived group due to the fact that it shows at least four unequivocally derived character states *vis-a-vis* the *crassicaudus* subgroup, i.e., seven instead of nine premaxillary teeth; nasals extending toward the midline instead of being more widely separated; a clear window in the lower eyelid instead of a scaly lower eyelid, and the supradigital scales in a single row throughout the length of

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[1] In an earlier paper I attempted to divide the *fasciatus* group into two subgroups based on the presence or absence of the ectopterygoid process — a process extending anteriorly from the ectopterygoid bone to the palatine along the anterolateral edge of the pterygoid (see Fig. 1 A-C in Greer 1967 and Plate 1 in Greer and Parker 1974). However, a continuing inability to find other characters supporting this subdivision has caused me to lose confidence in the ectopterygoid process as anything more than a convenient discriminatory character (Greer and Parker 1974). In this paper I begin to look for new ways to subdivide the *fasciatus* species group.

the digit instead of in multiple rows at least basally (Greer 1974 and 1979), whereas the *crassicaudus* subgroup shows only one obvious derived character state *vis-a-vis* the hypothetical ancestor of *Lerista,* i.e., the front and hind legs are relatively shorter (per. obs.).

Lerista also differs from certain members of the *crassicaudus* subgroup in two other characters, but variation in both characters in the *crassicaudus* subgroup and no precise knowledge of *Lerista's* relationships within this group make it difficult to determine if the character states in *Lerista* are primitive or derived. *Lerista,* for example, lacks a postorbital bone, which is certainly a derived character in the subfamily of which *Lerista* is a member, i.e., the Lygosominae (Greer 1974), but the fact that this bone is also lacking in all species of the *crassicaudus* subgroup except *fragilis* makes it quite possible that the absence of the postorbital in *Lerista* is primitive. *Lerista* also has an ectopterygoid process, which is probably a derived character in lygosomines if its general absence in other structurally primitive lygosomine genera such as *Mabuya* is a guide, but the fact that the process is present in *fragilis* in the *crassicaudus* subgroup raises the possibility that the process is primitive in *Lerista.* As the relationships of *Lerista* within the *crassicaudus* subgroup become better known, the phylogenetic significance of the absent postorbital bone and the ectopterygoid process in *Lerista* should become clearer.

The fact that the members of the *crassicaudus* subgroup are restricted to tropical northern Australia and southern New Guinea whereas the most primitive species of *Lerista* is restricted to the temperate southwest coast suggests that a shift in physiological requirements may also have accompanied the morphological modifications leading to *Lerista.* The disjunct distribution poses no zoogeographic problem, however, for the endemic *Sphenomorphus gracilipes* of southern Australia shows that the *fasciatus* species group, which is now restricted to the north and east parts of Australia, once had a much wider distribution in the south.

Finally, it is interesting to note that despite the fact that many of the extreme morphological trends shown by many species of *Lerista* are almost certainly adaptations to burrowing, e.g., a reduction and loss of digits and limbs, a countersinking of the lower jaw, a reduction in eye size, a fusion and loss of head scales, and the development of ventrolateral ridges in at least one species (*planiventralis*), there is one feature that, although susceptible to loss in other burrowing groups, has been surprisingly little modified in *Lerista.* This is the external ear opening. In all *Lerista,* including the two limbless forms — *apoda* and *ameles* — the external ear opening is small but persistent. This implies that despite the other "concessions" made by *Lerista* to a burrowing existence, the traditional surface adapted auditory mechanisms may have been largely retained.

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