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A NEW LIZARD IN THE GENUS *CTENOTUS* (LACERTILIA: SCINCIDAE) FROM THE NORTHERN TERRITORY WITH NOTES ON ITS BIOLOGY

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ABSTRACT

A new species in the genus *Ctenotus*, from the Northern Territory is described and figured. It has previously been confused with *C. inornatus* from which it is distinguished. Data are provided on its reproduction and habitat preferences. Aspects of reproduction of *C. inornatus* are considered in a comparison between the two species.

INTRODUCTION

Storr (1970) reviewed the members of the genus *Ctenotus* occurring in the Northern Territory, recognising twenty-three species, but subsequently (1971) removed one species (*C. taeniatus*) from this list, basing his action on a misidentification. It has since been added to twice with the description of *C. storri* (Rankin 1978) and the discovery of *C. regius* by Gillam *et al.* (1978).

The species groups of *Ctenotus* introduced by Storr are not employed here, as the status of these groups is obscure (see Storr 1969, p.98) and the species described below is considered distinctive enough to facilitate diagnosis without such measures.

The following abbreviations are used throughout this paper. AM: Australian Museum, Sydney; ANWC: Australian National Wildlife Collection, Canberra; NTM-A/S: the collection held at the Arid Zone Research Institute, Alice Springs.

The new species is distinguished by a prominent black vertebral stripe, hence we propose to call it *Ctenotus vertebralis* sp. nov.

***Ctenotus vertebralis* sp. nov.**

Figs. 1-4

HOLOTYPE: No. R410 in the collection of the Arid Zone Research Institute, Alice Springs, N.T., collected by M. W. Gillam on 5 July 1977, at Arnold River, Cox River Station N.T., 15°43'S, 134°32'E.

PARATYPES: (21) Koongarra, Mt Brockman Range, N.T., 12°53'S, 132°50'E (AM R38842-57); Nourlangie Rock, Mt. Brockman Range, N.T., 12°46'S, 132°39'E (AM R39899); Maranboy Police Station, N.T., 14°32'S, 132°47'E (ANWC R0463, R0474); Cox River headwaters, Cox River Station, N.T., 15°54'S, 134°41'E (AM R65113, NTM-A/S R411).

DIAGNOSIS: *Ctenotus vertebralis* is a moderately small (up to 55 mm SVL), slender species with sparse patterning. It is distinguished from all other described members of the genus by the following suite of characters: a very distinct black vertebral stripe, often pale edged, extending well onto the tail; no distinct pale blotches on upper lateral or

*Deceased

Records of The Australian Museum, 1979, Vol. 32 No. 15, 501-511, Figures 1-6.

outer vertebral zone; no more than 6 narrow pale longitudinal stripes, including pale edges (when present) on black vertebral stripe (often fewer than six when lateral pattern is absent) (Fig. 1.); presuboculars almost invariably 2; supraoculars 4, second largest; supraciliaries subequal in vertical depth; prefrontals rarely in contact; subdigital lamellae moderately compressed, dark; claws on hindlimb sabre-like (see Rankin, 1978).

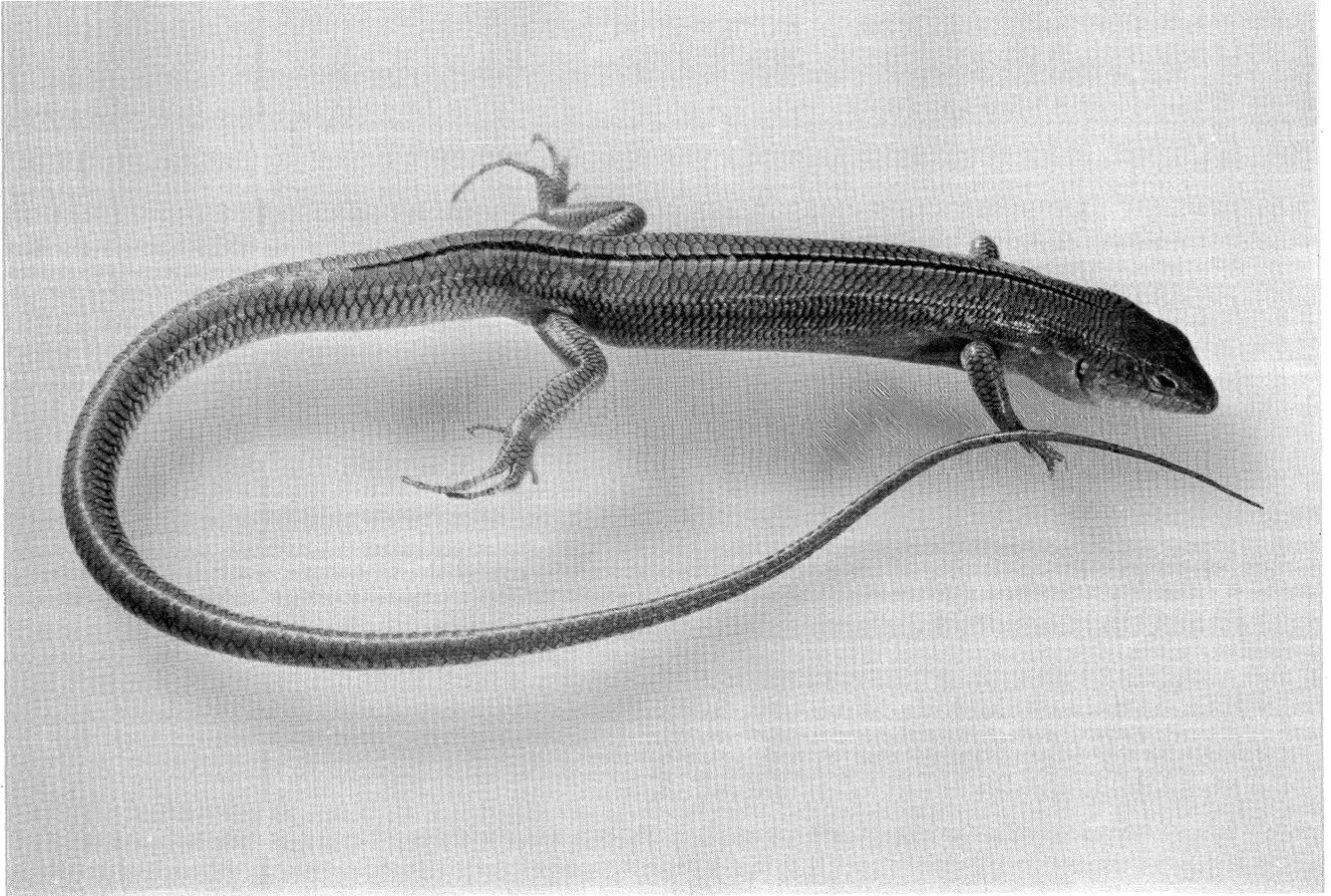
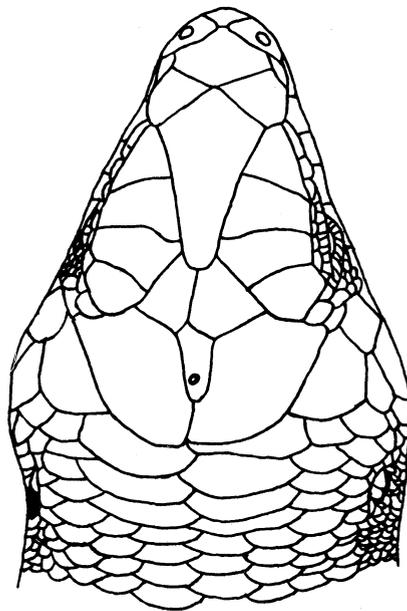
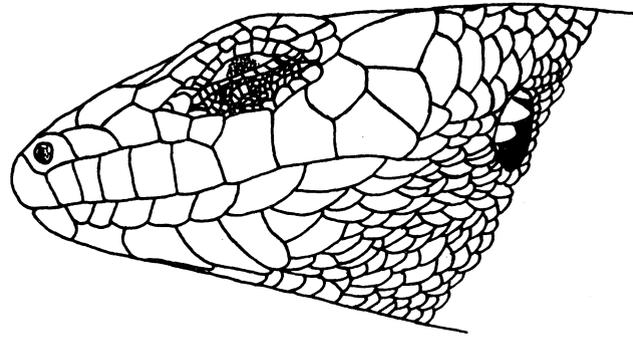


Fig. 1. Photograph of holotype of *Ctenotus vertebralis* (NTM-A/S R410), from Cox River Station, N.T. N.B. This is an extreme variant with respect to colour pattern. See variation in paratypes section and Fig. 3 (Photo G. Millen).



10 MM

Fig. 2. Head shields of holotype of *Ctenotus vertebralis* (NTM-A/S R410).

DESCRIPTION OF HOLOTYPE: SVL: 55mm; length of tail (original): 137mm (249% of SVL); length of forelimb: 15mm (27% of SVL); length of hindlimb: 25mm (45% of SVL); axilla-groin length: 29mm (53% of SVL); nasals narrowly separated; prefrontals narrowly separated; presuboculars 2/2; supraoculars 4/4, with 3/3 contacting frontal; supraciliaries 7/7; upper palpebrals (palpebrals of Storr) 11/11; supralabials 8/8; infralabials contacting postmental 3/2; ear lobules 3/3, obtuse, uppermost smallest; nuchals 3/4 (Fig. 2.); midbody scale rows 26; paravertebral scale rows, from posterior margin of parietals to posterior margin of hindlimbs, 58; lamellae beneath fourth toe 22/23, each with a dark, slightly compressed callus; claws on hindfeet long and sabre-like.

Colour and pattern (in life): Dorsal surface of body olive-brown, suffused anteriorly with copper. Head and nape contrasting paler olive-grey. A distinct black vertebral stripe (narrower than a paravertebral scale) extends from nape to basal third of tail. Upper lateral zone pale grey-brown. Two rows of very indistinct small cream spots or short dashes, most distinct anteriorly, corresponding in position to dorsolateral and mid-lateral stripes. Temporals streaked with cream. A very indistinct cream subocular streak, dark edged above. Supralabials and infralabials cream, finely peppered with brown. Limbs olive, unmarked. Venter cream.

It should be noted that in colour, the holotype represents one extreme among the known variants.

VARIATION IN PARATYPES: Meristics and measurements are included in Table 1. In all but one of the paratypes, the nasals are narrowly to moderately separated; the exception is AM R39899 in which they are in point contact. All but seven have the prefrontals narrowly to moderately separated and in those where the scales meet, contact is either point or narrow. Ear lobules obtuse to subacute, uppermost not enlarged.

The two paratypes from Cox River Station (NTM-A/S R411, AM R65113) agree very well with the colouring and patterning of the holotype. However, the rest of the type series, from more northerly localities, exhibits a great degree of variation in the intensity of pattern. At one extreme is the pattern described for the holotype. An example of the other extreme is AM R39899 an adult female (SVL=45mm). Its colouring and patterning (in alcohol) is as follows. Head and back dark grey, darker anteriorly. Top of head liberally spotted with black, especially on frontal and frontoparietals. A prominent black vertebral stripe beginning on nape, extending over basal two-thirds of tail, narrowly edged with white on body. A prominent narrow white dorsolateral stripe, extending from behind eye to just past level of hindlimb, for anterior two-thirds of its length margined above distinctly in black. Upper lateral zone from behind ear to level of hindlimb black, enclosing no pale spots or blotches, bordered below by a distinct white midlateral stripe, extending from behind ear to hindlimb, uninterrupted by forelimb. Lower lateral zone dark to pale grey. Sides of head pale brown with very fine dark brown peppering. Limbs pale brown with scattered darker spots. Tail pale brown except for vertebral stripe. Venter pale bluish grey except for underside of appendages which are cream.

The colour pattern just described is found almost universally in the juveniles of the type series which were all collected at Koongarra, but is also retained by several adults. An individual displaying a fairly well developed colour pattern is shown in Fig. 3.

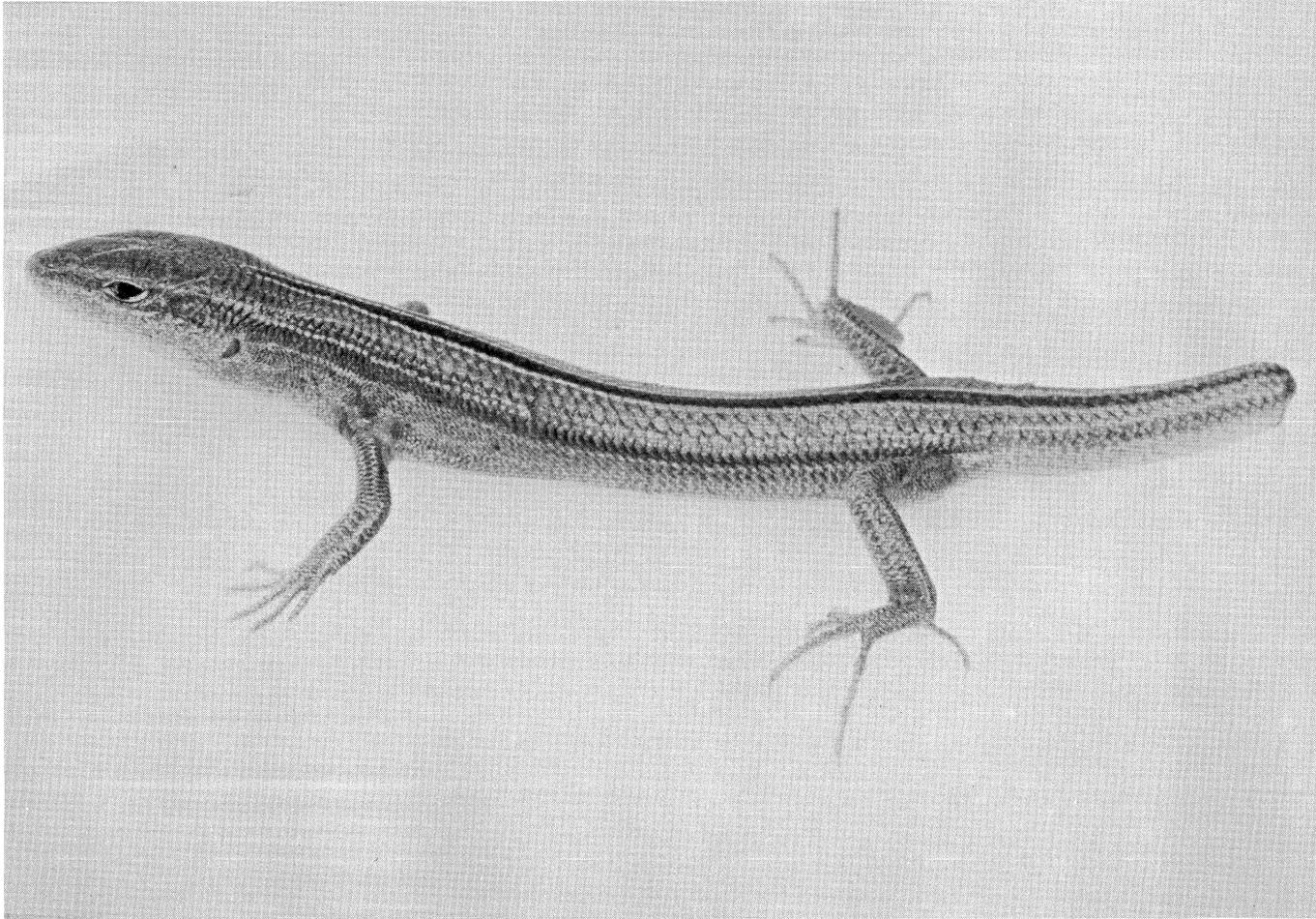


Fig. 3. Photograph of *Ctenotus vertebralis* from Koongarra, Mt. Brockman Range, N.T. This specimen shows a more developed colour pattern than the holotype (Photo H. G. Cogger).

Dr H. Cogger has kindly allowed us to examine his field notes on this species and has permitted us to publish the following colour description in life of an individual (AM R38842, adult female, SVL=50.5mm) from Koongarra which is intermediate in colour between the two extreme individuals described above. "Head silver-grey merging with bright, light bronzy-brown on the neck and back. A conspicuous black vertebral stripe, about one scale wide from nape to base of tail, bordered on either side by a narrow light band. A moderately defined light, white narrow dorsolateral stripe anteriorly, but disappearing about half way along the body, bordered above and below by ill defined narrow dark brown stripes. A relatively conspicuous narrow dark brown upper lateral band, from above the ear to the hindlimb, and bordered below by a vague, narrow white mid-lateral stripe. Below this is a vague brown zone from ear to groin. Venter white. Limbs above light yellowish brown with faint darker brown markings."

DISTRIBUTION: *Ctenotus vertebralis* has been collected in three localities surrounding Arnhem Land in the northern parts of the Northern Territory (Fig. 4).

HABITAT: Gillam observed *Ctenotus vertebralis* on several occasions during the course of a combined wildlife (Department of Northern Territory Public Service) and botanical (Department of Northern Territory) survey of Cox River Station, N.T. (Bolton *et al.*, 1977). Due to thick regeneration growth resulting from a recent fire and the limited time available however, only three individuals were collected.

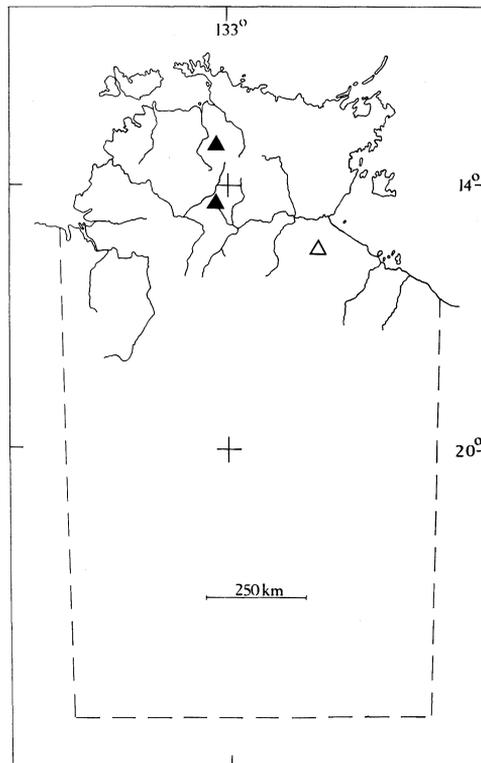


Fig. 4. Map of Northern Territory showing localities where *C. vertebralis* has been collected. The open symbol represents the type locality.



Fig. 5. *Melaleuca leucodendron* woodland at Arnold River, N.T., at the site where the holotype of *Ctenopus vertebralis* was collected.

C. vertebralis was generally observed at Cox River in an ecotonal series of habitats which occurs in the zone between rocky country and the flatter alluvial areas. The specific habitats where the three Cox River specimens were collected may be briefly described as follows. The holotype was taken on an alluvial paperbark (*Melaleuca leucodendron*) woodland (Fig. 5) adjacent to a river and below a rocky rise with Snappy Gum (*Eucalyptus leucophloia*) and Spinifex (*Plectrachne* sp.) covering. The two other specimens (AM R65113, NTM-A/S R411) were taken in woodland areas comprising *Eucalyptus polycarpa* and *Melaleuca* sp. over *Plectrachne* sp. and *Grevillea* sp. These areas were on lateritic to sandy soils, adjacent to broken low lying sandstone ridges. *Ctenotus spaldingi* occurred throughout this habitat with *C. vertebralis* and also extended to the edges of rivers and swamps, a habitat in which *C. vertebralis* apparently did not occur. On the rocky areas, both *C. vertebralis* and *C. spaldingi* were replaced by *C. saxatilis*.

The three *C. vertebralis* from Cox River were collected while active from mid-day to mid-afternoon. When approached and pursued, they appeared reluctant to take refuge in burrows. However, one eventually ran into a disused *Varanus gouldii* burrow, and another ran into a burrow, possibly its own, which was situated beneath a partly buried tree limb in a clearing.

Dr Cogger and Mr J. Wombey recorded habitat data at Mt. Brockman and Maranboy respectively. Their habitat records support those taken on Cox River Station. At Mt. Brockman, *C. vertebralis* was found to be common in the ecotone between rock and flat, open woodland. It was not recorded at all in the rocky areas, and numbers declined in the woodland away from the rock. During the wet season, when most were collected, they attempted to escape into tall annual grasses. At Maranboy, *C. vertebralis* were collected in open woodland where they were uncovered beneath rubbish. The general area is described as undulating stony hills interspersed with flat alluvial areas of Low Woodland with Tussock Grasses (nomenclature for the plant association after Carnahan, 1976).

REPRODUCTION: Like other members of its genus, *C. vertebralis* is oviparous, and a gravid female (AM R39899, SVL=45mm), containing shelled oviducal eggs was taken on 30 July 1973 at Nourlangie Rock, N.T. Unfortunately, due to damage during capture, it is impossible to determine the clutch size accurately, although it appears to be either three or four. Adult females (AM R38842, 38846) collected in February 1973 at Koongarra have ovarian eggs only. Two adult males from Cox River Station (NTM-A/S R411, AM R65113) collected in July 1977 have the testes enlarged, while those taken at Koongarra in February 1973 (AM R38855-6) do not have them enlarged. Of the 17 paratypes collected in February 1973 at Koongarra, five specimens are smaller than 30 mm SVL. These specimens may be regarded as very young juveniles, but the size at birth is uncertain.

REMARKS: *Ctenotus vertebralis* has been previously regarded by Cogger (1975) as constituting juvenile *C. inornatus*. As the distribution of *C. inornatus* competely overlaps that of *C. vertebralis*, and because *C. inornatus* is a much larger species than *C. vertebralis*, this did not seem entirely unrealistic at the time. The holotype of *Hinulia inornata*, British Museum (Natural History) No. 1946.8.15.45, has a SVL = 66mm (Rankin, pers. obs.), and Storr (1970, 1975) gives the maximum size as 87mm SVL and 95mm SVL for N.T. and W.A. respectively. Further, gravid *C. inornatus* (Rankin, unpublished data) range from 65.0 — 78.0mm SVL (\bar{x} = 73.7, s.d. = 4.68, N = 6). To determine at what size *C. inornatus* becomes sexually mature, the entire series of Australian Museum specimens smaller than approximately 60mm SVL were dissected and their gonads examined (4 females, 17 males). The smallest female examined was 50mm SVL, and the smallest male 46mm SVL. None of the four females was determined to be sexually mature. The smallest sexually mature male was 56.5mm SVL, although some larger than this were immature.

The maximum size recorded for *C. vertebralis* is 55 mm SVL, and it has already been stated that individuals below this size are able to reproduce (see section on reproduction). In view of this fact, by implication, reproductive isolation between the two species seems almost certain.

C. vertebralis is also readily distinguished from *C. inornatus* by its much more prominent vertebral stripe than in equally sized *C. inornatus* (Fig. 6), by its total absence of pale upper lateral flecks or spots, by having fewer midbody scale rows (24-26 vs 27-34), and by having supraciliaries subequal in vertical depth. (See Storr, 1975, for a discussion on the shape of supraciliaries in his *inornatus* subgroup.)

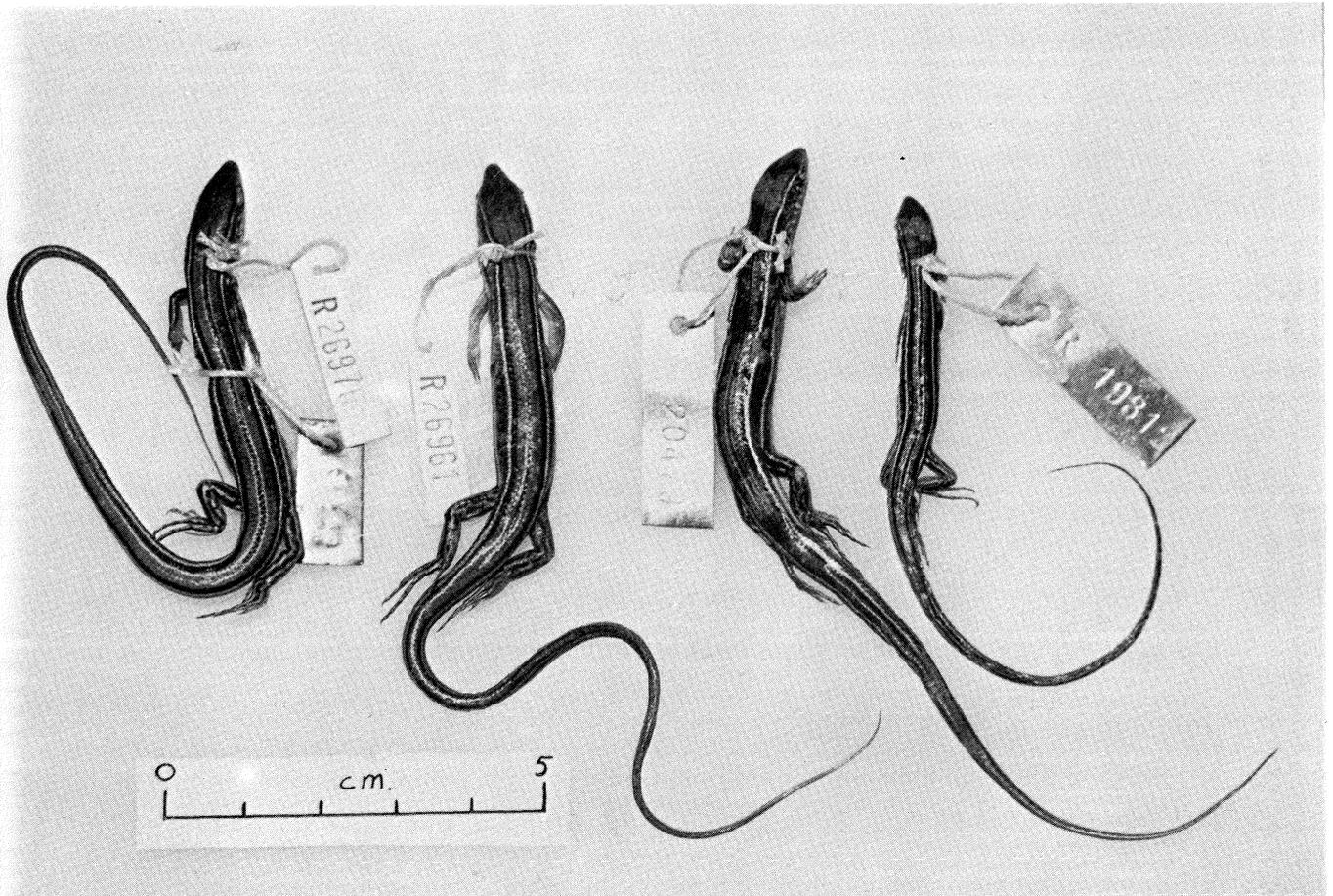


Fig. 6. A series of juvenile *Ctenotus inornatus* (Australian Museum specimens) showing variation in dorsal pattern. Localities (left to right): Forest River Mission, W.A.; Yirrkala, N.T.; Cape Arnhem, N.T. (two specimens).

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TABLE 1

Meristics and measurements of type series of *Ctenotus vertebralis*.

	Number	Range	Mean and Standard Deviation
SVL	22	24.5-55.0	40 ± 10
Tail (% of SVL)	8	190-266	236 ± 32
Forelimb (% of SVL)	22	24-33	29 ± 4
Hindlimb (% of SVL)	21	45-56	52 ± 5
Axilla-groin (% of SVL)	20	43-57	49 ± 7
Supraciliaries	22	6-8	7.2
Upper palpebrals*	22	9-12	9.5
Supralabials	22	7-8	7.9
Ear lobules	22	3-6	4.1
Nuchals	22	1-6	3.7
Midbody scale rows	22	24-26	24.8
Lamellae beneath 4th toe	21	20-25	22.5
Paravertebral scale rows**	21	51-62	57.5
Presuboculars	22	1-2	1.9
Infralabials contacting postmental	22	2-3	2.1

* Palpebrals of Storr (1969)

** The row of scales from the posterior margin of the parietals to the posterior margin of the hindlimbs.