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A BIOGEOGRAPHICALLY SIGNIFICANT NEW SPECIES OF *LEIOLOPISMA* (SCINCIDAE) FROM NORTH EASTERN QUEENSLAND

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ABSTRACT

The rock-dwelling skink *Leiolopisma jigurru* sp. nov. is described from the summit of Mt Bartle Frere, on southern Cape York Peninsula, northeastern Queensland. The combinations of 30 mid-body scales and paired fronto-parietals distinguishes this species from all but one of its Australian congeners. Colour, pattern, and 4th toe lamellae count distinguish it from *L. entrecasteauxii.*

Zoogeographic studies of the vertebrates of Cape York Peninsula have focussed on the New Guinea influence and on the high proportion of endemic species in the area. The discovery of a species of *Leiolopisma* at 1620 m in tropical Queensland and separated from its congeners by a gap of 1500 km highlights a new aspect of the zoogeography of vertebrates of the Cape — 'temperate' taxa occurring as relicts in the tropics. The distribution of *Leiolopisma* species is paralleled in several other, mainly invertebrate, taxa.

L. jigurru sp. nov. shares many morphological features with other skinks confined to rock 'islands'.

The species is 'rare' but its habitat is well protected.

INTRODUCTION

In October — November 1981, curators from the Queensland Museum and 'Earthwatch' volunteers undertook an altitudinal survey of invertebrates of the Bellenden Ker Range, on southern Cape York Peninsula, northeastern Australia. (See definitions of Cape York Peninsula by Covacevich and Ingram 1980, and Covacevich et al. 1982). This range, the second highest in Australia, supports dense rainforest and has not been methodically surveyed before. During this survey, it was possible to collect frogs and reptiles on Mt Bartle Frere, the highest and most southern peak of the range. Amongst the material collected and now located in the Queensland Museum are two new species of skinks belonging to the genera *Lampropholis* and *Leiolopisma.* The *Lampropholis* sp. nov. occurs widely in the rainforests of the Bellenden Ker Range and is, along with other members of this genus, the subject of revision of Mr Mark Schuster of the University of New England.

Greer (1974, 1979) has discussed the relationships of the skinks, including those in the genera *Leiolopisma* and *Lampropholis.* He has shown that *Leiolopisma* spp. have alpha palates (with the inner edges of the palatal rami diverging posteriorly along the smooth curve) while *Lampropholis* spp. have beta palates (with the rami having a large recurving process anteriorly). Such a major difference; Greer's (1974) diagnoses of the genera; Cogger's (1979) additional diagnostic feature of narrowly separated nasals for *Leiolopisma vs* widely separated nasals for *Lampropholis;* and the fact that *Leiolopisma* spp. are generally viviparous (Rawlinson 1976) while *Lampropholis* spp. lay eggs communally (Ingram, pers. comm.) suggest that assigning skinks to these two genera would be a simple task. Such is not the case however.

The palate in small skinks cannot be examined easily and there is considerable overlap in the characters used by Greer and Cogger to distinguish these genera. Further, Ingram and Ehmann (1981) have recently described an egg-laying species of *Leiolopisma, L. zia,* from southeastern Queensland and northeastern New South Wales. Examination of the karyotypes of most currently recognised species of *Leiolopisma* (including *L. jigurru*), *Lampropholis,* and most other genera in the *Eugongylus* group sheds no further light on the problem of separating *Leiolopisma* from *Lampropholis.* All species of *Leiolopisma* examined have 30 chromosomes and are very similar karyotypically. The only variation is in pairs 6–9 which is also a

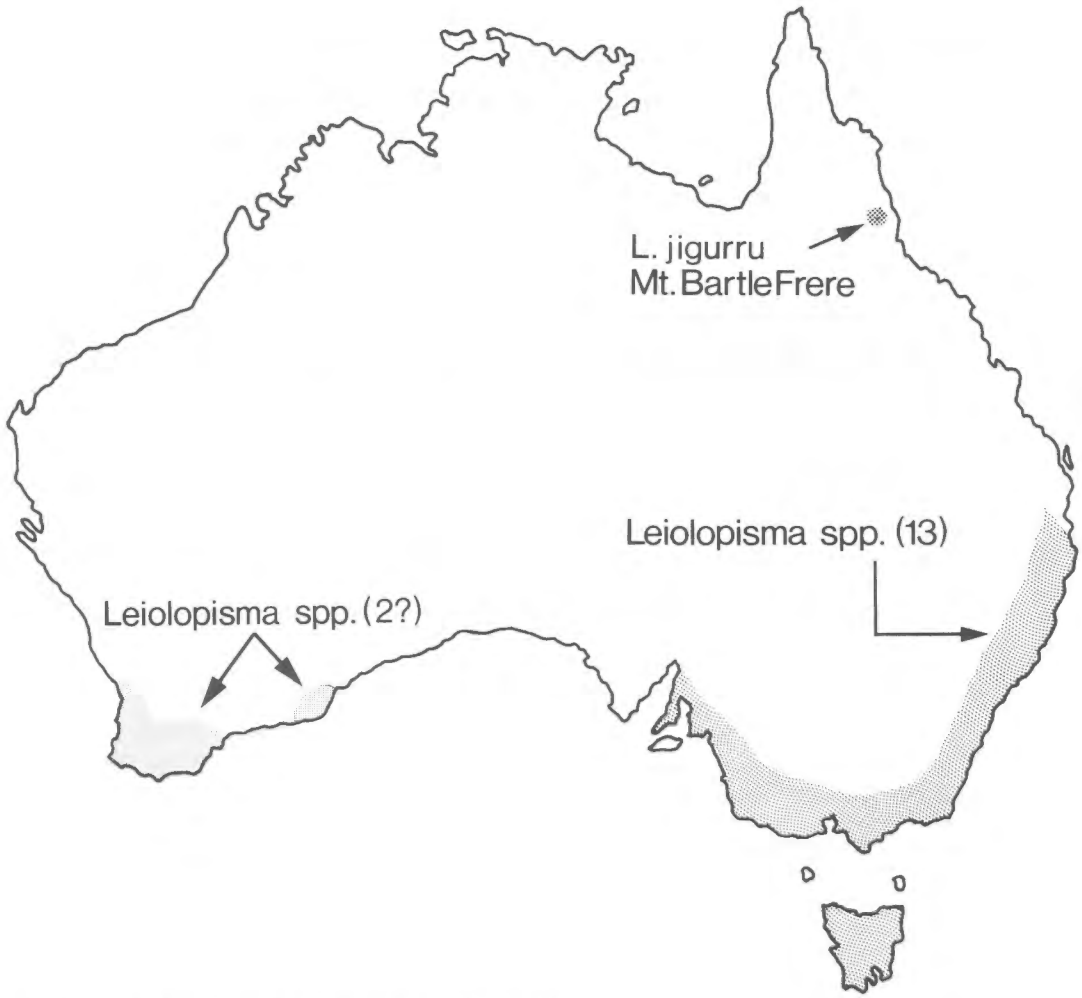

FIGURE 1: Occurrence of *Leiolopisma* species in Australia.

characteristic of *Lampropholis* spp. (S. Donellan, pers. comm.).

The Bartle Frere skink described here has an alpha palate, a characteristic of *Leiolopisma*. It also has the widely separated nasals of *Lampropholis*. The degree of separation of the nasals in *Leiolopisma* as presently defined apparently varies considerably (e.g. *L. zia,* narrow *vs L. trilineata,* wide, but not as wide as in the species described here). No data on breeding biology for this new species are available because only a handful of specimens are known.

In the light of this information it is reasonable to assign the Bartle Frere species to *Leiolopisma*.

Leiolopisma jigurru sp. nov.
(Pls 1a, b; 2a, b; 3)

MATERIAL EXAMINED

Holotype: QM J40040, ♀, near summit of South Peak of Mt Bartle Frere, NE.Q., 1620 m, on granite boulders; J. Covacevich, R. McKay, D. Marshall; 7–8 Nov., 1981.

Paratypes: AM R95553, Mt Bartle Frere, 1524 m, 23 Jan., 1977; J39494–99, Northwest Peak of Mt Bartle Frere, 1440 m, under exfoliated granite, 7–8 Nov., 1981; J39492–3 as for holotype.

DIAGNOSIS

A mid-body scale count of 30 and paired frontoparietal scales distinguishes *Leiolopisma jigurru* from other Australian species of *Leiolopisma* except *L. entrecasteauxii* (Dumeril and Bibron). *L. entrecasteauxii* has a lower lamellae under the 4th toe count (16–22) than *L. jigurru* (26–29) and lacks the distinctive dark brown to black, and white to cream colour pattern of *L. jigurru*.

Ten New Zealand species of *Leiolopisma* have the combination of 30 mid-body scale rows and paired frontoparietals, but only 3 species also have a 4th toe subdigital lamellae count which overlaps with that of *L. jigurru*. These are *L. infrapunctatum* (Boulenger), *L. nigriplantare* (Peters), and *L. lineoocellatum* (Dumeril and Dumeril). Colour and pattern quickly distinguish *L. jigurru* from these species. See Pl. 1a–b, 2a–b and Hardy (1977, figs 27, 30–32, 33).

DESCRIPTION OF HOLOTYPE

Snout-vent length 68.9 mm, tail 126.3 mm; T/SVL% 183.3; tip of snout – forelimb/axilla – groin = 22.2/37.0 (.59); head width 7.5 mm.

Head slender. Rostral broad, in contact with the nasals and frontonasal. Frontonasal broader than long, bordered by two large prefrontals which do not meet. Frontal twice as long as broad, narrow posteriorly, and equal in length to the frontoparietals and parietal together. Frontal in contact with first and second supraocular. Supraoculars 4, the second largest and the fourth smallest. Seven supraciliaries. Two frontoparietals, which are distinct from and larger than interparietal. Seven supralabials, 5th largest and, with sixth, contacting eye. Lower eyelid scaly with a large oval palpebral disc. Ear opening large, nearly round, with a deeply set tympanum, and without auricular lobules.

Mid-body scales 30. Mid-dorsal scales slightly larger than ventral and lateral scales, and lightly striated. Limbs and digits long. Twenty-six lamellae under 4th toe.

Colour (in life): Basically brown and black dorsally and cream ventrally, with a metallic sheen. See Pl. 1a, b. and 2a, b for distinctive pattern.

VARIATION IN THE PARATYPES

SVL 34.5 – 67.2, Tail 63.5 – 115.5 (part of the tail of J39495 has been lost), tip of snout – forelimb/axilla – groin .54 – .88, head width 4.5 – 8.2, T/SVL 135 – 189%. There is little variation. Lamellae under the fourth toe, 27–29. In six paratypes there are 8 supraciliaries. One specimen (J39492) has an extruded columnar hemipenis.

DISTRIBUTION AND HABITAT

Leiolopisma jigurru is known from only one locality — Mt. Bartle Frere, on southern Cape York Peninsula, NE.Q. It is found amongst granite boulders which occur as large 'fields' surrounded by dense rainforest near the mountain summit. Specimens were collected at 1440 m, 1524 m, and 1620 m. The type locality is cool to cold throughout the year and is frequently covered in mist. Climatic data are not recorded on Mt Bartle Frere but average annual rainfall (1974–1980) on the adjoining peak, Mt Bellenden Ker (1560 m), is 7736 mm. In early November, 1981 when all but one of the skinks in the type series were collected, daily temperatures ranged from 7° – 20°C.

ETYMOLOGY

'Jigurru' is both the Mamu and the Ngajan name for this lizard, acccording to Molly Ramond and George Watson, the last people to speak these languages well. Their people lived in the rainforest country at the headwaters of the Mulgrave and Russell Rivers on the slopes of the Bellenden Ker Range and their territories overlapped in the high mountains such as Bartle Frere. 'For more than ten thousand years they lived in harmony ... with their environment. One hundred years ago many of them were shot and poisoned ...' (Dixon, 1972).

DISCUSSION

Biogeographic studies of the herpetofauna of Cape York Peninsula have focussed on Pleistocene New Guinea migrations and on the high proportion of taxa endemic to the area (e.g. Keast 1959; Storr 1964; Tyler 1972; Covacevich and Ingram 1980; Kikkawa et al. 1981; Covacevich et al. 1982). The discovery of *Leiolopisma jigurru* on the 'temperate' summit of Mt. Bartle Frere on southern Cape York Peninsula in tropical Queensland highlights another aspect of its biogeography.

Several taxa whose present distribution is concentrated in the southern, temperate zones of Australia, are known to have relict representatives in cool, montane habitats in the tropics. This pattern has been observed for certain landsnails (Ohdner 1917) and plants and insects (Monteith 1980, Storey 1983) but has not

been previously recorded for vertebrates. Spiders (Gradungulidae, Migidae) and the marsupial *Antechinus stuartii* also have similar distributions. (V. Davies, S. Van Dyck, pers. comm.). The occurrence of *Leiolopisma* spp. is of special interest because, with the discovery of *L. jigurru,* it is a parallel of the southeastern Australia — montane northeastern Queensland — New Caledonia — New Zealand occurrence noted for some insects and plants (Monteith, 1980).

Forty-two species of *Leiolopisma* are now recognised. They occur in Tasmania, Lord Howe Island, mainland southeastern and southwestern Australia; New Zealand and the Chatham Islands; New Caledonia and the Loyalty Islands; and Mauritius (Greer 1979). The present 'stronghold' for the genus is temperate southeastern Australia — New Zealand (Hardy 1977). The Australian distribution of members of this genus is shown in Fig. 1. There is a gap of some 1500 km between the Mt Bartle Frere population of *L. jigurru* and the other two species occurring in Queensland, *L. platynota* (Peters) and *L. zia* Ingram and Ehmann, both of which occur in Queensland only at high altitudes in the extreme southeast of the state. *L. platynota* has a fairly broad coastal distribution from southeastern Queensland to northeastern Victoria (Cogger 1979). *L. zia,* on the other hand, is restricted to high altitude (above 1000 m) rainforests and Antarctic Beech (*Nothofagus*) forests of southeastern Queensland and northeastern New South Wales (Ingram and Ehmann 1981).

Greer (1974) has suggested a southern, Tasmanian/southeastern Australian, centre of diversity for *Leiolopisma.* Hardy (1977) revised New Zealand species of the genus and suggested a northern, New Guinean, centre of diversity. The discovery of the temperate relict species, *Leiolopisma jigurru,* in tropical Queensland may be used to support either hypothesis.

L. jigurru, is an agile and fast-moving posturing heliotherm like other lygosomine skinks endemic to isolated rocky areas. It is a typical rock dweller in being flattened dorsoventrally, large in relation to its congeners, and in having long digits and limbs and a highly achromatic pattern (Covacevich and Ingram 1980).

Frog and reptile species have been described as 'rare' for conservation purposes if they are known from 20 or less museum specimens or from five or less localities (Covacevich, et al. 1982). *L. jigurru,* qualifies as a 'rare' species on both counts, but is well protected. The type locality and other potential habitats on the Bellenden Ker Range lie in State Forest and National Park.

ACKNOWLEDGMENTS

'Earthwatch' is a private, American-based, non-profit organization which makes available volunteer workers to assist research programmes involving field expeditions. Without the support of 'Earthwatch', *L. jigurru* would not have been collected. Dr G. Monteith led the expedition and made the trip to Bartle Frere possible.

V. Davies, S. Donnellan, S. Van Dyck, G. Hardy, G.J. Ingram, G. Monteith, K. McDonald and M. Schuster has assisted in preparing this paper, either by providing information or constructive criticism.

Photographs were taken by A.J. Easton.

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PLATE 1

a,b *Leiolopisma jigurru* sp. nov. from the summit of Mt Bartle Frere, NE.Q., showing highly achromatic pattern, dorsoventral flattening, and long digits.


a

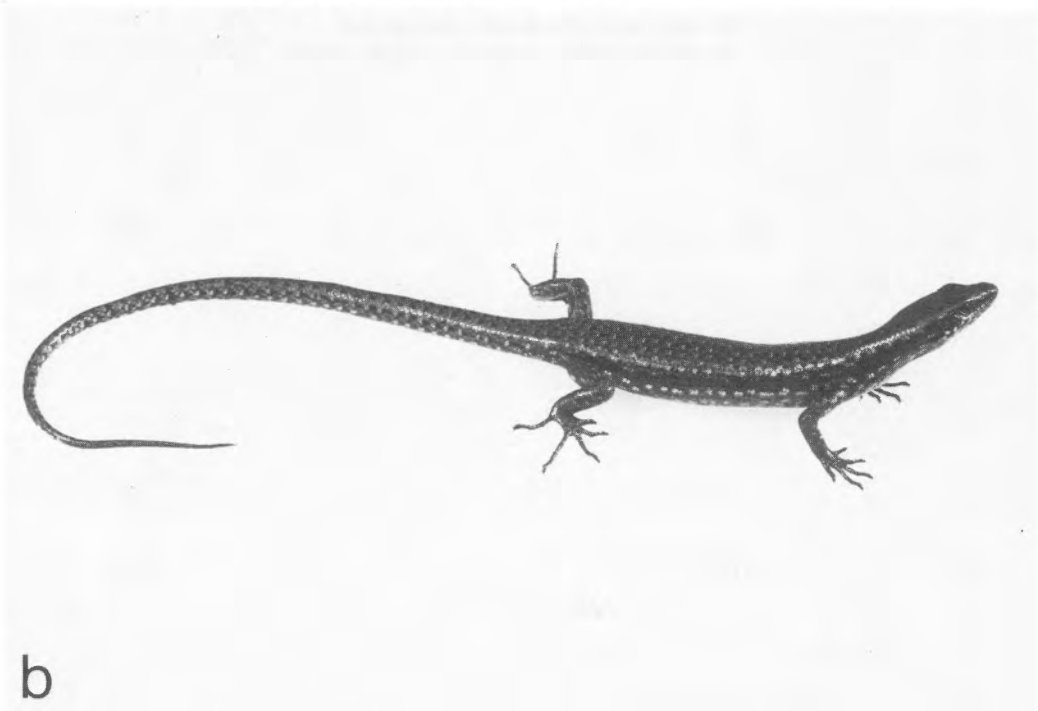
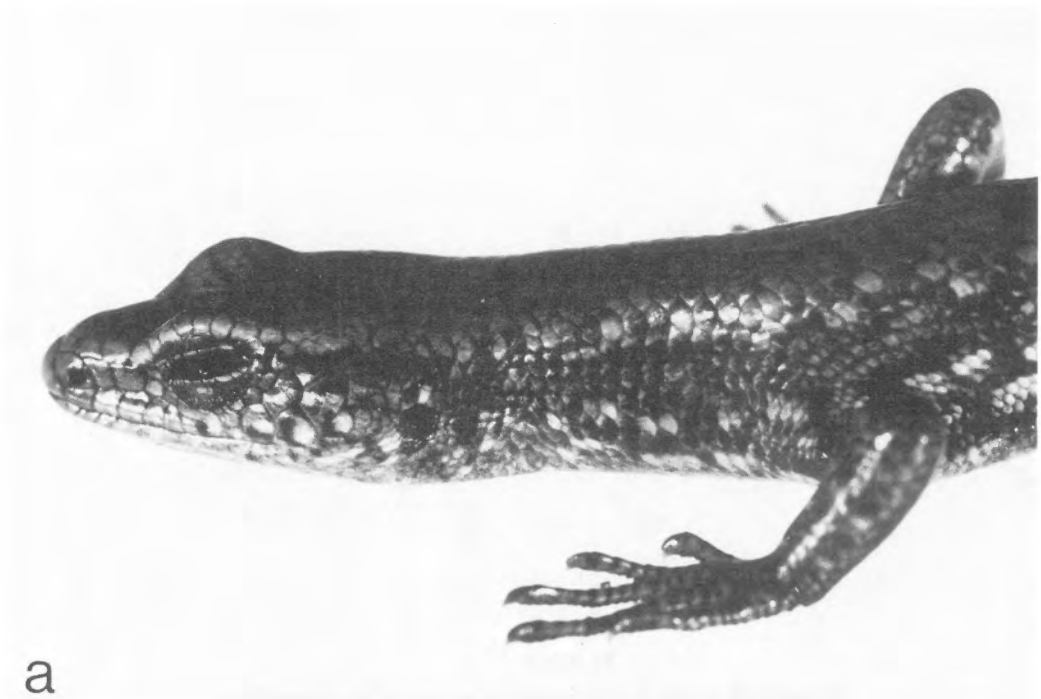

b

PLATE 2

a Close-up lateral view of *L. jigurru* sp. nov. showing ear opening, eye detail and colour pattern.
b Dorsal view of head scales of *L. jigurru* sp. nov.



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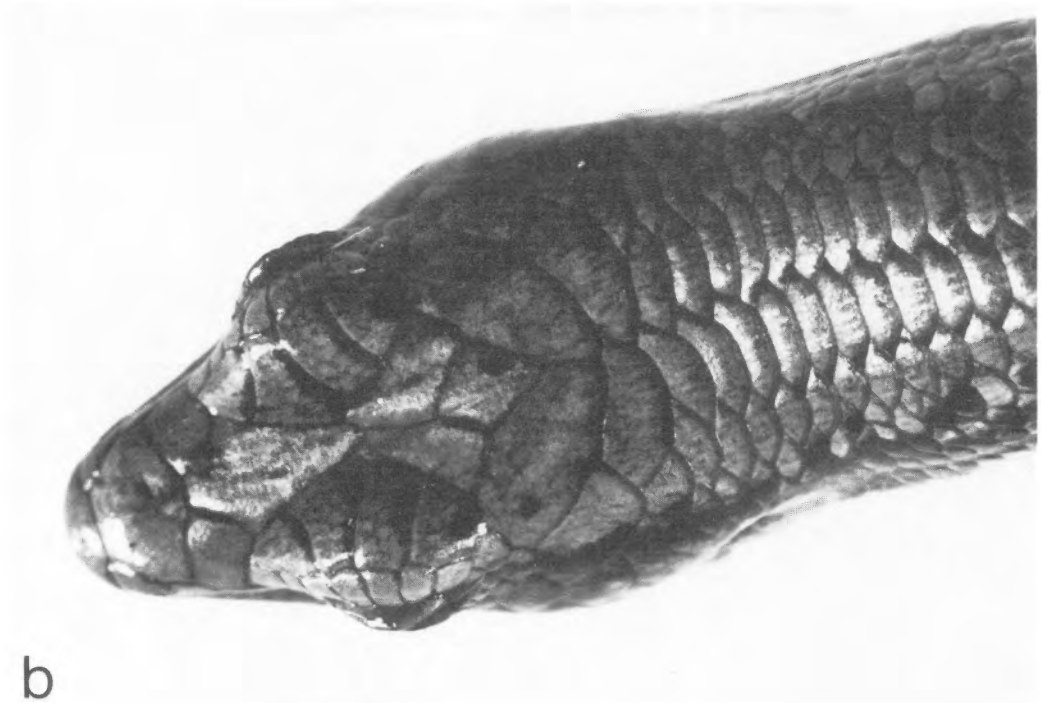

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PLATE 3

Mist-covered granite boulders near the summit of Mt. Bartle Frere, type locality of the temperate relict, *L. jigurru* sp. nov.