

TEN NEW *CTENOTUS* (LACERTILIA: SCINCIDAE) FROM AUSTRALIA

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ABSTRACT

Seven new species and three new subspecies of *Ctenotus* are described: *C. arnhemensis* from extreme north of Northern Territory, *C. eutaenius* from north-east Queensland, *C. essingtonii brevipes* from north Queensland, *C. capricorni* from central Queensland, *C. xenopleura* from the southern interior of Western Australia, *C. zebrilla* from north Queensland, *C. strauchii varius* from the eastern deserts, *C. allotropis* from south Queensland and northern New South Wales and *C. brooksi iridis* from south-eastern South Australia and western Victoria. *C. s. strauchii* is redescribed.

INTRODUCTION

Eight of the new taxa belong to five species-groups that have been described elsewhere (Storr *et al.*, in press):

- 1 *C. lesueurii* group. Size typically large; habit typically robust; digits not or only slightly compressed; subdigital lamellae bearing wide calli; second supraocular usually wider than first and much wider than third; supraciliaries very disparate in size (third or fourth to penultimate much smaller than others); ear lobules large and graded in size; colour pattern usually including a wide, black, white-edged vertebral stripe and a black upper lateral zone enclosing a series of pale spots. The *C. inornatus* subgroup is further characterized by having nasals normally separated, prefrontals normally in contact, nuchals mostly 2 or 3 (never more than 4), upper labials usually 8, and midbody scale rows 26-34 (mostly 28-32).
- 2 *C. essingtonii* group. Size small to medium; habit slender; digits compressed; subdigital lamellae bearing wide to moderately narrow calli; second supraocular usually wider than first and much wider than third; ear lobules absent, small or very disparate in size; dark vertebral stripe narrow or absent, seldom pale-edged; dark upper lateral zone usually unspotted.
- 3 *C. atlas* group. Size small to medium; habit moderately slender; digits compressed; subdigital lamellae with an obtuse keel or a narrow to moderately wide callus; supraoculars and supraciliaries not so disparate in size as in *lesueurii* and *essingtonii* groups; colour pattern consisting almost entirely of alternating dark and pale longitudinal stripes (upper lateral zone spotted in a few taxa). Formerly known as the *C. taeniolatus* group,

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but it is becoming increasingly doubtful whether *C. taeniolatus* is a member of it.

- 4 *C. colletti* group. Size very small; habit slender; snout long and narrow; toes compressed; subdigital lamellae with a fine sharp keel ending in a mucron or small spine; colour pattern consisting of alternating black and white longitudinal stripes.
- 5 *C. schomburgkii* group. Size very small; habit slender; subdigital lamellae with a fine sharp keel ending in a mucron or small spine; dark vertebral



Fig. 1: Map of Australia showing type localities of *Ctenotus arnhemensis* (1), *C. eutaenius* (2), *C. essingtonii brevipes* (3), *C. monticola* (4), *C. capricorni* (5), *C. xenopleura* (6), *C. zebrilla* (7), *C. strauchii strauchii* (8), *C. strauchii varius* (9), *C. allotropis* (10) and *C. brooksi iridis* (11).

stripe narrow or absent; usually a dark laterodorsal stripe enclosing (or interrupted by) pale spots, short dashes or transverse bars; dark upper lateral zone enclosing pale dots, spots or short dashes or interrupted by pale, squarish, window-like marks.

Two of the new species, *C. monticola* and *C. capricorni*, both from east Queensland, are more similar to each other than to other species of *Ctenotus*. They combine certain characteristics of the *lesueurii* and *leonhardii* groups. When more is known of the Queensland fauna it may prove feasible to describe a species-group for them.

A spot map (Fig. 10) is provided for the closely related *C. strauchii* and *C. allotropis*. The other species are known from too few localities to warrant separate maps, and I have contented myself (in Fig. 1) with locating their type-localities.

This paper is based on specimens in the Australian Museum (registered numbers prefixed with AM), Queensland Museum (QM), National Museum of Victoria (NMV), South Australian Museum (SAM) and Western Australian Museum (WAM).

SYSTEMATICS

Ctenotus arnhemensis sp. nov.

Fig. 2

Holotype

R88613 in Australian Museum, collected on 10 August 1979 by R. Sadler at Jabiluka, Northern Territory, in 12°33'S, 132°55'E.

Paratypes

Northern Territory: Jabiluka (AM R88596, 88602, 88651-2, 88669, 88672, 88944, 88946); Island Billabong (12°33'S, 132°53'E) (AM R88937-40).

Diagnosis

A very small, strongly patterned member of the *Ctenotus lesueurii* group with seven upper labials and separated nasals and prefrontals.

Description

Snout-vent length (mm): 46-55 (N 13, mean 51.0). Length of appendages (% SVL): foreleg 24-29 (N 13, mean 25.4), hindleg 40-48 (N 13, mean 43.0), tail 191-237 (N 6, mean 207.0).

Nasals separated (N 13). Prefrontals separated (N 13). Supraoculars 4, first 3 in contact with frontal, second much wider than first and third. Supraciliaries 9-10, third (occasionally fourth) to penultimate much smaller than others. Upper ciliaries 10-14 (N 13, mean 11.5). Second loreal 1.1-1.6 times as wide as high (N 13, mean 1.27). Presuboculars 2. Upper labials 7 (N 13). Ear lobules 5-7 (N 13, mean 5.5), mostly subacute, third from top

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usually largest. Nuchals 3-5 (N 12, mean 3.6). Midbody scale rows 23-27 (N 13, mean 24.8). Toes slightly compressed; 20-23 (N 13, mean 21.4) lamellae under fourth, each with a moderately wide callus.

Dorsal ground colour brown, palest on tail. Moderately wide, black, white-edged vertebral stripe from nape to base of tail. Narrow black latero-dorsal stripe from orbit to tail, on which it becomes brown. White dorso-lateral stripe from orbit to tail, on which it becomes brownish-white. Black upper lateral zone from orbit to level of hindleg, enclosing a series of white spots; represented on tail by a brown stripe. White midlateral stripe from ear aperture to tail; represented anteriorly by 2 white spots on temple and by a white line curving beneath eye up on to lore. Limbs brownish-white longitudinally streaked with blackish-brown.

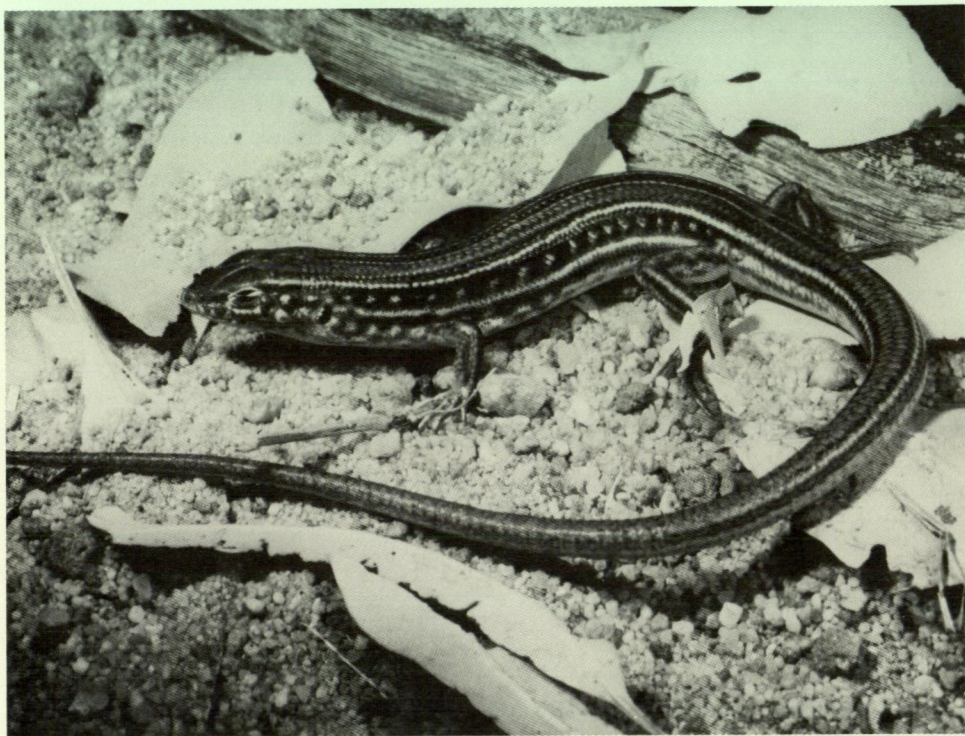


Fig. 2: A *Ctenotus arnhemensis* from Jabiluka, N.T., photographed in life by R.W.G. Jenkins.

Distribution

Only known from one small area in Arnhem Land (far north of Northern Territory).

Ctenotus eutaenius sp. nov.

Fig. 3

Holotype

R93408 in Australian Museum, collected on 30 July 1977 by A.E. and P. Greer at Charters Towers, Queensland, in 20°05'S, 146°16'E.

Paratype

Queensland: Picnic Bay, Magnetic I. (AM R93407).

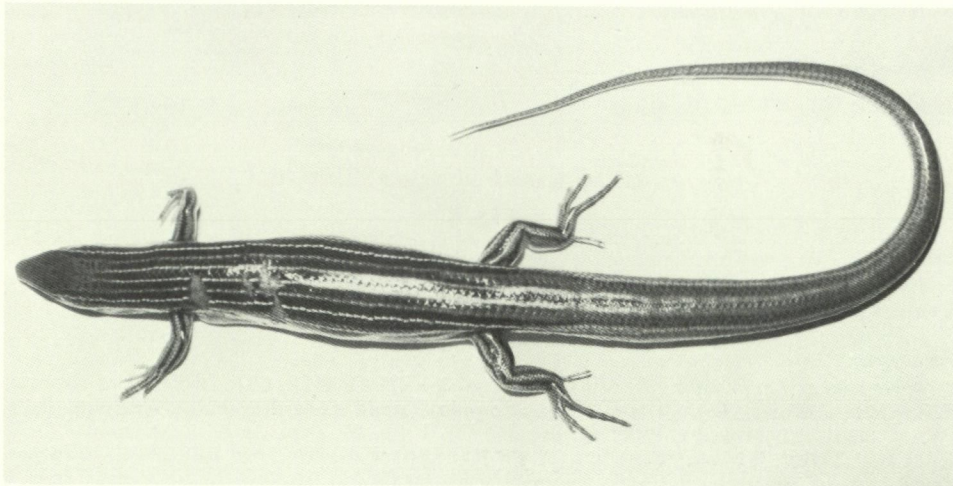


Fig. 3: Holotype of *Ctenotus eutaenius*.

Diagnosis

A member of the *C. lesueurii* group, *inornatus* subgroup, differing from all others by back and sides black with 10 white stripes. Similar in coloration to members of the *atlas* and *colletti* groups, but distinguishable by wide subdigital calli and large second supraocular.

Description (based on holotype and paratype)

Snout-vent length (mm): 82, 46.5. Length of appendages (% SVL): foreleg 24, 28; hindleg 40, 51; tail 221, 209.

Nasals separated or just touching. Prefrontals forming a short or long suture. Supraoculars 4, first 3 in contact with frontal, second much wider than first and third. Supraciliaries 9, fourth to penultimate much smaller than others. Upper ciliaries 10-12. Second loreal 1.2-1.5 times as wide as high. Presuboculars 2. Upper labials 8. Ear lobules 4 or 5; obtuse in juvenile, subacute in adult; second or third largest. Nuchals 2 or 3. Midbody scale rows 30. Toes not compressed; 20-22 lamellae under fourth, each with a wide callus.

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Back and sides black with 5 white stripes on each side: a narrow paravertebral from nape to tail (on which it becomes buffy-brown), a narrow dorsal from nape to rump, a narrow dorsolateral from last supraocular to tail (on which it is brownish-white), a narrow upper lateral from temple to tail (on which it is wider and buffy-brown), and a wide midlateral from below eye to tail (on which it is brownish-white). Also some indication anteriorly of a wide white lower lateral stripe.

Distribution

North-east Queensland.

Derivation of Name

Greek for 'well-striped'.

Ctenotus essingtonii brevipes subsp. nov.

Fig. 4

Holotype

R63611 in Australian Museum, collected on 24 June 1977 by A.E. and P. Greer at Venture Creek, 62 km E of Croydon, Queensland, in 18°13'S, 142°49'E.

Paratypes

Queensland: Coen (AM R16529); Strathgordon (NMV D13169); 16 km N of Edward River HS (AM R27285); Hann River, Kennedy Road (AM R26904); Wrotham Park (WAM R55858); Muldiva, W of Chillagoe (AM R70939); Tate River, near Ootann (AM R54642); 47 km WNW of Croydon (WAM R55850); Croydon (AM R63334-6); Venture Creek (AM R63610); Rifle Creek, 28 km S of Mt Isa (WAM R58266-7).

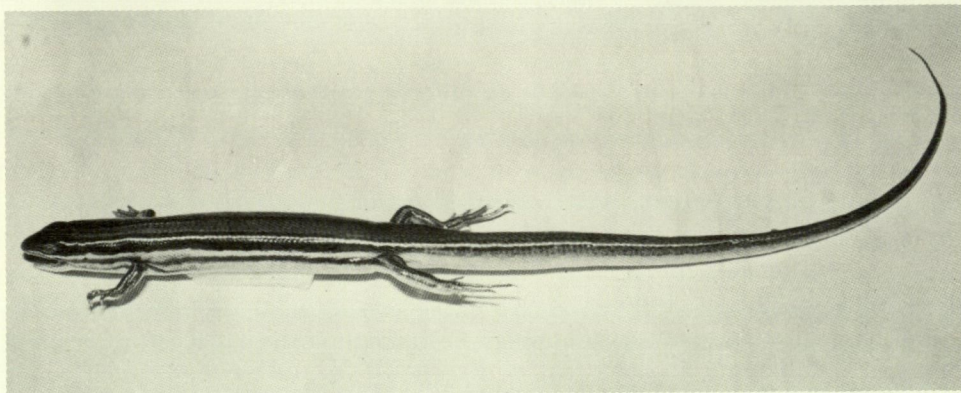


Fig. 4: Holotype of *Ctenotus essingtonii brevipes*.

Diagnosis

A member of the *C. essingtonii* group, distinguishable from *C. e. essingtonii* (Gray, 1842) by having little or no indication of ear lobules; it is also

slightly smaller and has shorter appendages, fewer midbody scale rows and fewer subdigital lamellae.

Distribution

Semi-arid and arid north Queensland (Gulf of Carpentaria and Princess Charlotte Bay drainages) from Coen south-west to Mt Isa.

Description

Snout-vent length (mm): 43-52 (N 14, mean 48.0). Length of appendages (% SVL): foreleg 21-26 (N 14, mean 22.7), hindleg 36-44 (N 14, mean 39.8), tail 193-211 (N 8, mean 201.4).

Nasals usually narrowly separated, occasionally in short contact. Pre-frontals separated (usually widely, occasionally narrowly). Supraoculars 4, first 3 in contact with frontal; second much wider than first and third. Supraciliaries 7-10 (mostly 8, N 13, mean 8.2), third to penultimate much smaller than others. Upper ciliaries 7-11 (N 15, mean 8.5). Second loreal 1.3-1.9 (N 14, mean 1.65) times as wide as high. Presuboculars 2. Upper labials 7 (N 13) or 6 (1). Ear lobules absent, unless a small slit-like pre-auricular scale partly covering upper anterior sector of aperture is construed as a lobule. Nuchals 3-5 (N 15, mean 3.7). Midbody scale rows 21-26 (N 15, mean 24.7). Toes slightly compressed; 17-21 (N 15, mean 18.8) lamellae under fourth, each with a narrow to moderately wide callus.

Upper surface brown, tinged with olive on head, red on tail and sometimes yellow on back. Usually no dorsal pattern, but one specimen (27285) has a white-edged, narrow, blackish-brown vertebral stripe on nape. Narrow but conspicuous white dorsolateral stripe from orbit to tail (on which it is suffused with reddish-brown), edged above by narrow, sharply defined, blackish-brown laterodorsal stripe. Blackish-brown upper lateral zone, continuing forward through orbit as a loreal stripe to nasal, and back on to tail (on which it becomes reddish-brown with dark edges). White midlateral stripe extending forward above ear aperture and below eye to bottom of first loreal, and back on to tail, where it is suffused with pink. Blackish-brown lower lateral stripe extending forward to lips. Some indication of a dark brown ventrolateral stripe in front of and behind arm. Lips pale brown, longitudinally striped with dark brown.

Remarks

For description of *Ctenotus e. essingtonii* see Storr (1970: 104).

Derivation of Name

Latin for 'short-footed'.

Ctenotus monticola sp. nov.

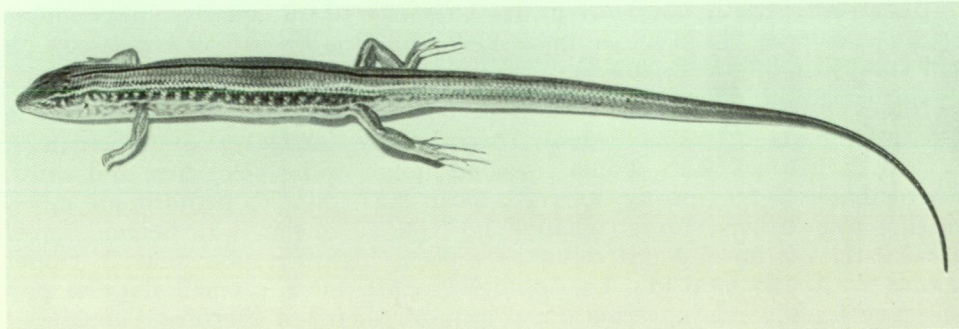
Fig. 5

Holotype

R70937 in Australian Museum, collected on 16 June 1976 by A.E. and P. Greer at 11 km W of Mareeba, Queensland, in 17°02'S, 145°20'E.

Paratypes

Queensland: 11 km W of Mareeba (AM R70936, 70938); Herberton (AM R63863-4).

Fig. 5: Holotype of *Ctenotus monticola*.**Diagnosis**

A moderately small *Ctenotus* with coloration as in *C. leonhardii* group, e.g. vertebral stripe narrow and upper lateral zone enclosing rows of pale dots, but having only 7 upper labials, shorter limbs, and fewer and more widely callose subdigital lamellae.

Description

Snout-vent length (mm): 52-61 (N 5, mean 56.4). Length of appendages (% SVL): foreleg 22-25 (N 5, mean 23.2), hindleg 39-45 (N 5, mean 42.8), tail 211-220 (N 2).

Nasals separated (usually narrowly). Prefrontals separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7 or 8 (N 5, mean 7.8), fourth to penultimate considerably smaller than others. Upper ciliaries 9-11 (N 5, mean 9.6). Second loreal 1.2-1.6 (N 5, mean 1.36) times as wide as high. Presuboculars 2 (3 on one side of one specimen). Upper labials 7. Ear lobules 2-4 (N 5, mean 2.4) obtuse or subacute, first usually largest. Nuchals 3-5 (N 5, mean 4.3). Midbody scale rows 24-28 (N 5, mean 25.6). Toes compressed; 17-19 lamellae (N 5, mean 17.9) under fourth, each with a narrow to moderately wide callus.

Upper surface brownish, tinged with olive on back and red on tail. Narrow blackish vertebral stripe from nape to proximal fifth of tail, narrowly and indistinctly edged with white. Occasionally some indication of a narrow dark

dorsal stripe. Narrow white dorsolateral stripe from orbit to level of vent, narrowly to moderately widely edged above with blackish (laterodorsal stripe). Blackish or dark brown upper lateral zone enclosing 1-3 longitudinal series of brownish-white dots which tend to align vertically. Narrow white midlateral stripe from below eye to level of vent. Lower lateral zone dark brown irregularly spotted with brownish-white. Upper lips barred with dark brown.

Distribution

Subhumid highlands of north-east Queensland.

Derivation of Name

Latin for 'inhabiting highlands'.

Ctenotus capricorni sp. nov.

Fig. 6

Holotype

R65946 in Australian Museum, collected on 28 November 1976 by R. Wells and D. Metcalfe at 33 km W of Jericho, Queensland, in 23°34'S, 145°48'E.

Paratype

Queensland: 33 km W of Jericho (AM R65945).

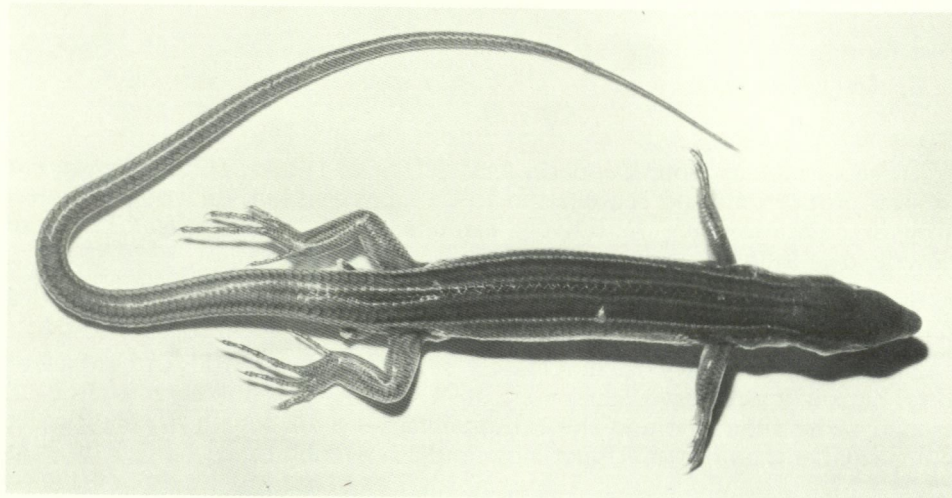


Fig. 6: Holotype of *Ctenotus capricorni*.

Diagnosis

A moderately small *Ctenotus* with coloration as in *C. leonhardii* group, e.g. vertebral stripe narrow or absent and upper lateral zone enclosing rows

of pale dots, but with wide subdigital calli and wide second supraocular as in *C. lesueurii* group. Further distinguishable from *C. monticola* by more numerous midbody scale rows, subdigital lamellae and ear lobules but fewer nuchals.

Description (based on holotype and paratype)

Snout-vent length (mm): 58.5, 53. Length of appendages (% SVL): foreleg 25, 28; hindleg 43, 38; tail 215, 202.

Nasals very narrowly separated. Prefrontals in short contact or very narrowly separated. Supraoculars 4, first 3 in contact with frontal, second wider than first and third. Supraciliaries 6-9. Upper ciliaries 11-12. Second loreal 1.2-1.8 times as wide as high. Presuboculars 2. Upper labials 8. Ear lobules 4 or 5, second or third largest, subacute or obtuse. Nuchals 2 or 3. Midbody scale rows 30 or 32. Lamellae under fourth toe 21-23, each with a moderately wide callus.

Head olive-brown. Tail buffy-brown. Back brown with narrow blackish vertebral stripe from nape to base of tail, edged with pale brown or brownish-white. Narrow, indistinct, pale brown dorsal stripe. Narrow blackish latero-dorsal stripe from nape to base of tail. Narrow white dorsolateral stripe from above temple to tail (on which it becomes wider and buffy). Brown upper lateral zone enclosing a series of white dots and short dashes (2 series in front of foreleg). White midlateral stripe well developed posteriorly but disappearing at or behind foreleg. Lower lateral zone pale greyish-brown.

Distribution

Central Queensland.

Remarks

Three specimens from Yeppoon (AM R16662, 16664, 16681) are similar in size, proportions and scutellation to *C. capricorni* but, differing considerably in coloration, are tentatively excluded from that species. They are described as follows.

Snout-vent length (mm): 51-59. Length of appendages (% SVL): foreleg 25-27, hindleg 48-49, tail 202.

Nasals very narrowly to moderately separated. Prefrontals in contact or very narrowly separated. Supraoculars 4, first 3 in contact with frontal, second wider than first and third. Supraciliaries 8-10, fourth to penultimate much smaller than others. Upper ciliaries 9-11. Second loreal 1.2-1.7 times as wide as high. Presuboculars 2. Upper labials 7 or 8. Ear lobules 4-6, obtuse or subacute. Nuchals 3. Midbody scale rows 30 or 32. Lamellae under fourth toe 21-23, each with a moderately wide callus.

Upper surface greyish-brown, tinged reddish on tail. With or without a narrow, faintly pale-edged, dark vertebral stripe. Narrow white dorsolateral stripe sometimes broken into short dashes, extending back to proximal third

of tail, with or without a narrow brown edge above (laterodorsal stripe). Blackish or dark brown upper lateral zone enclosing 2 series of white dots. With or without a narrow white midlateral stripe from ear aperture to proximal third of tail, represented anteriorly by a curving white line under eye. Lower lateral zone greyish-brown with or without variegations.

Derivation of Name

Latin for 'of Capricorn', in allusion to its known range being close to that Tropic.

Ctenotus xenopleura sp. nov.

Fig. 7

Holotype

R72212 in Western Australian Museum, pit-trapped by R.A. How *et al.* on 23 April 1980 at 15 km NE of Bungalbin Hill, Western Australia, in 30°17'S, 119°44'E.

Paratypes

Eastern Division (W.A.): 15 km NE of Bungalbin Hill (WAM R67097, 67104-5, 67116, 67118, 67140, 67143, 72123-4, 72139, 72149-50, 72181-2, 72198-9, 72205-9).

Eucla Division (W.A.): McDermid Rock (32°01'S, 120°44'E) (WAM R65290, 65304, 66153).



Fig. 7: Holotype of *Ctenotus xenopleura*, photographed in life by R.E. Johnstone.

Diagnosis

A small member of the *C. atlas* group with 10 pale stripes on a black ground and upper lateral zone spotted. Most like *C. alacer* Storr of east Kimberley and Central Australia, but smaller and having fewer upper labials, midbody scale rows and subdigital lamellae.

Description

Snout-vent length (mm): 27-49 (N 24, mean 38.4). Length of appendages (% SVL): foreleg 26-33 (N 24, mean 29.6), hindleg 43-51 (N 24, mean 45.8), tail 145-195 (N 12, mean 171.8).

Nasals separated (usually narrowly). Prefrontals narrowly separated or in contact (usually short). Supraoculars 4, first 3 in contact with frontal. Supraciliaries 6 (N 1) or 7 (23), fourth to penultimate considerably smaller than others. Upper ciliaries 7-11 (N 23, mean 8.7). Second loreal 1.1-1.8 times as wide as high (N 22, mean 1.50). Presuboculars 1 (N 2) or 2 (22). Upper labials 6-8 (7 except in 2 specimens). Ear lobules 2-6 (N 23, mean 4.6), obtuse or subacute. Nuchals 2-4 (N 22, mean 2.9). Midbody scale rows 26-30 (N 24, mean 27.6). Lamellae under fourth toe 20-26 (N 24, mean 22.9), each with a weak obtuse keel.

Head pale brown, pale olive or brownish-white, spotted (sparsely towards snout) with blackish-brown; narrow black stripe through lore. Back and sides black, marked with white (pale coppery in life) as follows: on each side a narrow paravertebral, dorsal and dorsolateral stripe, 1 (occasionally 2) upper lateral series of small, usually elongate spots, a wide midlateral (which passes over top of ear aperture) and ventrolateral stripe; white stripes suffused with brown on nape and foreback. Tail brownish-white (pale coppery in life) with some indication (especially anteriorly) of dark hollow vertebral, laterodorsal and upper lateral stripes. Upper surface of limbs brownish-white (pale coppery-brown in life) with 3 black stripes.

Distribution

Only known from 2 localities in the semi-arid southern interior of Western Australia. At both localities it was confined to patches of sandy soil with low shrubs over *Triodia*.

Derivation of Name

Greek for 'strange-sided', in allusion to the pale upper lateral spots, rare in the *C. atlas* group.

Ctenotus zebrilla* sp. nov.*Fig. 8****Holotype**

R63316 in Australian Museum, collected on 24 June 1977 by A.E. and P. Greer at Venture Creek, 62 km E of Croydon, Queensland, in 18°13'S, 142°49'E.

Paratypes

Queensland: Lappa (AM R16478, 16672).

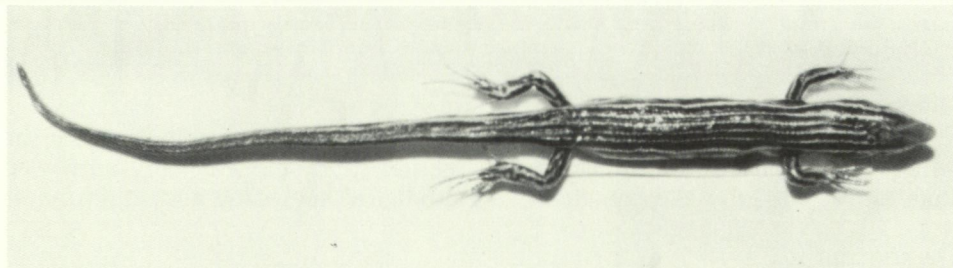


Fig. 8: Holotype of *Ctenotus zebrilla*.

Diagnosis

A member of the *C. colletti* group with 8 white stripes on a black ground. Agreeing with *C. striaticeps* Storr of north-west Queensland in having widely separated prefrontals but differing in failure of paravertebral stripe to extend on to head, presence of dorsal stripe, absence of ventrolateral stripe, fewer subdigital lamellae, and more numerous but smaller ear lobules.

Description

Snout-vent length (mm): 31-40 (N 3, mean 36.3). Length of appendages (% SVL): foreleg 25-28 (N 3, mean 27.0), hindleg 42-47 (N 3, mean 45.0), tail 177 (N 1). Nasals in moderately long contact. Prefrontals very widely separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7, fourth to penultimate considerably smaller than others. Upper ciliaries 8 or 9. Second loreal 1.3-1.4 times as wide as high. Presuboculars 2. Upper labials 6 or 7. Ear lobules 3-7 (N 3, mean 5.3), first never largest; obtuse in smallest specimen, subacute in others. Nuchals 3 or 4. Midbody scale rows 29 or 30. Toes compressed; 17-21 (N 3, mean 19.2) lamellae under fourth, each with a fine dark mucronate keel.

Upper and lateral surfaces black with 4 white stripes on each side: a narrow paravertebral, a narrow dorsal, a narrow dorsolateral from first supraocular nearly to end of tail, and a midlateral extending forward to first labial after bending above ear aperture.

Distribution

Southern interior of Cape York Peninsula, north Queensland.

Derivation of Name

Neo-Latin for 'little zebra', in allusion to its black and white stripes.

Ctenotus strauchii strauchii (Boulenger, 1887)

Fig. 10

Lygosoma strauchii Boulenger, 1887, Catalogue of the lizards in the British Museum (Natural History), 3: 229. Gayndah, Queensland (Godeffroy Museum).

Diagnosis

A sharply patterned member of the *C. schomburgkii* group with nasals in contact, prefrontals widely separated, second supraocular usually narrower than third, ear lobules very small, and subdigital keels fine and mucronate.

Description

Snout-vent length (mm): 30-52 (N 19, mean 41.8). Length of appendages (% SVL): foreleg 22-29 (N 18, mean 25.8), hindleg 33-48 (N 18, mean 40.4), tail 135-187 (N 7, mean 159.0).

Nasals in short to moderately long contact. Prefrontals widely to very widely separated. Supraoculars 4, first 3 in contact with frontal; second narrower than third (N 13) or about as wide (3) or slightly wider (2). Supraciliaries 6 (N 2) or 7 (16), fourth to penultimate usually much smaller than others. Upper ciliaries 9 or 10 (N 15, mean 9.5). Second loreal 1.2-1.8 times as wide as high (N 17, mean 1.47). Presuboculars 2. Upper labials 7 (N 16) or 8 (3). Ear lobules 2-5 (N 18, mean 3.2), obtuse, very small. Nuchals 3-5 (N 17, mean 3.5). Midbody scale rows 26-32 (N 18, mean 28.5). Lamellae under fourth toe 14-22 (N 18, mean 18.1), each with a fine, mucronate, greyish-brown keel.

Head dark olive-brown (paler in far west of range) and tail pale brown. Back brown with or without a narrow, black, pale-edged vertebral stripe from nape to base of tail. Narrow or wide black laterodorsal stripe from above eye to base of tail, enclosing a series of pale spots, dots or short dashes. Narrow white dorsolateral stripe from above eye to tail (on which it becomes wider and suffused with brown; except in AM R62861 where it is replaced by a series of short white oblique dashes). Black upper lateral zone from orbit to base of tail, enclosing a series of small whitish spots or 1-3 series of whitish dots that tend to align vertically; represented on tail and sometimes on lore by a dark brown stripe. White midlateral stripe from bottom of loreals to base of tail, branches encircling ear aperture. Narrow black or greyish-brown lower lateral zone, sometimes enclosing small irregular white spots; represented on upper and lower lips by a dark stripe. Upper surface of limbs pale brown, streaked or mottled with black. Plantar scales wholly white.

Distribution

Subhumid, semi-arid and arid zones of eastern and mid-western Queensland, west to about long. 144°E (where it begins to intergrade with *C. s. varius*); and arid and semi-arid northern interior of New South Wales, south

to about lat. 31°S and west to the Barrier Range (where it again begins to intergrade with *C. s. varius*) (see Fig. 10).

Geographic Variation

In the north-east of its range, i.e. Queensland east of the Great Dividing Range, there is usually no vertebral stripe, the black laterodorsal stripe is very wide, and the appendages are considerably longer and the subdigital lamellae more numerous than in the south and west. When more material is available from Queensland it may prove desirable to recognise an additional subspecies in eastern Australia. Another consequence of this geographic variation is discussed under *C. allotropis*.

Material

Queensland: north Queensland (NMV D2035); Charters Towers (WAM R21467-9) and 35 km SSW (AM R63106); Telemon, 50 km WNW of Hughenden (QM J5818); 80 km NNW of Muttaborra (AM R62861); 48 km NNW of Marlborough (QM J24922); Arcadia Valley, 66 km NNE of Injune (QM J30814); road west of Charleville (AM R57597); Dynevor Downs (AM R59260-2).

New South Wales: 30 km WSW of Brewarrina (AM R47387-8, 68296); Quambone (AM R64907); Darling River between Bourke and Wilcannia (AM R6467); Fowlers Gap, 110 km N of Broken Hill (AM R52929).

Ctenotus strauchii varius subsp. nov.

Figs 9 and 10

Holotype

R49507 in Australian Museum, collected on 14 October 1975 by H.G. Cogger and P. Webber at Charlotte Waters, Northern Territory, in 25°54'S, 134°56'E.

Paratypes

For details of 29 specimens from Queensland, Northern Territory, South Australia and New South Wales, see Material.

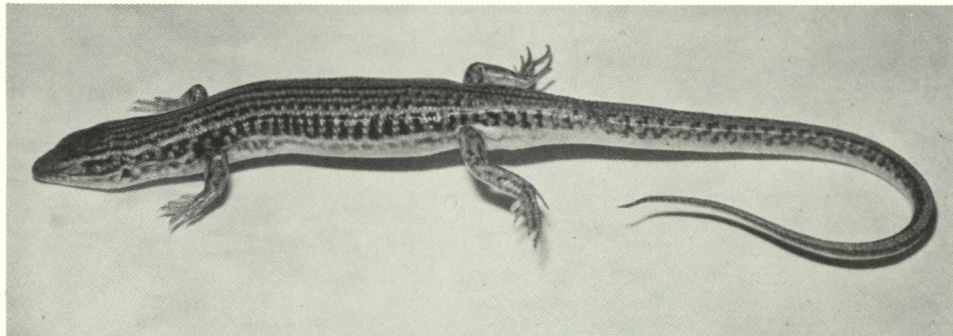


Fig. 9: Holotype of *Ctenotus strauchii varius*.

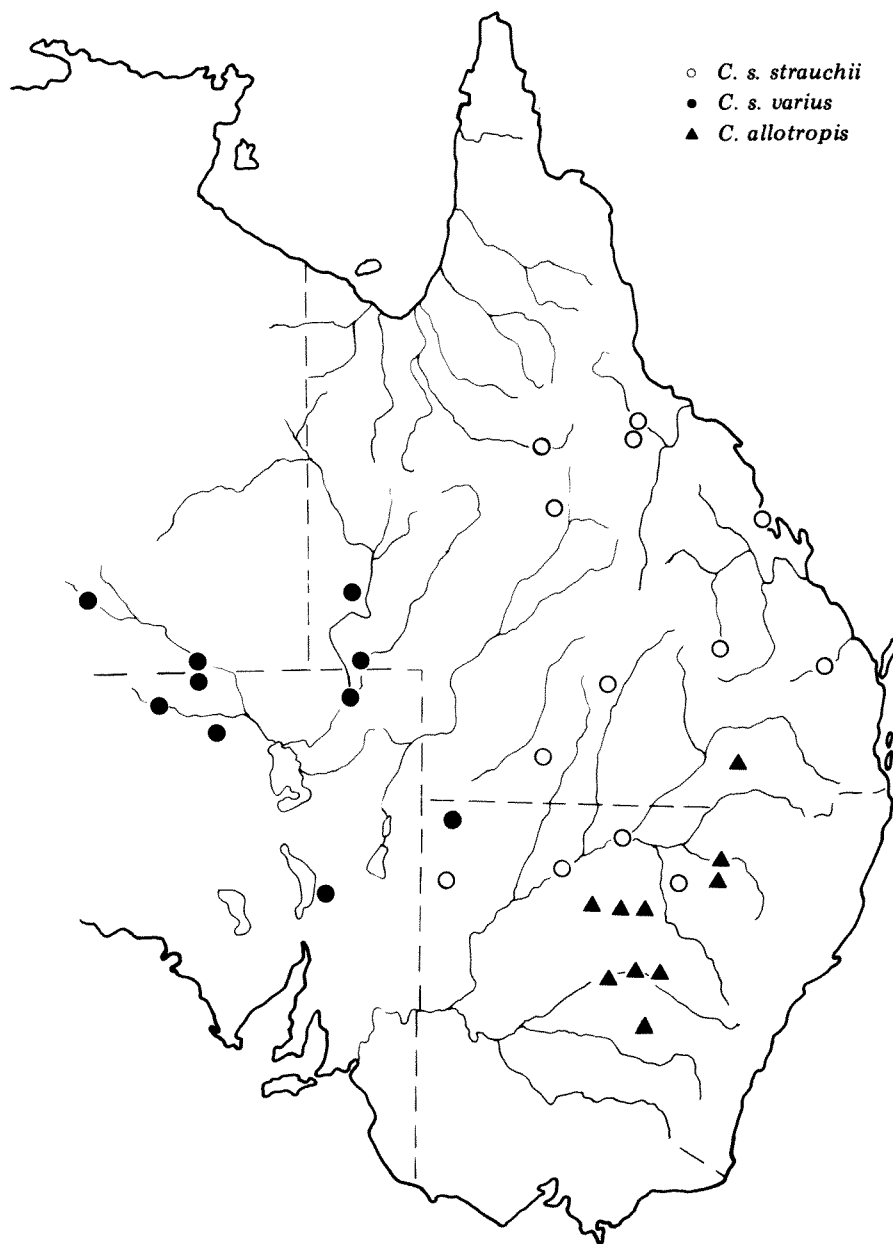


Fig. 10: Map of eastern Australia showing locality of specimens of *Ctenotus strauchii* *strauchii*, *C. strauchii varius* and *C. allotropis*.

Diagnosis

Distinguished from *C. s. strauchii* and *C. allotropis* by its pale coloration, diffuse colour pattern, more numerous presuboculars and upper labials, supraciliaries decreasing gradually in size from first to penultimate, and ear lobules more disparate in size. Further distinguishable from *C. allotropis* by its sharply keeled subdigital lamellae.

Description

Snout-vent length (mm): 33-56 (N 30, mean 46.7). Length of appendages (% SVL): foreleg 21-29 (N 29, mean 24.4), hindleg 32-42 (N 29, mean 36.8), tail 126-173 (N 15, mean 148.4).

Nasals in short to moderately long contact (N 31) or narrowly separated (1). Prefrontals moderately to widely separated. Supraoculars 4 with first 3 in contact with frontal (N 29) or 5 with first 4 in contact with frontal (2), second usually much narrower than first. Supraciliaries 6-9 (seldom more than 7, N 30, mean 6.6). Upper ciliaries 8-13 (N 28, mean 9.4). Second loreal 1.1-1.9 times as wide as high (N 30, mean 1.60). Presuboculars usually 3 (with second small and wedged in between top of first and top of third), occasionally 2, rarely 1. Upper labials 7-9 (N 30, mean 8.0). Ear lobules 2-4 (N 30, mean 2.8), short, obtuse or subacute, first or second much larger than others. Nuchals 1-5 (N 29, mean 3.2). Midbody scale rows 25-32 (N 29, mean 28.4). Lamellae under fourth toe 16-21 (N 30, mean 18.1), each with a fine mucronate keel.

Ground colour of head and back pale olive-grey, pale reddish-brown or pale buffy-brown, of tail pale reddish-brown. Black dorsal markings highly variable: occasionally a narrow vertebral stripe and on each side a narrow dorsal stripe; usually a laterodorsal series of irregular spots or short transverse bars. White dorsolateral stripe from above lore or eye to base of tail, usually narrow and continuous. Upper lateral zone black, occasionally enclosing 1-3 series of small pale spots, but usually broken up into a series of narrowly vertical bars or approximately rectangular blotches, alternating with bars of dorsal ground colour similar in size and shape to black bars; represented on lore by narrow black stripe, and on tail by a series of squarish brown spots. Narrow white midlateral stripe. Narrow grey lower lateral zone usually present.

Distribution

Arid eastern interior of Australia: far western Queensland, south-eastern Northern Territory, north-eastern South Australia and far north-western New South Wales (see Fig. 10).

Material

Queensland: Sandringham, 54 km NW of Bedourie (AM R93006-7, 93010); Birdsville (QM J9743).

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Northern Territory: Tempe Downs (NMV D280); Charlotte Waters (NMV D946; AM R49731, 70933-4); Central Australia (AM R2094); '39 km N of Neale Junction, W.A.' (AM R49741).

South Australia: 15 km S of Charlotte Waters (AM R70935); Lambina (NTM 1548); Oodnadatta (AM R60023-4); 16 km N of Clifton Hills (SAM R10345); Mern Merna (SAM R2611, 2646, 10018-23).

New South Wales: Milparinka (SAM R9930, 10042-3; AM R42714-5).

Ctenotus allotropis sp. nov.

Figs 10 and 11

Holotype

R27832 in Australian Museum, collected in August 1967 by H.G. Cogger in the Round Hill Fauna Reserve, near Euabalong, New South Wales.

Paratypes

Queensland: Moombah, 70 km E of St George (QM J34770).

New South Wales: 32 km SW of Wee Waa (AM R69621); Pilliga East State Forest (AM R69620); Nyngan (AM R58700-1); 13 km E of Hermidale (AM R17164) and 11 km W (AM R45877); Cobar (AM R58702-3); Round Hill Fauna Reserve (AM R26986, 27829, 27910, 30413, 45569-73, 57905, 92294); Condobolin (QM J31847-8); 3 km N of Bogan Gate (AM R59263); Ingalba Nature Reserve, Temora (AM R85252).

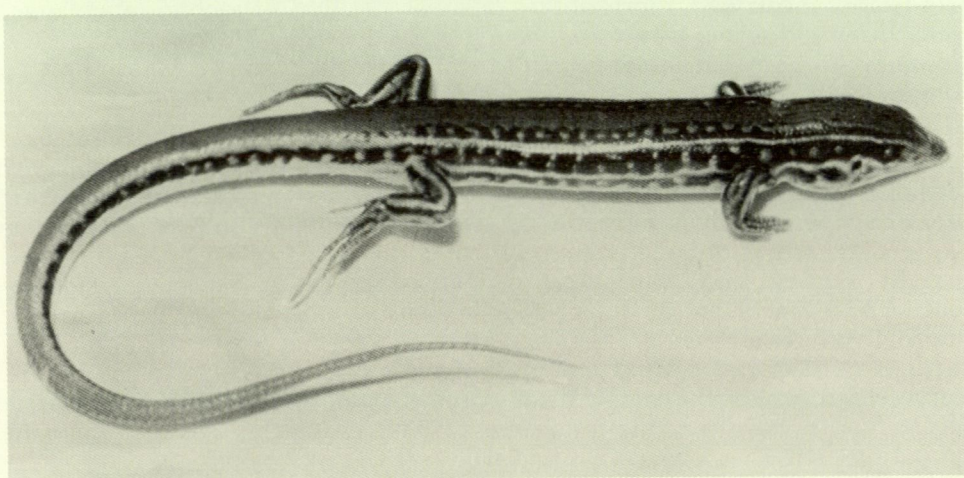


Fig. 11: Holotype of *Ctenotus allotropis*.

Diagnosis

A sharply patterned member of the *C. schomburgkii* group with nasals in contact and prefrontals widely separated, distinguishable from all other members of the group by the blackish, relatively wide keels of the proximal subdigital lamellae. Further distinguishable from *C. s. strauchii* by second supraocular not narrower than third. For other differences between *C. allotropis* and sympatric *C. s. strauchii*, see under Remarks.

Description

Snout-vent length (mm): 29-54 (N 25, mean 43.9). Length of appendages (% SVL): foreleg 22-29 (N 25, mean 25.6), hindleg 40-49 (N 25, mean 44.7), tail 130-182 (N 14, mean 161.9).

Nasals in very short to moderately long contact. Prefrontals widely to very widely separated. Supraoculars 4, first 3 in contact with frontal; second as wide as third (N 3) or wider (22). Supraciliaries 6 (N 5) or 7 (19), fourth to penultimate much smaller than others. Upper ciliaries 7-10 (N 21, mean 9.0). Second loreal 1.3-2.1 times as wide as high (N 24, mean 1.76). Presuboculars 2. Upper labials 7 (N 22) or 8 (2). Ear lobules 3-6 (N 24, mean 3.5), obtuse or subacute, small. Nuchals 3 or 4 (N 24, mean 3.7). Midbody scale rows 26-32 (N 25, mean 28.2). Lamellae under fourth toe 17-22 (N 24, mean 19.6), each with a blackish-brown keel (proximal keels obtuse, distal keels fine and mucronate).

Dorsally brown, paler and more reddish on tail. Black laterodorsal stripe from orbit to base of tail, enclosing a series of pale reddish-brown or brownish-white spots. Narrow white dorsolateral stripe from orbit to base of tail; on tail wider and pale reddish-brown. Upper lateral zone black, enclosing 2 or 3 series of pale reddish-brown or brownish-white dots that tend to align vertically; represented anteriorly by black loreal stripe, and on tail by black stripe enclosing a series of small brownish-white spots or broken by a series of irregular white vertical bars. Upper surface of limbs pale brown, streaked with blackish-brown. Apices of larger (outer) plantar scales blackish-brown.

Distribution

Semi-arid lowlands of southern Queensland and northern New South Wales, west of the Great Dividing Range and between lat. 28° and 34° 30'S (see Fig. 10).

Remarks

This species is very similar to *C. s. strauchii* and not easily distinguished from it except by the nature and colour of the subdigital keels and plantar scales. However, in the zone of overlap they are more different than one would suppose after comparing their descriptions. Within the range of *C. allotropis*, *C. s. strauchii* has a vertebral stripe, much shorter appendages (e.g. hindleg 35-43% of SVL, N 4, mean 37.0), and less numerous lamellae under fourth toe (14-17, N 4, mean 16.0).

Derivation of Name

From Greek *allos* (different or strange) and *tropis* (keel), in allusion to the obtuse keels of the proximal subdigital lamellae, unique in the *C. schomburgkii* group.

Ctenotus brooksi iridis subsp. nov.

Fig. 12

Holotype

D53837 in National Museum of Victoria, pit-trapped by A.J. Coventry and D. Ashwell on 18 February 1980 at 6.6 km ENE of Chinaman Well, Victoria, in 35°52'S, 141°43'E.

Paratypes

For details of 59 specimens from South Australia and Victoria, see Material.



Fig. 12: Holotype of *Ctenotus brooksi iridis*.

Diagnosis

A member of the *Ctenotus schomburgkii* group distinguishable from other subspecies of *C. brooksi* by its dark coloration and strong pattern, especially the 5 well-defined black stripes on back. Further distinguishable from *C. b. aranda* and *C. b. taeniatus* by black upper lateral zone enclosing a series of white spots (rather than being broken by a series of white rectangular marks) and by presence of white midlateral stripe.

Description

Snout-vent length (mm): 25-50 (N 60, mean 39.9). Length of appendages (% SVL): foreleg 24-33 (N 53, mean 27.8), hindleg 40-53 (N 53, mean 47.1), tail 143-178 (N 31, mean 159.3).

Nasals narrowly separated (N 38) or in short contact (8). Prefrontals in contact (N 38) or narrowly separated (8). Supraoculars 4, first 3 in contact with frontal, second and third usually narrower than first. Supraciliaries 6 (N 25) or 7 (15), third to penultimate smallest. Upper ciliaries 8 (N 5), 9 (14) or 10 (15). Second loreal 1.3-2.3 times as wide as high (N 40, mean 1.72). Presuboculars 1 (N 44) or 2 (1). Upper labials 7 (N 40) or 8 (2). Ear lobules 3-6 (N 40, mean 4.4), acute or subacute in adults, obtuse in juveniles. Nuchals 1-6 (N 43, mean 2.7). Midbody scale rows 26-30 (N 43, mean 27.0). Lamellae under fourth toe 17-23 (N 43, mean 20.5), each with a fine, dark,

mucronate keel. First few plantar scales opposite fourth toe enlarged and bearing a fine pale keel.

Ground colour (in alcohol) of head and tail pale brown, of back very pale green or very pale brown (pale pink in life). Head streaked with black. Back with five black stripes: vertebral and on each side a dorsal and laterodorsal; vertebral extending for furthest on tail (but for not more than half its length); dorsal and dorsolateral merging at base of tail and soon disappearing. Narrow white dorsolateral stripe from above eye to base of tail. Black upper lateral zone from eye to base of tail, enclosing an irregular series of whitish spots; represented on lore by a narrow black stripe and on tail by a blackish-brown stripe. White midlateral stripe from upper lips to base of tail, broad on body. Narrow lower lateral zone blackish-grey, sometimes interrupted by or enclosing small white spots. Limbs pale brown, longitudinally striped with black.

Distribution

South-eastern interior of South Australia (the Murray Mallee and Upper South-East) and western interior of Victoria (the Big Desert).

Remarks

Of all the subspecies of *Ctenotus brooksi*, *euclae* from the northern shores of the Great Australian Bight is most like *iridis*. Yet these taxa are separated by 700 km of seas, mountain ranges and other country unsuitable for the species. On the other hand *C. b. aranda* occurs only 300 km to the north of *iridis*, with the Olary Spur alone hindering the dispersal of the species. Thus on geographic grounds one would have to derive *iridis* from the north, which would imply that the similarities between *iridis* and *euclae* were examples of convergence or the shared retention of ancestral characters.

Two things support the derivation of *iridis* from a northern rather than a western stock. First, the northernmost specimens of *iridis* (SAM R11183, 14601) tend towards *aranda* in that the white spots are not enclosed by the black of the upper lateral zone but interrupt it. Second, the population of *C. brooksi* on Eyre Peninsula, judging from specimens from Wirrulla (SAM R15210) and Sceale Bay (SAM R15124), though geographically intermediate between *euclae* and *iridis*, is in no way morphologically intermediate. Indeed this population is unique in having the upper lateral zone almost entirely black.

The name of this subspecies comes from Latin *iris*, in allusion to the proximity of the type locality to the town of Rainbow. For descriptions of previously named subspecies of *Ctenotus brooksi* see Storr (1971).

Material

South Australia: Calperum South (34°07'S, 140°37'E) (SAM R14601); 20 km NE of Blanchetown (SAM R11183); Billiatt Conservation Park (34°55'S, 140°20'E) (SAM

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R15796, 16682); 'S.E. County Chandos' (SAM R9003); 48 km S of Pinnaroo (SAM R14480a-d, 15193); Naracoorte (SAM R9299).

Victoria: 28-30 km NW of Wyperfield (NMV D51675, 51724) and 5-18 km W (NMV D51658, 51662, 51664, 51666, 51681, 51685, 51689, 52160) and 11 km E (NMV D51734); 10 km S of Moonlight Tank (NMV D48296); 2-5 km NNW of Chinaman Well (NMV D52623, 52643, 52655, 52683, 53023-4, 53452, 53512-4, 53520, 53830, 53895, 53914, 53969, 54066) and 1-2 km N (NMV D52602, 53074, 54121) and 0.2-5 km NE (NMV D52642, 52661, 52676, 53483, 53819-20, 53859, 53899, 53951) and 4-7 km NE (NMV D52978, 53461, 53848, 53865-6, 53922, 53939).

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