

## REVISION OF THE GENUS *LYGISAURUS* DE VIS (SCINCIDAE : REPTILIA) IN AUSTRALIA

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Ingram, G. and Covacevich, J. 1988 11 7: Revision of the genus *Lygisaurus* de Vis (Scincidae : Reptilia) in Australia. *Mem. Qd Mus.* 25(2): 335-354, Brisbane ISSN 0079-8835.

The genus *Lygisaurus* de Vis, 1884, is resurrected from the synonymy of *Carlia* Gray, 1845, and eight species (*L. foliorum* de Vis, 1884; *L. timlowi* (Ingram, 1977); *L. laevis* (Oudemans, 1894); *L. tanneri* sp. nov.; *L. sesbrauna* sp. nov.; *L. macfarlanei* (Günther, 1877); *L. aeratus* (Garman, 1901); and *L. rococo* sp. nov.) are assigned to it. Small size, with supradigital scales on the fourth toe, and number of premaxillary teeth distinguish *Lygisaurus* from *Carlia*. Male breeding pattern and absence of keels or carinations further distinguish them. *Lygisaurus* also resembles *Menetia* superficially, but is readily distinguished from that genus by its transversely oriented supraoculars (vs obliquely oriented in *Menetia*).

Two other changes to established nomenclature are warranted from this review. *Lygisaurus foliorum* de Vis, 1884, is the senior synonym of the taxon traditionally known as *Carlia burnetti* (Oudemans, 1894). The name *Carlia foliorum*, used by Storr (1974) now refers to *Carlia munda* (de Vis, 1885). Because the holotype of *L. foliorum* is lost, a neotype is designated to stabilize the name.

□ Scincidae, Reptilia, *Lygisaurus*, *Carlia*, taxonomy, Australia.

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The identity of the type species of *Lygisaurus*, *L. foliorum* de Vis, 1885, has been elusive (Boulenger, 1887; Greer, 1975), and, because the type material has been lost (Covacevich, 1971), its identity can not be checked. However, de Vis's type description is fairly detailed and certain of the characters described by him — six supraciliaries, colour and pattern, leaf litter habitat, and fused lower eyelid — suggest strongly that *L. foliorum* is a senior synonym of *Ablepharus burnetti* Oudemans, 1894. There is, however, a complication. De Vis describes *L. foliorum* with 28 mid-body scale rows. Our concept of '*A. burnetti*' is based on Oudemans's (1894) description and our examination of 66 specimens of this taxon. Midbody scale counts on these range between 21 and 25, with a mean of 23.2. Nonetheless, despite this anomaly, we are convinced that, on balance, and acknowledging the errors which characterise de Vis's description (Ingram, in press), *L. foliorum* de Vis and *A. burnetti* Oudemans name the same taxon.

Boulenger (1887) said *Lygisaurus foliorum* might be allied to *Lygosoma mundum* (de Vis, 1885), and Storr (1974) used *foliorum* as the available name for that taxon within the genus *Carlia*. However, we think that taxon should properly be called *Carlia munda* (Cogger, 1986).

Further, the type locality of *foliorum* is Brisbane, where it is a common skink. The nearest to Brisbane *Carlia munda* has been collected is at Ipswich, 32 km away. In the following species accounts, we declare a neotype of *Lygisaurus foliorum* to stabilize the nomenclature.

The following body measurements and morphological characters are used in separating the species.

Distance from snout to vent in millimetres (SV); width of head at widest part as % of SV (HW); length of tail as % of SV, excluding specimens with regenerated tails (TL); length of hindlimb as % of SV (HL); number of supraciliaries (both sides of head counted); the supraciliaries are defined as that row of scales immediately below the supraoculars, bordered anteriorly by the prefrontal and bordered posteriorly by the supraoculars above and the ciliaries below; lower eyelid fused or not; size of the palpebral disc compared with the size of the ear aperture; shape of the ear aperture; size, shape and position of the ear lobules; number of supraocular scales; interparietal free or fused to the frontoparietal; number of supralabial scales (both sides of head counted); number of scales between the second presubocular and the nasal scale; number of midbody scale rows; number of scales in a line from chin to vent; number of

lamellae under the left fourth toe; colour and pattern of juveniles, adult males and females.

Specimens were examined from the following institutions: Queensland Museum (QM); Australian Museum (AM); Museum of Victoria (MV), and the Donald Thomson Collection (MV DTD); South Australian Museum (SAM); Zoologisch Museum, Amsterdam (ZMA); Museum of Comparative Zoology, Harvard (MCZ).

### *Lygisaurus* de Vis

1884 *Lygisaurus* de Vis. *Proc. Roy. Soc. Qd* 1: 77. Type species by monotypy: *Lygisaurus foliorum* de Vis, 1884.

#### DIAGNOSIS

*Lygisaurus* spp. are small leaf-litter dwelling skinks with a digital formula of 4/5. They most closely resemble *Carlia* spp. and *Menetia* spp.

The following characters readily distinguish *Lygisaurus* spp. from *Carlia* spp. — striate body scales (vs keeled or carinate body scales in *Carlia*, at least in juveniles); small size, with maximum SV length of 40 mm (vs maximum SV length of 70 mm); number of supradigital scales on the 4th toe<sup>1</sup> (fewer than 10 vs 10 or more in *Carlia*); number of premaxillary teeth<sup>1</sup> (usually 15 vs usually 13 in *Carlia*); and male breeding colour (patternless, iridescent grey-green or grey-orange-brown, usually with bright red to orange throat<sup>2</sup>, tail, and hind limbs vs grey to brown, but not iridescent, with one or two reddish lateral longitudinal stripes, and usually with blue throats, rarely red, in *Carlia*).

*Lygisaurus* is easily separated from *Menetia* by the alignment of the supraocular scales (transverse vs oblique in *Menetia*).

#### DISTRIBUTION

Irian Jaya, Papua New Guinea, Torres Strait Islands, north Queensland, and eastern Queensland and New South Wales, mainland Australia.

#### REMARKS

There is a potential junior synonym for *Lygisaurus*. *Proterascincus* was described by Wells and Wellington (1984) based on

<sup>1</sup> These distinguishing characters were first observed by Cogger (1986).

<sup>2</sup> Not observed in *L. timlowi*, *L. sesbrauna* and *L. rococo*; colour fades in spirit.

*Ablepharus burnetti* Oudemans, 1894, a taxon we treat as a junior synonym of *L. foliorum*. Also, there is a potential junior synonym of either *L. aeratus* or *L. laevis* in Wells and Wellington (1985). This is *Proterascincus kuranda*. As there is a case before the International Commission on Zoological Nomenclature to have the works suppressed (Australian Society of Herpetologists, 1987); as the works have wreaked taxonomic chaos (Tyler, 1985); and as we (with many other taxonomists) have agreed not to use the names proposed therein (Grigg and Shine, 1985), we do not discuss the proposal further.

### THE SPECIES OF *LYGISAURUS*

Eight species of *Lygisaurus* occur in Australia — *L. foliorum* de Vis, *L. timlowi* (Ingram), *L. laevis* (Oudemans), *L. tanneri* sp. nov., *L. sesbrauna* sp. nov., *L. macfarlani* (Günther), *L. aeratus* (Garman), *L. rococo* sp. nov. One of these species, *L. macfarlani*, is also found in New Guinea.

#### *Lygisaurus foliorum* de Vis (Figs 1, 2, 3)

1884 *Lygisaurus foliorum* de Vis. *Proc. R. Soc. Qd* 1: 77. Holotype lost, from Brisbane, Queensland. Neotype, here designated, QM J23660, from Mt Coot-tha, Brisbane, SE Queensland.

1894 *Ablepharus burnetti* Oudemans. In Semon, *Zool. Forsch. in Austral.* 5: 145. Burnett River, SE Queensland. Lectotype ZMA 11345 (here designated).

1948 *Ablepharus burnetti sydneyensis* Copland. *Proc. Linn. Soc. N.S.W.* 73: 362. Mt. Riverview Lookout, near Blaxland, New South Wales. Holotype AM R18589.

#### DIAGNOSIS

*L. foliorum* is a large *Lygisaurus*, with a maximum SV length of 39 mm.

*L. foliorum* and *L. timlowi* are the only species of *Lygisaurus* with the lower eyelid fused (or partially fused) above and with a large transparent palpebral disc. They are readily distinguished from each other by ear size and shape (*L. foliorum*, smaller than disc with longer axis horizontal vs *L. timlowi*, very much smaller than disc), ear lobules (present vs absent), supraoculars (4 vs usually 3, occasionally 1 or 2), interparietal scale (free vs fused to interparietal), supralabials (7 or 8, with the 5th or 6th under the eye vs 6, with the 4th under the eye), midbody



FIG. 1. *Lygisaurus foliorum* Peak Ranges, near Capella (S. Wilson).

scale count (21–25 vs 18–20), and lamellae under the fourth toe (17–23 vs 15–19).

*L. foliorum* appears to be a sister species of *L. aeratus* despite the fact that the latter species has a moveable eyelid, a character which may appear to be fused in spirit material and cause confusion between these two species. See discussion under *L. aeratus* for further detail.

#### DISTRIBUTION

Northeastern Queensland from Townsville region south to Blaxland area in mid-eastern New South Wales. In Queensland, west to the Carnarvon Range and St George. In N.S.W. west to Armidale and the Warrumbungle Mountains. Also Magnetic, Lindeman and Curtis Islands, and Mission Island, Hawkesbury River.

#### DESCRIPTION

SV: 15–39 (N = 83, mean 27.9). HW: 11–17 (N = 68, mean 14.5). TL: 124–175 (N = 23, mean 149.0). HL: 30–43 (N = 15, mean 33.3).

Supraciliaries 6, rarely 7 or 5 (N = 156, mean 6.0). Palpebral disc large. Lower eyelid fused

above forming a fixed spectacle over the eye (sometimes the lower lid separates as an artefact of preservation and appears moveable). Ear aperture much smaller than palpebral disc; longer axis of aperture usually horizontal, with one to many acute or low, flat lobules. Four supraoculars (N = 152). Interparietal free. Supralabials 7, rarely 8 (N = 152, mean 7.0), with the fifth, rarely the sixth, under the eye. Usually 2, sometimes 3, scales between the second presubocular and the nasal scale (N = 65, mean 2.2). Midbody scale rows 21–25 (N = 66, mean 23.2). Number of scales from chin to vent 47–54 (N = 31, mean 49.4). Number of lamellae under fourth toe 17–23 (N = 65, mean 19.8).

Grey-brown scales lined with darker brown; labials flecked with dark brown; an indistinct dark line from nares through eye; scales on sides of throat edged in dark brown; underside white. Breeding male, light grey with pinkish orange throat, tail and hindlimbs.

#### HABITAT

Bark, leaf, stick, and grass litter in open forest and woodland.

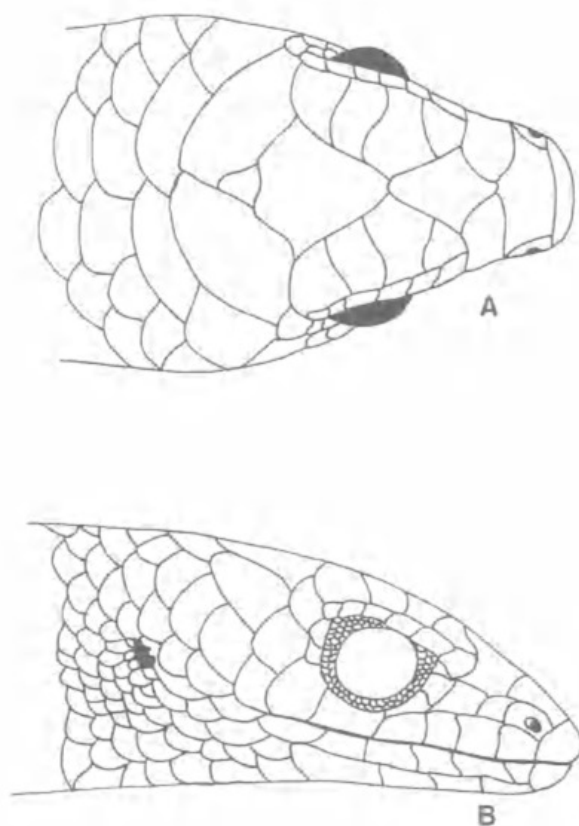


FIG. 2. *Lygisaurus foliorum* (QM J38622). A. Dorsal view of head. B. Lateral view of head.

#### REMARKS

Greer (1975: 74) excluded *Lygisaurus foliorum* de Vis from the synonymy of *C. melanopogon* (= *C. munda*) on the basis of size, keeling, and colour, but he did not align *foliorum* with other taxa noting '... there are still few diagnostic clues by which to determine the species' relationships; indeed, if it were not for the mention of the tetradactyl front limb and the relatively high midbody scale row count (28), it would be difficult to even identify the specimen as *Carlia*...'. We concur that *L. foliorum* is not a synonym of *C. munda* and have proposed a solution to the question of the identity of *foliorum*. To stabilize the nomenclature we have selected a neotype for *Lygisaurus foliorum* de Vis 1884.

NEOTYPE: QM J23660 Mt Coot-tha, Brisbane, SE Queensland (27°29'S, 152°57'E). Collected by C. Morris and A. Merrit on 22 July 1973.

SV: 30. HW: 15. Tail regenerated. HL: 30. Supraciliaries 6. Palpebral disc large. Lower eyelid fused above forming a fixed spectacle over the eye. Ear aperture much smaller than

palpebral disc; longer axis of aperture horizontal, with pointed, wide lobules on the margins. Four supraoculars. Supralabials 7, with fifth under the eye. Two scales between the second presubocular and the nasal scale. Midbody scale rows 23. Number of scales from chin to vent 51. Number of lamellae under fourth toe 20.

We have examined the remaining two syntypes of *Ablepharus burnetti* Oudemans (ZMA 11345-6) from the original type series of four specimens. Two specimens are missing (Cogger, Cameron and Cogger, 1983). We have selected ZMA 11345 as the lectotype.

Copland (1948) based his concept of three subspecies largely on variation in the number of ear lobules. There is no justification for recognizing subspecific taxa because the variation is clinal. From south to north *L. foliorum* specimens show slight increases in total size, size of the palpebral disc, and number of mid-body scale rows and a slight decrease in the number of ear lobules.

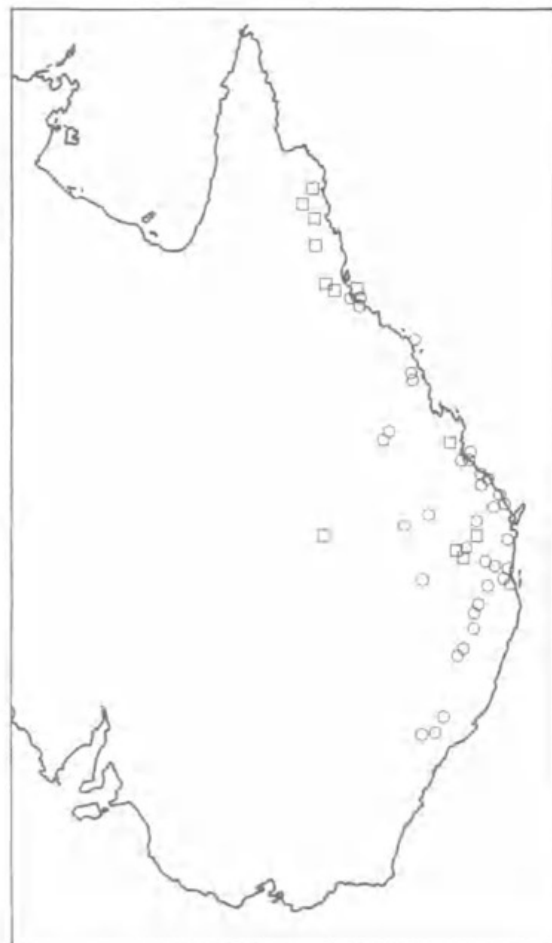


FIG. 3. Distribution of *Lygisaurus foliorum* (○), *L. timlowi* (□).



## MATERIAL EXAMINED

1km W of Moongobulla (QM J26625); Magnetic Island (QM J26338); 36.3km SE of Townsville (QM J26640); Lindeman Island (AM R11173, 47166–70; QM J5643). Homevale (QM J33857, 33860); Oakey Creek, Homevale (QM J33900); "Retro", Capella (QM J15769–70); "Gaylong", Capella, (QM J15784, 15786); West Curtis Island (QM J24223–4); Rundle Range (QM J33764, 33812); Crest, Rundle Range (QM J33833); State Forest 60 E of Mount Larcom (QM J15733); Gladstone (AM R5036); 11.2km S of Miriamvale (QM J11894–5); Warro State Forest (QM J23795); Mount Warro, 17kms SW of Lowmead (QM J23853–4); 24.1km NW of Bundaberg (QM J11892); Bundaberg (QM J22008, 22323); Burnett River (AM R5338; ZMA 11345–6); Cordalba State Forest (QM J15648); 9.6km W of the firetower, Cordalba (QM J15796); Nathan Gorge (QM J38622); Eidsvold (AM R5413, 6340); Murphy's Lake, Taroom (QM J11893); 8km NW of Gayndah (QM J11898, 11902); 6.4km SE

of Gayndah (QM J11896); Arcadia Valley via Injune (QM J25901); 22.5km W of Gympie (QM J11897); Chinchilla (QM J24207); Jandowae (QM J13772); Bryden (QM J11900); Crows Nest (QM J22785); Petrie (QM J22672); Enoggera, Brisbane (QM J11901); St Lucia, Brisbane (QM J24198); Mt Coot-tha (QM J23660); Daisy Hill (QM J24196–7, 24199); Mount Crosby (QM J11899); 3.2km E of Flinders Peak (QM J11903); St George (QM J23623); 9.6km SW of Beaudesert (QM J22023); 7.5km SW of Nerang (QM J24206); Barney View, Mt Barney (QM J21989); Lesley Dam via Warwick (QM J24363); 20km WNW of Tenterfield (QM J24201); 8km NE of Wyberba (QM J24202–5); 6km E of Wyberba (QM J11890); Wyberba (QM J24200); 37km W of Armidale (AM R31782); 33.7km W of Armidale (AM R31786); Warrumbungle Mountains (AM R15594); Mission Island, Hawkesbury River (AM R6076); Mt. Riverview Lookout, near Blaxland (AM R18589).



FIG. 4. *Lygisaurus timlowi* Barakula, via Chinchilla (S. Wilson).

***Lygisaurus timlowi* (Ingram)**  
(Figs 3, 4, 5)

1977 *Menetia timlowi* Ingram. *Vict. Nat.* 94: 185.  
Barmount, 80km NW of Marlborough, ME  
Queensland (22°32'S, 149°06'E). Holotype QM  
J24940.

**DIAGNOSIS**

*L. timlowi* is a small (maximum SV length 29 mm) *Lygisaurus* with a fused eyelid forming a spectacle over the eye, resembling *L. foliorum*. The diagnosis for *L. foliorum* details the characters which distinguish these two species.

**DISTRIBUTION**

From Shiptons Flat, Cape York Peninsula, west to Alpha and south to Chinchilla SE Queensland. Also Magnetic Island.

**DESCRIPTION**

SV: 15–29 (N = 18, mean 24.8). HW: 10–13 (N = 9, mean 11.6). TL: 114–137 (N = 3, mean 126.8). HL: 17–23 (N = 7, mean 20.1).

Supraciliaries 5, rarely 6 (N = 34, mean 5.1). Palpebral disc very large. Lower eyelid fused above, forming a spectacle over the eye. Upper ciliaries enlarged, appearing like a second row of supraciliaries. Ear aperture very small; very much smaller than the palpebral disc; no obvious lobules. Supraoculars usually 3, sometimes 2, rarely 1 (N = 30, mean 2.6). Interparietal fused to frontoparietal. Supralabials 6 (N = 26), with the fourth under the eye. Three, sometimes two scales between the second presubocular and the nasal scale, (N = 20, mean 2.7). Midbody scale rows 18–20 (N = 13, mean 19.5). Number of scales from chin to vent 52–61 (N = 5, mean 55.8). Number of lamellae under fourth toe 15–19 (N = 15, mean 16.5).

Brown dorsally, dark brown laterally, broken into dots on side of tail and head. Underside of tail heavily flecked with brown, rest of ventral surface sparsely flecked, but neck and chin white. Two specimens have orange tails.

**REMARKS**

Ingram (1977) hinted that *Menetia timlowi* might be a species of *Carlia* (*sensu Lygisaurus*). He noted that the species was similar to both *Menetia surda* and *Carlia burnetti* (= *Lygisaurus foliorum*). The important characteristic that he used to justify his decision to place *timlowi* in *Menetia* was 'the long narrow obliquely orientated first supraocular'. Ingram was mistaken. Unlike *Menetia*, which has obliquely orientated supraoculars, the condition of the supra-

oculars in *timlowi* obviously is formed by fusion of the first 2 or 3 supraoculars. There is no reorientation of the supraoculars, only fusion. Thus they are transversely orientated. Because of this, we have placed *timlowi* in *Lygisaurus*. *L. timlowi*, in some specimens, also has the feature of two scales between the nasal and the second presubocular. This feature is found on most specimens of *L. foliorum* and some *L. aeratus*.

**MATERIAL EXAMINED**

Shiptons Flat (QM J45800); 2.9 km NNE of junction of Gulf and Kennedy Highways (AM R63131); 25.2 km NE of Cooktown Rd. via Windsor Tableland Forestry Rd (AM R63899); 40 Mile Scrub, 40 mi. W of Mt Garnet (QM J31041–2, 31053); 'Battery' (QM J44398–401); 'Boori' (QM J44383); crest of Warrigal Range, 27.4km E Torrens Creek (QM J38901); Magnetic Island (QM J24448); Alpha (QM J32468); Moonggoo (QM J36805); Barmount, 80km NW Marlborough (QM J24940); Byanda Station, 20km NNW Proston (QM J39171); 18 km N Chinchilla (QM J41373); 7km N Chinchilla (QM J26147).

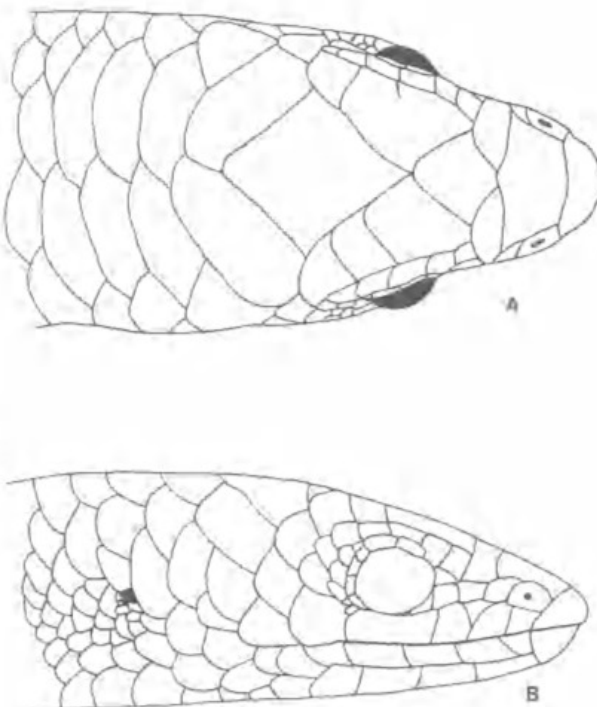


FIG. 5. *Lygisaurus timlowi* (QM J38901). A. Dorsal view of head. B. Lateral view of head.

**Lygisaurus aeratus** (Garman)  
(Figs 6, 7, 8)

1901 *Lygosoma aeratum* Garman. *Bull. Mus. Comp. Zool.* 39: 7. Cooktown, Queensland. Holotype MCZ 6476.

1901 *Ablepharus heteropus* Garman. *Ibid.* p. 9. Great Barrier Reef, Queensland. Holotype MCZ 6484.

**DIAGNOSIS**

*L. aeratus* is a large (maximum SV length 39 mm) *Lygisaurus* with a moveable eyelid containing a large disc. It can be confused with *L. rococo* from which it may be distinguished by ear lobules (in *L. aeratus*, many sharp lobules vs in *L. rococo*, 1–5 flat lobules), supralabials (6, occasionally 5, with 4th or 5th entering the eye vs 7, with 5th which is grooved, entering the eye), and midbody scale count (19–24 vs 27–30), number of scales between chin and vent (43–54 vs 51–59). Some spirit specimens of *L. aeratus* can also be confused with specimens of *L. foliorum*. See 'remarks' below.

**DISTRIBUTION**

Prince of Wales Island, throughout Cape York Peninsula, and south to near Ingham, NE Queensland.

**DESCRIPTION**

SV: 18–39 (N = 67, mean 27.0). HW: 13–17 (N = 65, mean 14.9). HL: 28–35 (N = 30, mean 32.9). TL: 94–158 (N = 20, mean 136.1).

Supraciliaries 6, rarely 5 (N = 138, mean 5.9). Palpebral disc very large. Lower eyelid moveable. Ear aperture much smaller than palpebral disc; with longer axis of aperture usually horizontal, with sharp lobules subequal in size around the margin. Four supraoculars (N = 17). Interparietal free. Supralabials 6, rarely 7 or 5 (N = 54, mean 6.2), with the fourth under the eye or rarely the fifth. Three scales between the second presubocular and nasal scale, rarely two (N = 42, mean 2.9). Midbody scale rows 19–24 (N = 35, mean 22.5). Number of scales from chin to vent 43–54 (N = 30, mean 47.6).



FIG. 6. *Lygisaurus aeratus* Mt Mulligan (S. Wilson)

Number of lamellae under fourth toe 18–24 ( $N = 64$ , mean 20.1).

Olive brown above with a coppery head. Laterally brown with or without white speckling. Labials are darkly barred; sometimes this barring continues as a series of lines down the sides of the neck. Ventrally cream, with or without a series of brown spots forming lines from neck to tail. Breeding males have a red throat, red tail and red hind limbs.

#### HABITAT

Leaf litter of open-forest, woodland, and grasslands.

#### REMARKS

*L. aeratus* may be difficult to separate from *L. foliorum* in preservative, because it can be difficult to determine if the eyelid is fused above (the condition in *L. foliorum*), especially in older spirit specimens. They can be easily separated by the number of supralabials and number of scales between second presubocular and nasal

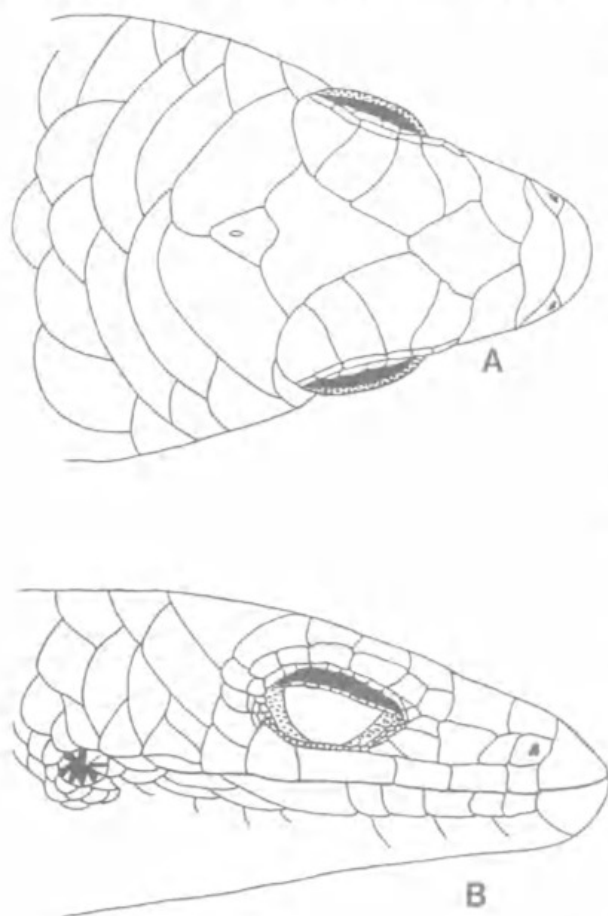


FIG. 7. *Lygisaurus aeratus* (QM J40980). A. Dorsal view of head. B. Lateral view of head.

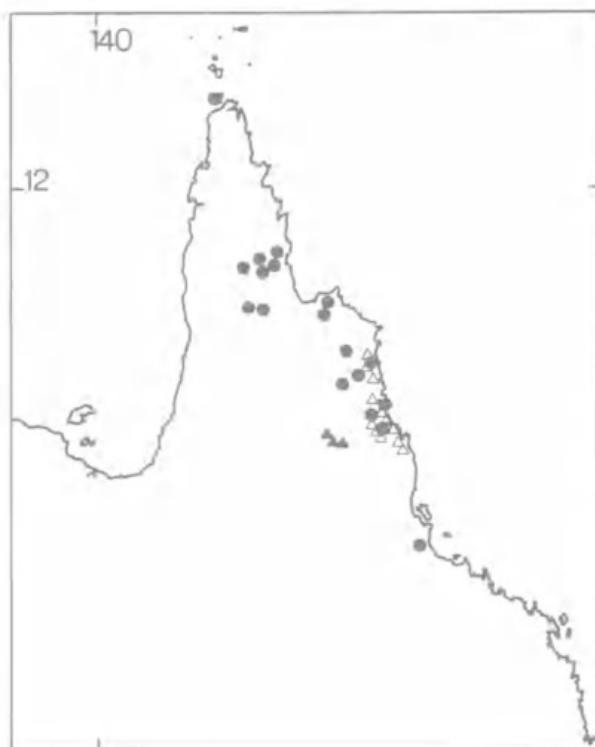


FIG. 8. Distribution of *Lygisaurus aeratus* (●), *L. rococo* (▲), *L. laevis* (Δ).

scale. Of the 66 specimens of *L. foliorum* we have examined, none had six supralabials, but *L. aeratus* may have seven. With respect to the number of scales between the second presubocular and the nasal scale, 77% of the *L. foliorum* had two, while in 64 *L. aeratus* throughout its range, 91% had three. The condition of two scales is because the first presubocular does not penetrate to the supralabials (compare Figs 2B and 7B).

Garman (1901) stated that *Lygosoma aeratum* had a moveable eyelid and *Ablepharus heteropus* did not. The holotype of the latter (MCZ 6484), however, does have a moveable eyelid with a very large palpebral disc. It also has six supralabials, six supraciliaries, and three scales between the second subocular and the nasal. The holotype of *Lygosoma aeratum* has a moveable eyelid with a very large palpebral disc, six and five supralabials, and two scales between the second presubocular and the nasal. Both specimens belong to the taxon described here. We have chosen *aeratus* as the available name because of page priority.

#### MATERIAL EXAMINED

Prince of Wales Island (AM R46227–34, 46321–9, 46344–5, 46482); 29 mls N of Coen (AM R40948–9);



3–4 mls W of Rokeby Homestead (QM J23442); Coen Airport (QM J37527); Peach Creek, 12 km NE of Mt. Croll (QM J37489); 3 km N of Coen (QM J26272); 2 km up Lankelly Creek from bridge near Coen (QM J26263–5); 10 mls E of Coen (AM R16466, 47140); Melville Range, Cape Melville (QM J20511, 20517); Wakooka Outstation, Cape Melville (QM J20485); Strathgordon Homestead (SAM R9788); 24 km N of Glen Garland via Musgrave (QM J38029); Isabella Falls (QM J17818); 13 mls W of Cooktown (QM J27089); Cooktown (MCZ 6476); Shiptons Flat (QM J40975, 40977–82); 10 km N of Palmer River (AM R56789); Great Barrier Reef (MCZ 6484); Windsor Tableland (QM J38755); Walkamin, Atherton Tableland (QM J26691); Palm Beach, Cairns (SAM R2972); 19.9 km S of Ingham (QM J26611–3, 26615–7).

***Lygisaurus rococo* sp. nov.**  
(Figs 8, 9, 10)

**HOLOTYPE**

QM J46014 (formerly AM R112119), 3.2 km SE of Chillagoe Post Office, NE Queensland

(17°10'S, 144°32'E), collected by A. Greer and P. Greer on 20 June, 1984.

**DIAGNOSIS**

*L. rococo* is a large, robust (maximum SV length 39 mm) *Lygisaurus* with a moveable lower eyelid with a large disc (like *L. aeratus*, with which it can be confused). See detailed diagnosis of *L. aeratus* for characters which readily separate these two species.

**DISTRIBUTION**

Known only from the limestone rocks of the Chillagoe area, Queensland.

**DESCRIPTION**

SV: 26–39 (N = 8, mean 33.2). HW: 13–17 (N = 7, mean 15.0). TL: 168–170 (N = 2, mean 169). HL: 38–46 (N = 6, mean 41.5).

Supraciliaries 6 (N = 18). Palpebral disc large. Lower eyelid moveable. Ear aperture smaller than palpebral disc; aperture round with 1 to 5 low flat lobules around margin. Four supraoculars (N = 12). Interparietal free.

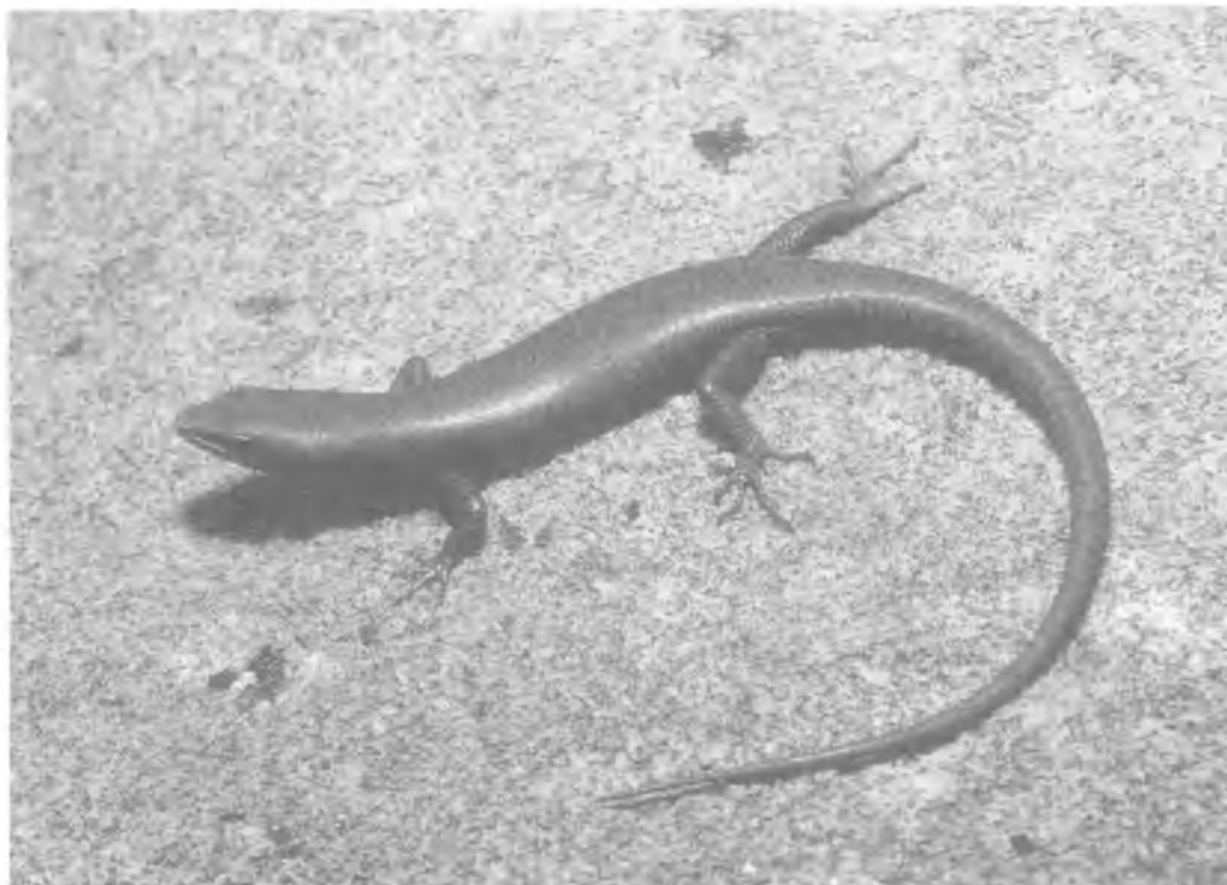


FIG. 9. *Lygisaurus rococo* 7 km west of Chillagoe (S. Wilson).

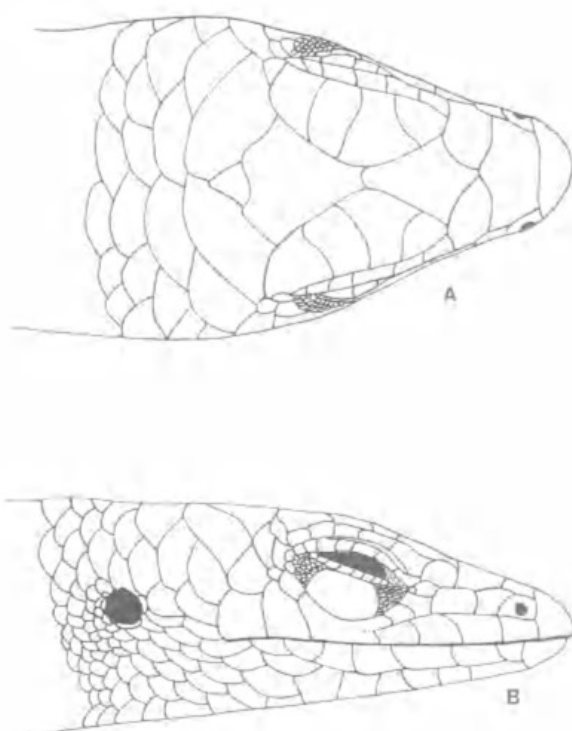


FIG. 10. *Lygisaurus rococo* (QM J46014). A. Dorsal view of head. B. Lateral view of head.

Supralabials 7 ( $N = 16$ ), with the fifth under the eye; also the fifth has a groove in the upper anterior corner. Three scales between the second presubocular and the nasal scale ( $N = 4$ ). Midbody scale rows 27–30 ( $N = 9$ , mean 27.9). Number of scales from chin to vent 51–59 ( $N = 8$ , mean 53.8). Number of lamellae under fourth toe 23–26 ( $N = 9$ , mean 24.2).

Dark brown dorsally and laterally, becoming coppery brown on the head. Steel-grey ventrally, becoming creamy brown on the chin. Undersides of feet are black.

#### HABITAT

Very restricted, amongst dry leaf litter accumulated between limestone rocks (S. Wilson pers. comm.).

#### REMARKS

*L. rococo* has the typical characters of a rock-dwelling lygosomid skink. Covacevich and Ingram (1978) listed these characteristics in relation to the species *Cryptoblepharus fuhni*, *C. litoralis*, *Carlia coensis*, *C. scirtetis*, *C. rimula* (the last two as '*Carlia* spp. nov.') and *Lampropholis mirabilis* (as *Lampropholis* sp. nov.). The features which set *L. rococo* apart from other *Lygisaurus*, and which are indicative

of rock-dwelling habits, are high number of midbody scales; large size; dark colouration; large limbs and digits; high lamellae count for fourth toe; and black palms and toe lamellae.

#### PARATYPES

7 km west of Chillagoe (QM J42068); 3.2 km SE of Chillagoe P.O. (AM R112114–8); 14.9 km E of Chillagoe P.O. (AM R112120–1).

#### *Lygisaurus laevis* (Oudemans) (Figs 8, 11, 12)

1894 *Lygosoma laeve* Oudemans. In Semon's *Zool. Forsch. in Austral.* 5: 144. Cooktown, Queensland. Holotype ZMA 10994.

#### DIAGNOSIS

*L. laevis* is a large (maximum SV length of 37 mm) *Lygisaurus* with a moveable eyelid containing a small disc, a character it shares with *L. tanneri*, *L. sesbrauna* and *L. macfarlanei*. Table 1 summarizes features which distinguish these four species. Other characters (midbody scale count, chin-vent scale number, lamellae under the 4th toe, and numbers of scales between the second presubocular and the nasal) are not useful in distinguishing the species. Table 1 emphasises the similarity of these four species. It shows that *L. laevis* is most difficult to distinguish from *L. sesbrauna* from which it is distinguished consistently only by ear shape and size of ear lobules.

#### DISTRIBUTION

Rainforests from Cooktown south to Mt Molloy, Kuranda, and Bramston Beach, NE Queensland.

#### DESCRIPTION

SV: 28–37 ( $N = 21$ , mean 32.8). HW: 13–16 ( $N = 18$ , mean 14.5). TL: 114–170 ( $N = 5$ , mean 141.9). HL: 31–39 ( $N = 12$ , mean 34.3).

Supraciliaries 6 or 7, rarely 8 ( $N = 42$ , mean 6.6). Palpebral disc small. Lower eyelid moveable. Ear aperture subequal in size to the palpebral disc; longer axis of aperture usually horizontal, with sharp lobules subequal in size around the margin. Four supraoculars ( $N = 21$ ). Interparietal free. Supralabials 7 ( $N = 36$ ), with the fifth under the eye. Three scales between the second presubocular and the nasal scale. Midbody scale rows 23–26 ( $N = 21$ , mean 24.6). Number of scales from chin to vent 46–52 ( $N = 12$ , mean 48.4). Number of lamellae under fourth toe 18–25 ( $N = 21$ , mean 21.3).

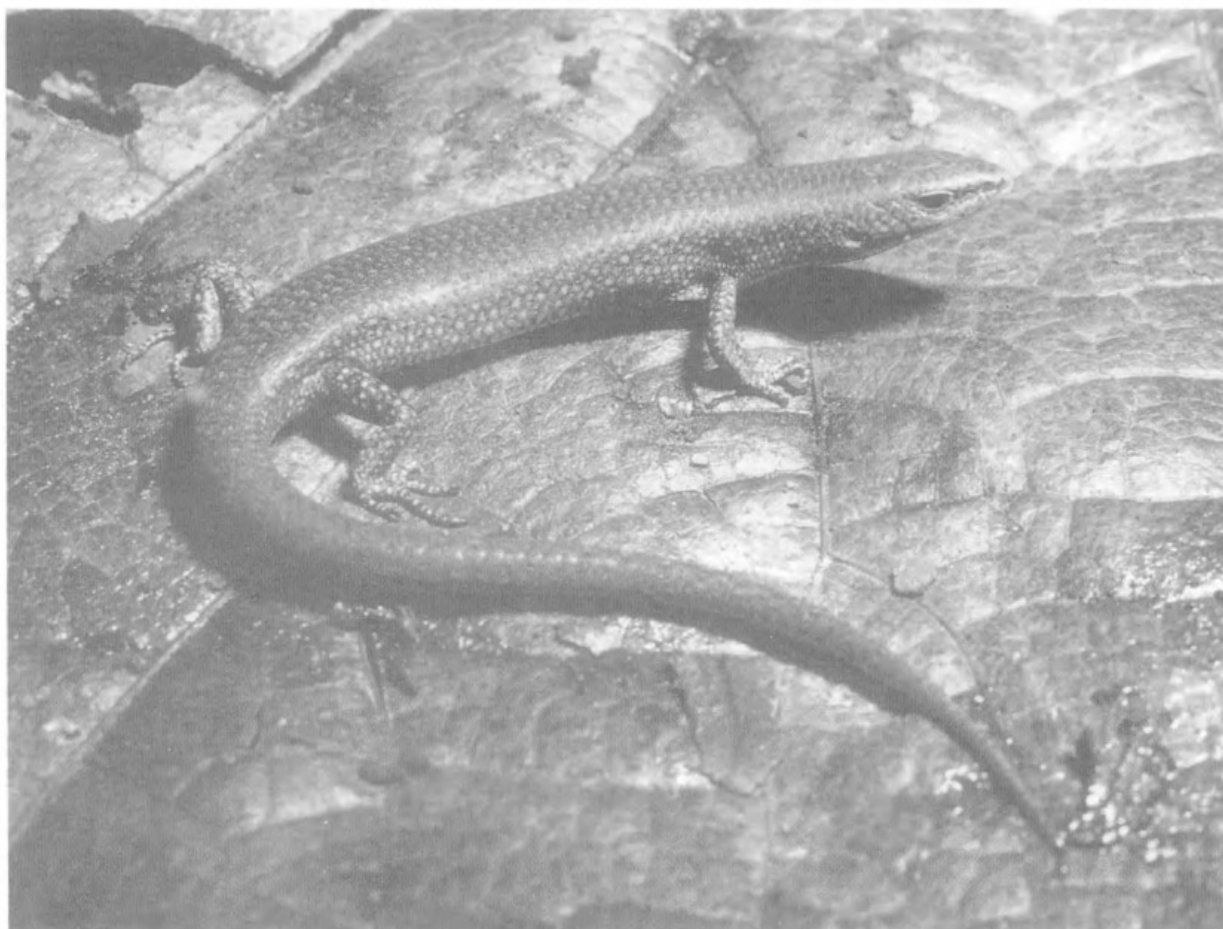


FIG. 11. *Lygisaurus laevis* Freedom Country, 8 km west of Kuranda (S. Wilson).

TABLE 1. A comparison of some features of four similar species of *Lygisaurus*.

|                          | <i>L. laevis</i>       | <i>L. tanneri</i>    | <i>L. sesbrauna</i>           | <i>L. macfarlani</i>               |
|--------------------------|------------------------|----------------------|-------------------------------|------------------------------------|
| ear size                 | subequal to disc       | smaller than disc    | subequal to disc              | smaller than disc                  |
| ear lobules              | sharp, subequal        | none or flat and low | sharp, anteriorly much longer | 1 large; several smaller and blunt |
| supralabials             | 7                      | 7(6)                 | 7(6)                          | 6(7)                               |
| supralabial entering eye | 5                      | 5(4)                 | 5(4)                          | 4(5)                               |
| ear shape                | longer axis horizontal | round                | round                         | round                              |

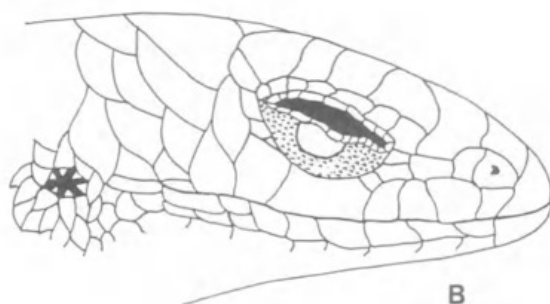
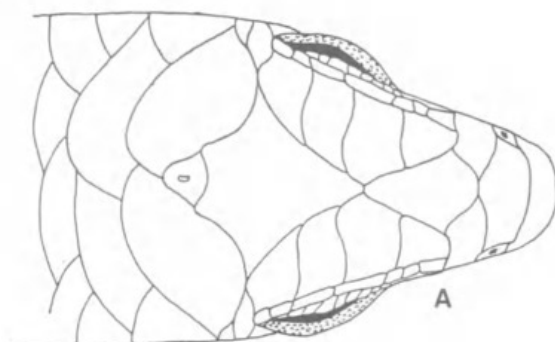


FIG. 12. *Lygisaurus laevis* (QM J27267). A. Dorsal view of head. B. Lateral view of head.

Dark brown above sometimes with darker indistinct stripes. Laterally black, sometimes with pale speckling. Breeding male has a red tail and throat. Ventrally cream, sometimes with the scales edged darkly.

#### HABITAT

Leaf-litter of rainforest and its margins.

#### REMARKS

We have examined the holotype of *Lygosoma laeve* Oudemans, ZMA 10994. It has seven supralabials, an ear aperture that has the longer axis horizontal, and sharp, pointed lobules around the margins of the aperture. Also, like many specimens of *L. laevis* from near Cooktown, it has six supraciliaries.

#### MATERIAL EXAMINED

Cooktown (ZMA 10994); Shiptons Flat (QM J17830-1, 40983-4); McAdams Creek, Amos Bay (QM J25315-8); Bloomfield (QM J25298, 39437); Mt Finlay (QM J27267); Hilda Ck, south base of Thorton

Peak (AM R56588); Mt Molloy (QM J25127); Crowley Ck, via Mt Molloy (QM J27007, 27047); 7.8 km N of Kennedy Highway via Black Mt Rd, Kuranda (AM R112996); 10 km NE of Kuranda (AM R56447); Freedom Country, 8 km W of Kuranda (QM J42076-7); Kuranda (AM R47196); 3 km SSW of Kuranda (AM R56330); Acacia St, North Holloway Beach (AM 112984-6); Holloway Beach (AM R112957); Cairns (QM J40365); Crystal Cascades (AM R112958-88, 115013-4); 0.3 km W of Yarrabah boundary on Koombal Rd (AM R112989-95); 7 km N of Heales Lookout, via Gillies Highway (AM R112997-8); 35.1 km S of Cairns (QM J26597-8); Russel Island (AM R36654); Bramston Beach (AM 115009-11).

#### *Lygisaurus sesbrauna* sp. nov. (Figs 13, 14, 15)

#### HOLOTYPE

QM J24664, Lake Boronto, Cape York Peninsula, N Queensland (10°46'S, 142°34'E), collected by G.J. Ingram on 24 September, 1974.

#### DIAGNOSIS

A medium sized (maximum SV length 34 mm) *Lygisaurus* sharing several characters with *L. laevis*, *L. tanneri* and *L. macfarlani* (see Table 1 for summary of differences). It is most easily confused with *L. laevis*. For differences, see diagnosis of *L. laevis*.

#### DISTRIBUTION

The wetter eastern side of Cape York Peninsula, from the tip south to Silver Plains, Queensland.

#### DESCRIPTION

SV: 18-34 (N = 45, mean 27.6). HW: 13-17 (N = 35, mean 14.9). HL: 28-34 (N = 30, mean 32.0). TL: 111-145 (N = 11, mean 128.9).

Supraciliaries 7, rarely 8 and very rarely 6 (N = 86, mean 7.1). Palpebral disc small. Lower eyelid moveable. Ear aperture subequal in size to the palpebral disc; aperture round, with sharp lobules around the margin; the anterior lobules are much the longer. Four supraoculars (N = 31). Interparietal free. Supralabials 7, rarely six (N = 88, mean 6.9), with the fifth under the eye, or rarely the fourth. Three scales between the second presubocular and the nasal scale. Midbody scale rows 22-26 (N = 30, mean 23.9). Number of scales from chin to vent 40-49 (N = 33, mean 44.0). Number of lamellae under fourth toe 21-26 (N = 30, mean 23.1).

Colour patterns vary between the two extremes described below. Ground colour of upper parts and sides red or lemon brown. On





FIG. 13. *Lygisaurus sesbrauna* Lockerbie Scrub, Cape York Peninsula (S. Wilson).

the back and neck there is a black vertebral stripe with 2–3 fine dark paravertebral lines. Pale dorsolateral lines irregularly edged in black. Sides with or without dark longitudinal lines. Labials speckled with dark brown. Black patch on head. There may be series of dark lines leading from the labials along the side of the neck. Ventrally cream with or without black speckling below; there maybe a series of dark lines under the tail.

Breeding males are known to lose the pattern described above and become uniform brown with red tail and legs. It is not known if they further develop a red throat in life. It is not possible to determine the presence of red throats from the preserved specimens.

#### HABITAT

Leaf litter of monsoon forest, open-forest, woodland, and heath.

#### REMARKS

This species may also be confused with *L. macfarlani* because females, juveniles, and non-

breeding males have similar patterns. They can be easily distinguished in the hand by the nature of the pale dorsolateral stripes. These are neatly lined in black on *L. macfarlani* but on *L. sesbrauna* these are wider and the black lining is ragged on the edges.

#### ETYMOLOGY

The species name for Ses Brauna who generously assisted one of us (G.I.) with field work on Murray Island.

#### PARATYPES

Somerset (AM R56062, 56168); Blackwater Lagoon, 6 mls SW of Somerset (AM R40950; 40952–3); Lake Boronto (QM J25599, 25993); Naru Point (QM J25602); 2 km E of Lockerbie (QM J25615); Lockerbie (QM J24620, 24630–2, 25990, 42113); Shotgun Creek crossing (QM J26259); 1 km S of Captain Billy Creek crossing (QM J26206); Heathlands (QM J26204–5, 26236); 3 mls N of Iron Range (AM R40952–3); Lamond Hill, Iron Range (QM J28057); Leo Creek (QM J32512, 32516, 37516–20); Buthen Buthen (QM J34461–3, 34465, 37522); 20 km S of Buthen Buthen (QM

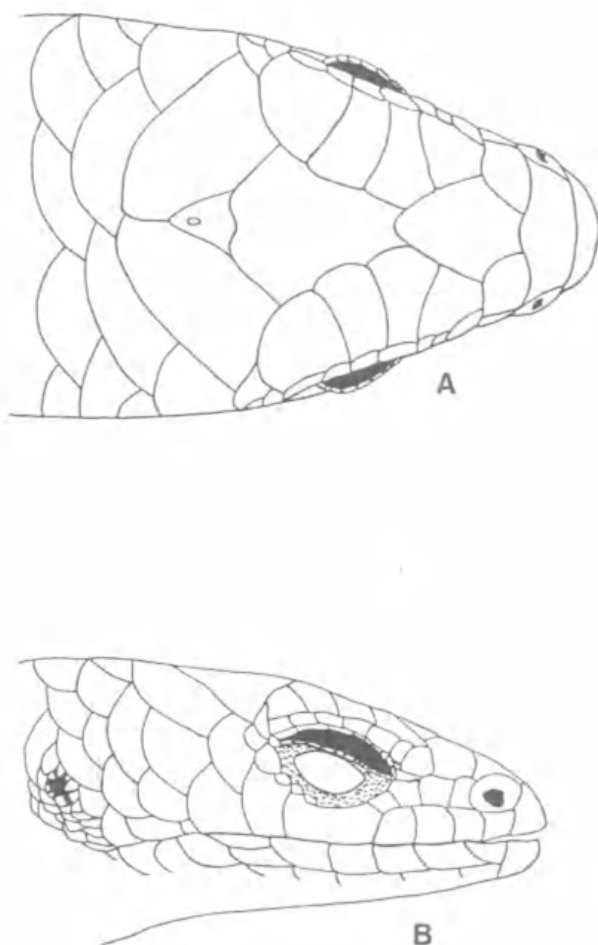


FIG. 14. *Lygisaurus sesbrauna* (QM J25615). A. Dorsal view of head. B. Lateral view of head.

J34578); 10 km NE of Coen (QM J37508); Lankelly Creek (QM J37525–6); Rocky Scrub (QM J37510, 37513–5, 37524); Attack Creek, 11 km NE of Birthday Mountain (QM J37523); 2 km E of Birthday Mountain (QM J38299); 7 km NW of Rocky River mouth (QM J38092); 29 km ENE of Mt. Croll (QM J37530–1); Silver Plains Station (MV D10192); 78 mls S of Coen (AM R21332).

***Lygisaurus tanneri* sp. nov.**  
(Figs 15, 16, 17)

**HOLOTYPE**

QM J32352, Morgan River crossing, near Hopevale Community, N Queensland (15°20'S, 145°02'E), collected by G.J. Ingram on 12 July, 1976.

**DIAGNOSIS**

A large (maximum SV 37), robust, species of *Lygisaurus* sharing several characters with *L.*

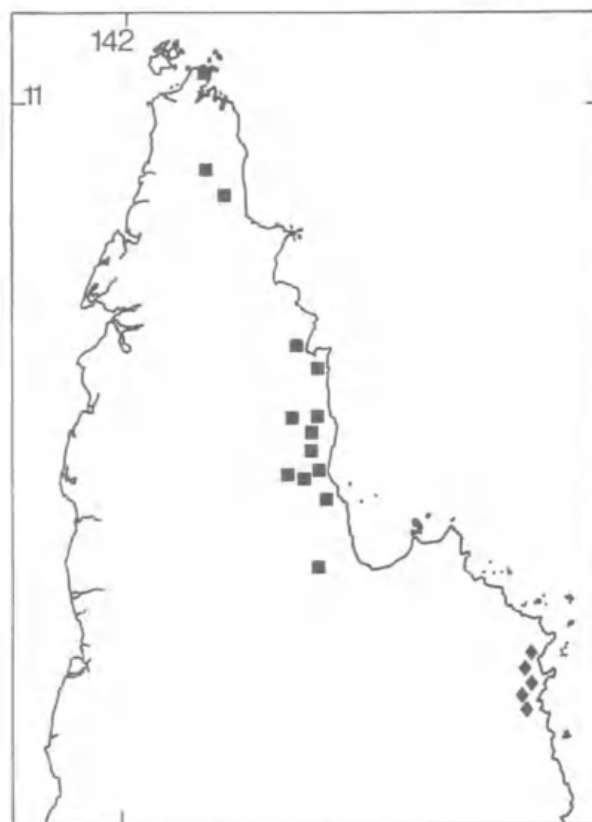


FIG. 15. Distribution of *Lygisaurus sesbrauna* (■), *L. tanneri* (◆).

*laevis*, *L. rococo*, and *L. macfarlani*. See Table 1, for summary of characters useful in distinguishing these four species. *L. tanneri* is most similar to *L. macfarlani* from which it is distinguished by ear lobules (none, or flat, low lobules in *L. tanneri* vs 1 — several large blunt lobules in *L. macfarlani*) and by supralabials (7, occasionally 6; with 5th, occasionally 4th, entering eye vs 6, occasionally 7; with 4th, occasionally 5th, entering eye).

*L. tanneri* may also be confused with *L. curtus*, of New Guinea, but the former lacks the dark nostril to ear line and white stripe from angle of the jaw to ear of *L. curtus*.

**DISTRIBUTION**

Riverine rainforest and monsoon forests between Starcke Station and the Endeavour River, north of Cooktown, Queensland.

**DESCRIPTION**

SV: 16–37 (N = 22, mean 30.3). HW: 13–18 (N = 18, mean 15.5). TL: 128–156 (N = 7, mean 144.1). HL: 30–39 (N = 18, mean 35.3).



FIG. 16. *Lygisaurus tanneri* Lily Creek, via Cooktown (S. Wilson).

Supraciliaries 7, rarely 6 ( $N = 44$ , mean 6.9). Palpebral disc small. Lower eyelid moveable. Ear aperture smaller than palpebral disc; aperture round without lobules or with low flat ones around margin. Four supraoculars ( $N = 22$ ). Interparietal free. Supralabials 7, rarely 6 ( $N = 44$ , mean 6.8), with the fifth under the eye or rarely the fourth. Three scales between the second presubocular and the nasal scale. Midbody scale rows 22–27 ( $N=19$ , mean 25.2). Number of scales from chin to vent 46–50 ( $N = 20$ , mean 48.4). Number of lamellae under fourth toe 20–24 ( $N = 17$ , mean 22).

Tan to dark brown above, sometimes with a paler indistinct dorsolateral line, especially in immatures. Tan to dark brown with or without pale speckling laterally, sometimes contrasting with the dorsal colour. Breeding males have red tails and red throats.

#### HABITAT

Leaf litter of riverine rainforest and monsoon forest.

#### REMARKS

This species appears similar to *L. laevis*, with which it has seven supralabials in common, but the ear lobules and the round ear aperture suggest a relationship with *L. macfarlandi*, or *L. curtus* of New Guinea. The large robust form is similar to that in *L. laevis*, *L. curtus* and some insular populations of *L. macfarlandi*.

#### ETYMOLOGY

Named for Mr Charles Tanner from whose property many of the type series were taken.

#### PARATYPES

Mclvor River, Starcke Station (QM J20609–11); Mclvor River Crossing (QM J32362–4); 33 km N of creek crossing near Hopevale Mission (QM J32358–9); Jansen's Crossing, Endeavour River (QM J42771–2); Cedar Scrub (QM J22789); 15 km W of Cooktown (QM J24117–8); 15 km WNW of Cooktown (MV D13175–6); 13 km W of Cooktown (QM J22380, 27093–6); 11.3 km W of Endeavour River Bridge (AM R126336–47); 10.8 km W of Endeavour River Bridge

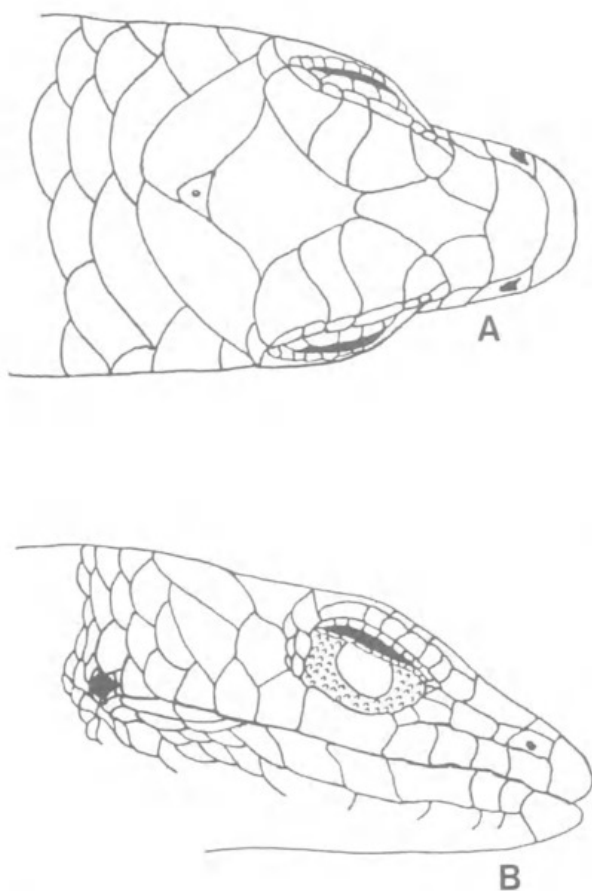


FIG. 17. *Lygisaurus tanneri* (QM J24118). A. Dorsal view of head. B. Lateral view of head.

(AM R126348); 0.5 km S of Endeavour River Bridge (AM R126349); Endeavour River, 9 mls W and 2 mls N of Cooktown (AM R26694-6); Endeavour River (SAM R9760a-b, 9938).

***Lygisaurus macfarlani* (Günther)**  
(Figs 18, 19, 20)

1877 *Carlia macfarlani* Günther. *Ann. Mag. Nat. Hist.* (4)19: 413. Somerset and islands of Torres Strait, Queensland. Lectotype BMNH 1946.8.16.49, here designated.

**DIAGNOSIS**

A large (maximum SV length 37), delicately-built species of *Lygisaurus* sharing several characters with *L. laevis*, *L. sesbrauna* and *L. tanneri*. See Table 1 for summary of characters useful in separating these species. *L. macfarlani* is most similar to *L. tanneri*. For differences, see diagnosis of *L. macfarlani*. *L. macfarlani* lacks the dark streak from nostril, through eye, to ear of *L. curtus*, a New Guinea species.

**DISTRIBUTION**

Found in the wetter parts of eastern Cape York south to Princess Charlotte Bay. Also the Torres Strait Islands. Extralimital in southwest Papua New Guinea.

**DESCRIPTION**

SV: 16-37 (N = 55, mean 30.3). HW: 13-18 (N = 49, mean 14.8). HL: 29-39 (N = 40, mean 34.1). TL: 124-167 (N = 15, mean 140.0).

Supraciliaries 7, rarely 6 or 8 (N = 112, mean 7.0). Palpebral disc small. Lower eyelid moveable. Ear aperture smaller than palpebral disc; aperture round usually with one large blunt anterior lobule and several blunt or low and flat ones on the other margins (on some of the Torres Strait islands the number of lobules may be reduced). Four supraoculars (N = 40). Interparietal free. Supralabials 6, rarely 7 (N = 112, mean 7.0), with the fourth, rarely the fifth, under the eye. Three scales between the second presubocular and the nasal scale. Midbody scale rows on island specimens 22-30 (N = 45, mean 25.3); on the mainland specimens 23-26 (N = 26, mean 24.3). Number of scales from vent to chin 43-51 (N = 32, mean 47.8). Number of lamellae under fourth toe 20-26 (N = 47, mean 22.7).

The skin is semi-translucent. Ground colour on upper parts and lateral surfaces fawn with a series of dark brown longitudinal stripes aligned through the centre of the scales. There are pale dorsolateral lines beginning behind the eyes and continuing to and along the tail. These lines are sharply delineated by dark brown. On the head there is a large dark patch. The labials have dark brown flecking. Ventrally cream, sometimes with brown speckling which may form lines under the tail.

Breeding males lose all this pattern and have a greenish grey colour with red legs, tail, and red on the chin and throat. Pattern and colour varies between the two extremes described above.

**HABITAT**

Leaf litter of monsoon forest, open forest, woodlands, heath, grasslands, and gardens.

**REMARKS**

This taxon has been traditionally known by the name *novaeguineae* (Boulenger, 1887; Mitchell, 1953; Cogger, Cameron and Cogger, 1983). Meyer's (1874) description of *Lygosoma* (*Carlia*) *Novae Guinea* is brief and not helpful



FIG. 18. *Lygisaurus macfarlani* Tip of Cape York Peninsula (S. Wilson).

for identifying the taxon described. Also, the holotype is missing (Cogger, Cameron, and Cogger, 1983). Meyer's description, translated from German, is as follows:

'Distinguished from *C. melanopogon* Gray by its brown violet metallic shimmering colour on the upper side and is black spotted on the head. Throat white and there is a white stripe under the eye. The white stripes on the scales of *melanopogon* never anterior. Body scales not small, in 23 rows. New Guinea'.

Although uninformative, the description of the colour and pattern does not match the colour and pattern of *L. macfarlani*, which does not have a white stripe under the eye. Neither does it match that of *L. curtus* of New Guinea. *L. curtus* (Boulenger, 1897) is a good species that can be distinguished from *L. macfarlani* by its robust form and the presence of a dark streak beginning at the nostril and continuing back 'through' the eye to the ear. A black streak is not mentioned by Meyer.

In summary, the species name *novaeguinea* cannot be applied convincingly to any of the *Lygisaurus* known from New Guinea. Clarification of the identity of the name will require

review of the large collections of *Lygisaurus* species from that country.

Throughout the islands of the Torres Strait *L. macfarlani* has evolved many distinct insular forms. While Günther (1877) lamented the lack of detailed locality data for MacFarlane's specimens (these came from Somerset and islands of the Torres Strait), the types of *Carlia macfarlani* can be identified as specimens from the Darnley-Murray Island group in the northeast of the Strait. Samuel MacFarlane landed at Darnley Island in 1871 with Reverend Murray for the London Missionary Society (Souter 1963). However, they did not reach Murray Island until 1874. That event is still celebrated on the island today as 'The Coming of the Light'.

We have designated BMNH 1946.8.16.49 as the lectotype of *Carlia macfarlani* from the syntypes, BMNH 1946.8.16.49-51.

#### MATERIAL EXAMINED

Torres Strait Islands (BMNH 1946.8.16.49-51); Saibai Island (AM R48360); Dauan Island (AM R48535, 48550); Yam Island (AM R42365, 61665, 61764-75, 61805, 61829-32, 61873, 62470); Gabba Island (AM R48478-9); Murray Island (AM R42579-



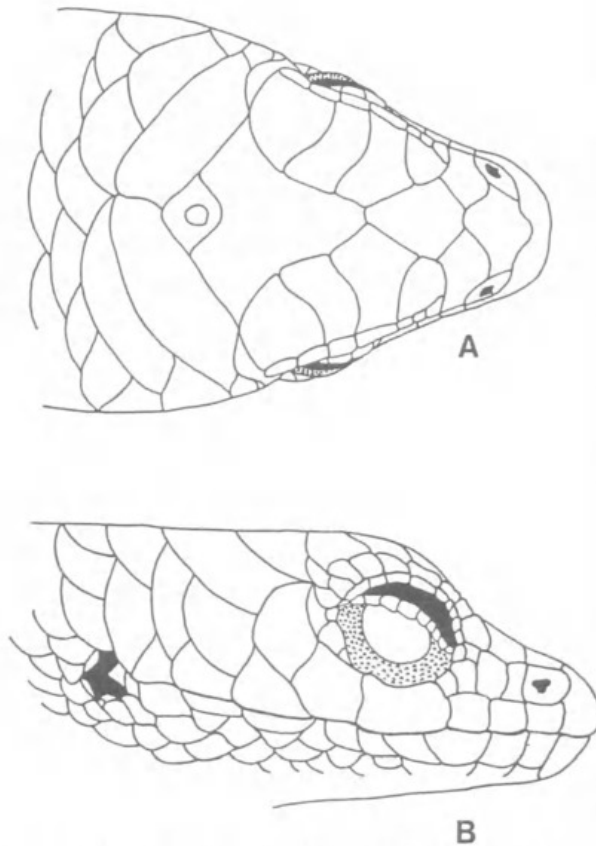


FIG. 19. *Lygisaurus macfarlani* (QM J28013). A. Dorsal view of head. B. Lateral view of head.

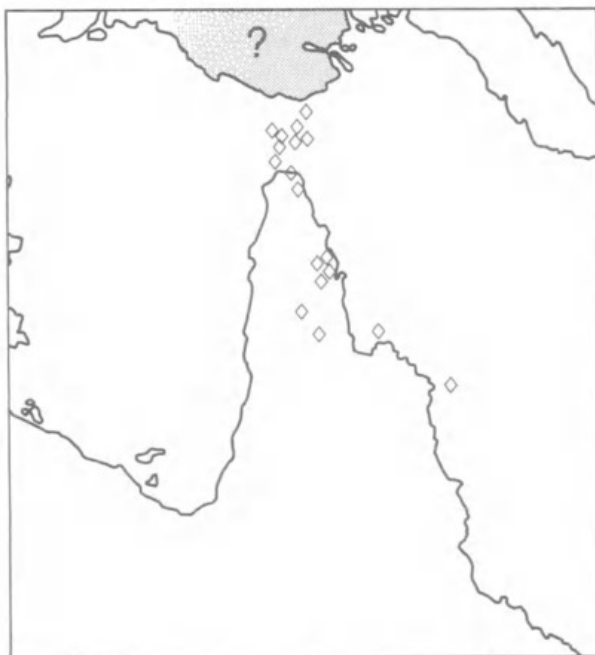


FIG. 20. Distribution of *Lygisaurus macfarlani* (◊).

85, 44219–23, 45920, 46102–6, 46108–12); Weier (AM R45907); Dauar Island (AM 45937–8); Jarvis Island (AM R48562); Coconut Island (AM R42546); Badu Island (AM R48598, 58978, 58980–4, 58988–97; 59026–30, 59032–3, 59052–7, 59077–83, 59085–6, 59088–104, 59120–1); Mabuiag Island (AM R48562); Moa Island (AM R46679–82, 46778–84, 46862–7, 46957); Wednesday Island (AM R61980); Thursday Island (AM R17022, 42380, 44240, 46173–5, 58957); Prince of Wales Island (AM R46216–7, 46220–1, 48989, 55960, 59183); Hammond Island (AM R42295, 46982–8); Horn Island (SAM R13674; AM R61900–2, 61946–7, 62478; QM J25653–4, 25668, 25690–2); Somerset (AM R56035–7); Naru Point (QM J24636); Lake Boronto (QM J25559, 25564); Great Woody Island (AM R62004–5); 0.5 km N of Pascoe River mouth (QM J32007); Iron Range (QM J7793–4, AM R47197); East Claudie River, Iron Range (QM J28011–5); Claudie River (MV D817); Bare Hill (MV DTD–D1245); Brown Creek, 12 km N of Mt Tozer (QM J37511); West Claudie River (QM J34380); 15 mls NE of Pascoe River (AM R40951); Buthen Buthen (QM J34464, 37521); 2 mls N of Coen (QM J23420); Coen Airport (QM J37529); Lankelly Creek, near Coen (QM J37509, 37528); Coen rubbish dump (AM R40947); Coen (AM R40947); 10 mls E of Coen (AM R16346, 47139); Rocky River (AM R16340, 21284); 11 km SW of mouth of Rocky River (QM J37507); 78 mls S of Coen (AM R21332); Flinders Island (QM J36181–4); Cape Melville (QM J37851); Lizard Island (AM R55001).

#### KEY TO THE SPECIES OF *LYGISAURUS*

- 1 Lower eyelid fused above forming a spectacle over the eye ..... 2  
Lower eyelid moveable ..... 3
- 2(1) Interparietal fused to the frontoparietal scale ..... *L. timlowi*  
Interparietal free ..... *L. foliorum*
- 3(1) Usually six supralabials ..... 4  
Seven supralabials ..... 5
- 4(3) Usually seven supraciliaries; ear aperture round, blunt or flat lobules around margins ..... *L. macfarlani*  
Usually six supraciliaries; longer axis of ear aperture is horizontal, sharp ear lobules around margins ..... *L. aeratus*
- 5(3) Midbody scale rows 27 or fewer; usually seven supraciliaries ..... 6  
Midbody scale rows greater than 26; usually six supraciliaries ..... *L. rococo*

- 6(5) Sharp lobules surrounding ear opening 7  
Ear lobules low and flat, sometimes absent  
..... *L. tanneri*

- 7(6) Ear opening usually round with long  
anterior lobules; well defined light  
dorsolateral stripes in juveniles, females,  
and non-breeding males ..... *L. sesbrauna*  
Longer axis of ear opening usually horizontal  
with subequal sized lobules; no well  
defined dorsolateral stripes in juveniles,  
females and non-breeding males .....  
..... *L. laevis*

# ACKNOWLEDGEMENTS

Dr Allen Greer (Australian Museum) presented one of us (G.I.) with the first specimens known of *L. rococo* and drew our attention to *L. aeratus*. For this generosity and his continued advice we are deeply grateful.

For the loan of specimens we are grateful to Dr H.G. Cogger, Dr A.E. Greer, Mr R. Sadlier (Australian Museum, Sydney); Mr A.J. Coventry (Museum of Victoria, Melbourne); Dr D. Hillenius (Zoologisch Museum, Amsterdam); Dr T. Houston (South Australian Museum, Adelaide); Miss E. Grandison and Mr A.F. Stimson (British Museum Natural History, London); Dr G.M. Storr (Western Australian Museum, Perth); the Donald Thomson Administration Committee, Melbourne; and Professor E.E. Williams (Museum of Comparative Zoology, Harvard).

Financial support for this work has been received from the Australian Museum (travel grant to enable G.I. to examine reference collections there); Australian Research Grants Committee (grant which enabled G.I. to work with Drs H.G. Cogger and H. Heatwole in Torres Strait); Australian Biological Resources Study (grant which enabled G.I. to work in Cape York Peninsula with Prof. J. Kikkawa, and grant to Australian and Queensland Museums which involved J.C. in the survey of eastern Australian rainforest fauna); and the Australian Institute of Aboriginal Studies (grant to Cape York Ecology Transect).

Many people have helped us with this work. We warmly thank Peter Rawlinson, Hal Cogger, Allen Greer, Steve Wilson, Ross Sadlier, Lewis Roberts, Glen Storr and Lucille Crevola-Gillespie.

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