

# Two new species of frogs

(Anura: Myobatrachidae, Pelodyadidae) from Queensland and New South Wales

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## Abstract

*Ranidella weserticola* sp. nov. is closely related to *R. parinsignifera*, *R. tinnula* and *R. sloanei* and differs from all *Ranidella* spp. by its small size, robust hind limbs, rounded snout and chirping male call. *Litoria olongburensis* sp. nov. is aligned with the *Litoria dorsalis* species group which consists of five species, *dorsalis*, *microbelos*, *timida*, *olongburensis*, and *adelaidensis*.

## A new species of *Ranidella*

In reviewing the myobatrachid frog genera Heyer and Liem (1976) redefined the genus *Ranidella*. It included three species from Queensland — *R. signifera* (Girard), *R. parinsignifera* (Main), and *R. tinnula* (Straughan and Main). The biology of these species and of *Assa darlingtoni* (Loveridge) was studied by Straughan and Main (1966). At that time all four species were placed in the genus *Crinia* which, in Queensland, was restricted to the south-eastern part of the state.

Specimens easily referred to *Ranidella* (sensu Heyer and Liem 1976) but differing from any known species of the genus, have been recently collected in western Queensland.

The following abbreviations are used for adult measurements: SVL, snout-vent length; TL, tibial length; HW, head width at broadest part; EN, distance between the external nostril and anterior border of eye; IN, distance between the two external nostrils; ED, eye diameter between anterior and posterior borders of eye; SE, distance

from tip of snout to anterior border of eye; TW, tympanum width. Ratios are given as percentages.

Specimens with a number prefixed by the letter J are housed in the Queensland Museum, and by DSL in David S. Liem's collection.

## *Ranidella deserticola* sp. nov.

**Holotype:** Adult male, J22654, Charleville, southwestern Queensland, David S. Liem 13.ii.1971.

## Paratypes

J22655, DSL 4710, same data as holotype; J25000-2, 42 km E. of Thargomindah, G. J. Ingram and C. J. Corben, 26.xii.1974; J31601-3, Thargomindah, R. Raven, 8.xi.1976; J28925, 130 km E. of Birdsville, R. J. McKay, 1.ix.1976; J27237, Polygammon Creek on Middleton-Hamilton Hotel Road, C. Corben, A. Smyth and G. Roberts, 27.x.1975.

## Diagnosis

This species is distinguished from other *Ranidella* by combination of the following characters: 1. small size, 2. robust hindlimbs, 3. snout rounded in profile, 4. characteristic male call, which sounds like the chirping of a young House Sparrow (*Passer domesticus*).

## Description of Holotype

SVL 15.6 mm; TL 7.2 mm, 46.2% of SVL; HW 5.1 mm, 32.7% of SVL; IN 1.5 mm; EN 1.5 mm; IN/EN ratio 100.00; ED 1.9 mm; SE 2.2 mm; ED/SE ratio 86.4; EN/SE ratio 68.0. Tip of snout bluntly rounded (fig. 1A); canthus rostralis evenly rounded, not distinct; loreal region sloping outward; head bluntly pointed in dorsal view (fig. 1B); tympanum obscure; sup-

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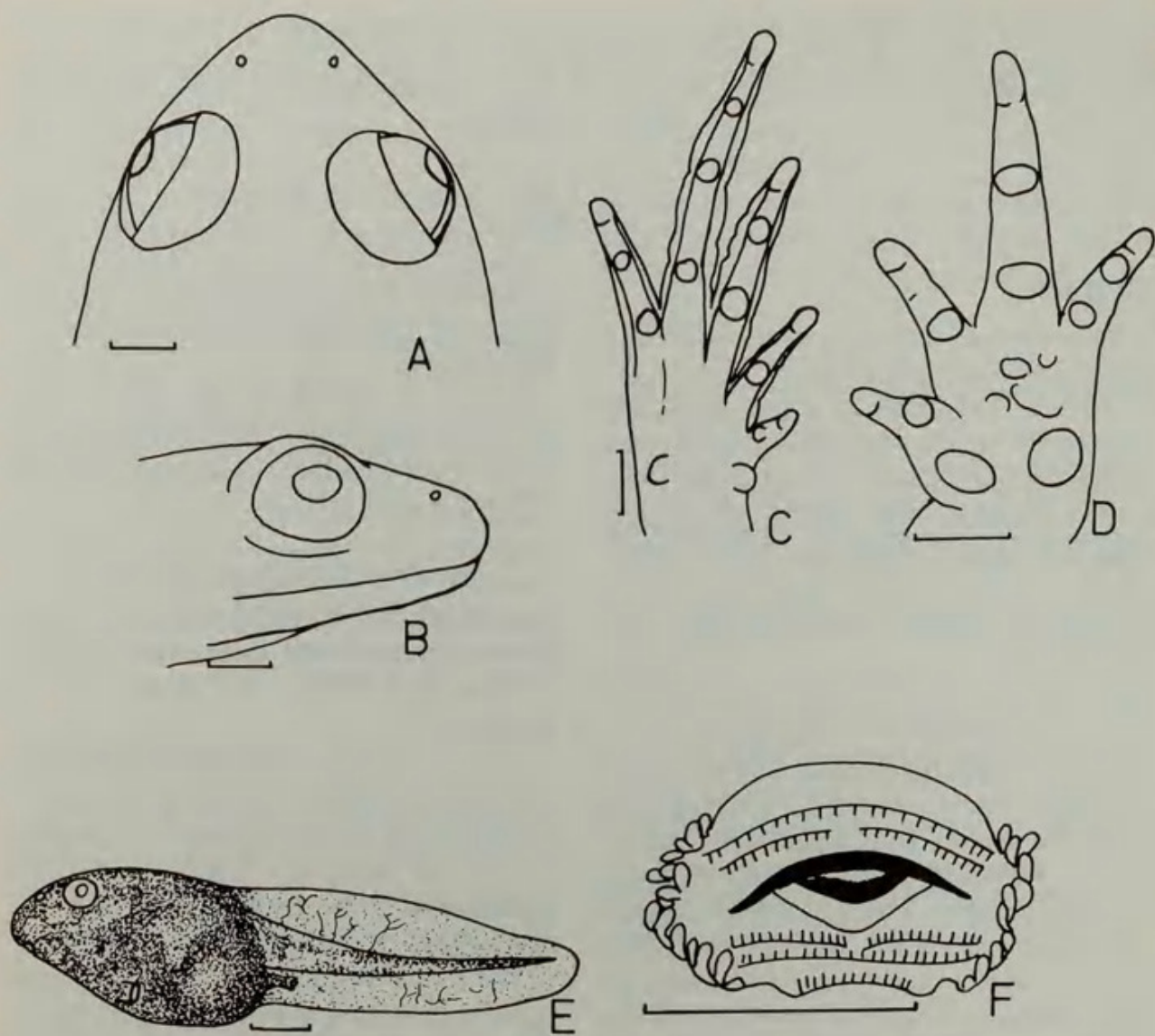


Fig. 1.—*Crinia deserticola*, holotype (J22654) A. dorsal aspect of the head, B. lateral aspect of the head, C. ventral aspect of the right foot, D. ventral aspect of the left hand, E. tadpole of *Crinia deserticola* at stage 37, F. mouth parts of *Crinia deserticola*. Line equals to 1 mm.

ratympanic fold absent; tongue elongated, free posteriorly; vomerine teeth absent; upper jaw toothed; vocal sac present with two slit-like openings on floor of buccal cavity.

Distal segment of fingers blunt, not expanded; length of fingers from shortest to longest 1-2-4-3; phalangeal formula 2-2-3-3; subarticular tubercles roundish, one each on 1st and 2nd fingers, and two each on 3rd and 4th fingers; supernumerary tubercles present on palm; two metacarpal tubercles present, a rounded outer and an oval inner tubercle; fingers without a trace of webbing (fig. 1C); nuptial pad absent; subcutaneous glands present on base of 1st finger.

Hind limbs robust; distal segment of toes blunt; toes with broad fringes; subarticular tubercles roundish, one each on 1st and 2nd toes, two each on 3rd and 5th toes, and three on 4th toe; supernumerary tubercles absent; outer and inner metatarsal tubercles rounded (fig. 1D).

Skin of dorsum shagreen to smooth; abdomen and throat coarsely granular; pupil horizontal with ventral angle.

### Colour

In life dorsum light brown with V-shaped olive marking on the head, two roundish olive markings in the posterior coccygeal region, olive crossbands on fore and hind limbs; abdomen cream, and ventral surfaces



of thighs flesh colour; throat and chest dusted with dark brown pigmentation. In preservative, dull grey-brown dorsally, fore and hind limbs light brown with dark brown crossbands; ventral surfaces of abdomen and hind limbs cream white; throat and chest heavily dusted with dark pigmentation.

### Variation

The ten paratypes are similar to the holotype: SVL 13.0-18.4 mm (mean  $15.7 \pm 0.526$ ); TL/SVL 39.9-49.4 (mean  $45.57 \pm 1.037$ ); HW/SVL 31.4-41.6 (mean  $34.68 \pm 1.009$ ); IN/EN 84.6-107.7 (mean  $34.68 \pm 2.333$ ); ED/SE 60.7-91.3 (mean  $74.78 \pm 3.387$ ); EN/SE 54.2-66.7 (mean  $60.67 \pm 1.194$ ).

### Breeding

The mating call is a melodious chirping similar to the call of a young House Sparrow (*Passer domesticus*).

A sound spectrograph of this call is given in Figure 2.: This is based on recordings by C. J. Corben at Polygammon Creek, south-western Queensland on the 27th October, 1975. It shows a dominant frequency of 4000 HZ, a duration of 128 milliseconds, and a call rate of 59 per minute. It is composed of two pulses, with an individual duration of 60 milliseconds. The three calls of decreasing energy and quickening rate are the terminal sounds of a calling period of an individual, which then pauses for an interval before resuming calling.

The call of *R. deserticola* is readily distinguished from the short creeking call of *R. sloanei*, the long, more drawn out call of *R. parinsignifera*, the lower-pitched call of *R. tinuwa*, and the grating call of *R. signifera* (see Straughan and Main, 1966, plate 6, for sound spectrograms of these species). *R. deserticola* males call from land, under tussocks, or on exposed mud along the banks of temporary water.

### Life history

Small eggs (black animal and cream vegetal poles) are laid in water, suspended on submerged vegetation. Tadpoles are indis-

tinguishable from *R. parinsignifera* or *R. signifera*; dextral anal opening, sinistral spiracle, blunt tail, labial papillar row interrupted on anterior and posterior portions, and labial tooth row I, 1/1, II (figs. 1E and F).

### Habitat

*R. deserticola* occurs throughout all habitats in the areas in which it has been recorded (from brigelow and mulga to ashy soil plains). At Charleville it was found synchronosympatric with *Litoria rubella*, *L. latopalmata*, and *Limnodynastes tasmaniensis*; at Windorah with *Cyclorana novaehollandiae*, *C. verrocus*, *C. platycephalus*, *Litoria rubella*, *L. caerulea*, *L. latopalmata*, *Limnodynastes tasmaniensis*, and *Notaden* sp.; and at Thargomindah with *Litoria rubella*, *Limnodynastes tasmaniensis* and *Notaden bennetti*.

### Distribution

From Charleville west to the Betoota area, north to Polygammon Creek and south to the Thargomindah area.

### Comparisons with other species

Comparing *R. deserticola* with all currently recognized *Ranidella*, only three species are apparently closely related — namely *R. tinnula*, *R. parinsignifera* and *R. sloanei*. *R. deserticola* differs from *R. tinnula* by the rounded snout in profile, slightly smaller SVL, belly plain without darker mottling and no distinct mid-line of white dots down the throat; from *R. parinsignifera* by slightly smaller size, robust hind limbs, and only throat and chest dusted with brown pigmentation; and from *R. sloanei* by its smaller size, narrower eye diameter (ED/SE less than 91.3 as opposed to 104.2 in *R. sloanei*), narrower eye-nostril distance (EN/SE less than 68.0 as opposed to more than 73.9 in *R. sloanei*) and tubercular palm. The only other described *Ranidella* in Queensland is *R. signifera*, and *R. deserticola* differs from it by the following characteristics: smaller SVL (less than 18.5 mm as opposed to more than



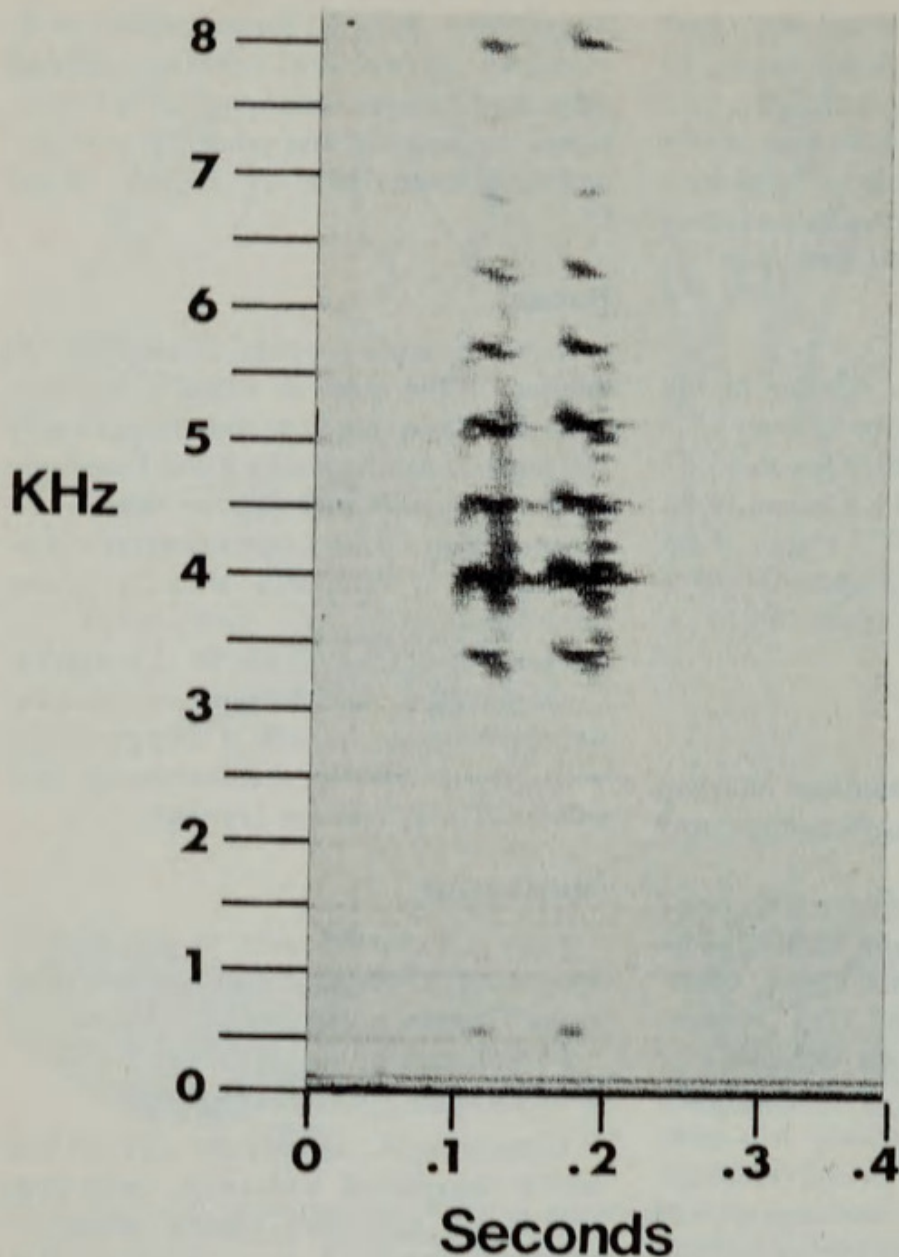


Fig. 2.—Sonogram of the mating call of *Ranidella deserticola*.

18.6 mm), lack of black and white mottling on the ventral surfaces of thighs and posterior portion of the abdomen, and uniformly dark throat and chest. Tyler and Parker (1974) described *R. remota* from the southwestern district of Papua New Guinea. It differs from *R. deserticola* by its ornate dorsal pattern and by its long, pulsed, buzzing call.

Judging from morphology and the structure of the male call, *R. deserticola* is intermediate between *R. parinsignifera* and *R. sloanei*.

#### Etymology

The specific name is derived from the

Latin *desertus* meaning waste, and the Latin suffix, *cola*, meaning an inhabitant. The name refers to the habitat of the frog.

#### Other material examined

*Ranidella sloanei* (DSL 6814-5), *R. tinula* (DSL 4739-42), *R. parinsignifera* (DSL 4311-2, 4268-70, 4350-1, 4465-6, 4736, 5353, 5413-6, 6275-6, 6382-3), *R. signifera* (DSL 5176-80, 6374-9).

#### A new species of *Litoria*

An undescribed treefrog in the wallum (sensu Coaldrake, 1961) of southeast Queensland and northeast New South Wales has been well known for several years.



Fig. 3.—An individual of *Litoria olongburensis* from North Stradbroke Island.

(Liem 1974; Ingram 1975; Ingram and Corben 1975; Gravatt and Ingram 1975; Bensink 1976; Barry and Lear 1976; Campbell & Barry 1977). This frog with its small size, slender body, pointed snout, and vestigial finger webbing does not resemble any other treefrog from that area. After comparing it with currently recognized Australo-papuan pelodyadids, four species showed potential resemblance. These were *Litoria dorsalis* (Macleay), *L. microbelos* (Cogger), *L. adelaidensis* (Gray), and *Litoria timida* Tyler and Parker. These are grouped here as the *Litoria dorsalis* complex.

*Litoria adelaidensis* is placed in this species group because it shares a number of characters with that group, e.g. pointed protruding snout, sharp canthus rostralis, unwebbed fingers, bifid distal subarticular of 3rd and 4th fingers, presence of loreal and head streaks, and a cream maxillary streak.

Cogger (1966) gave an excellent and detailed review on the history and status of *Litoria dorsalis*. The new form differs from *dorsalis* and *microbelos* by a more extensive finger webbing (reaching by a narrow fringe the 2nd subarticular tubercle of 3rd and 4th fingers), more extensive toe webbing (reaching the base of penultimate phalanx of 5th toe; on outer margins of 2nd and 3rd toes; and on distal subarticular tubercle on outer margin of 4th toe), a distinct broad cream maxillary streak from below the eye

to halfway down along the flank, and a prominent brown loreal streak from nostril to eye (Fig. 4B).

It differs from *adelaidensis* by its smaller size (less than 29 mm as opposed to 50–60 mm in *adelaidensis*) less extensive webbing on 1st toe (reaching base of proximal phalanx as opposed to  $\frac{1}{2}$  to  $\frac{3}{4}$  along that phalanx), and the absence of a brown patch with cream blotches on disto-posterior portion of the thighs.

The new form is readily distinguished from *timida* by the straight canthus rostralis, shorter tibia (TL/SVL ratio less than 58.1 as opposed to more than 60.5), and the presence of loreal and head streaks.

#### *Litoria olongburensis* sp. nov.

*Litoria* sp. nov. Ingram & Corben 1975; Gravatt & Ingram 1975; Bensink 1976; Barry & Lear 1976; Campbell & Barry 1977.

*Litoria* sp. A. Bensink & Burton 1975.

#### Holotype

Adult female, J22652 from Coomboo Lake, Fraser Island, southeast Queensland, R. Shine, 10.i.1972.

#### Paratypes

SE Queensland: J27480 Teewah Creek, Cooloola, C. Corben & A. Smyth,



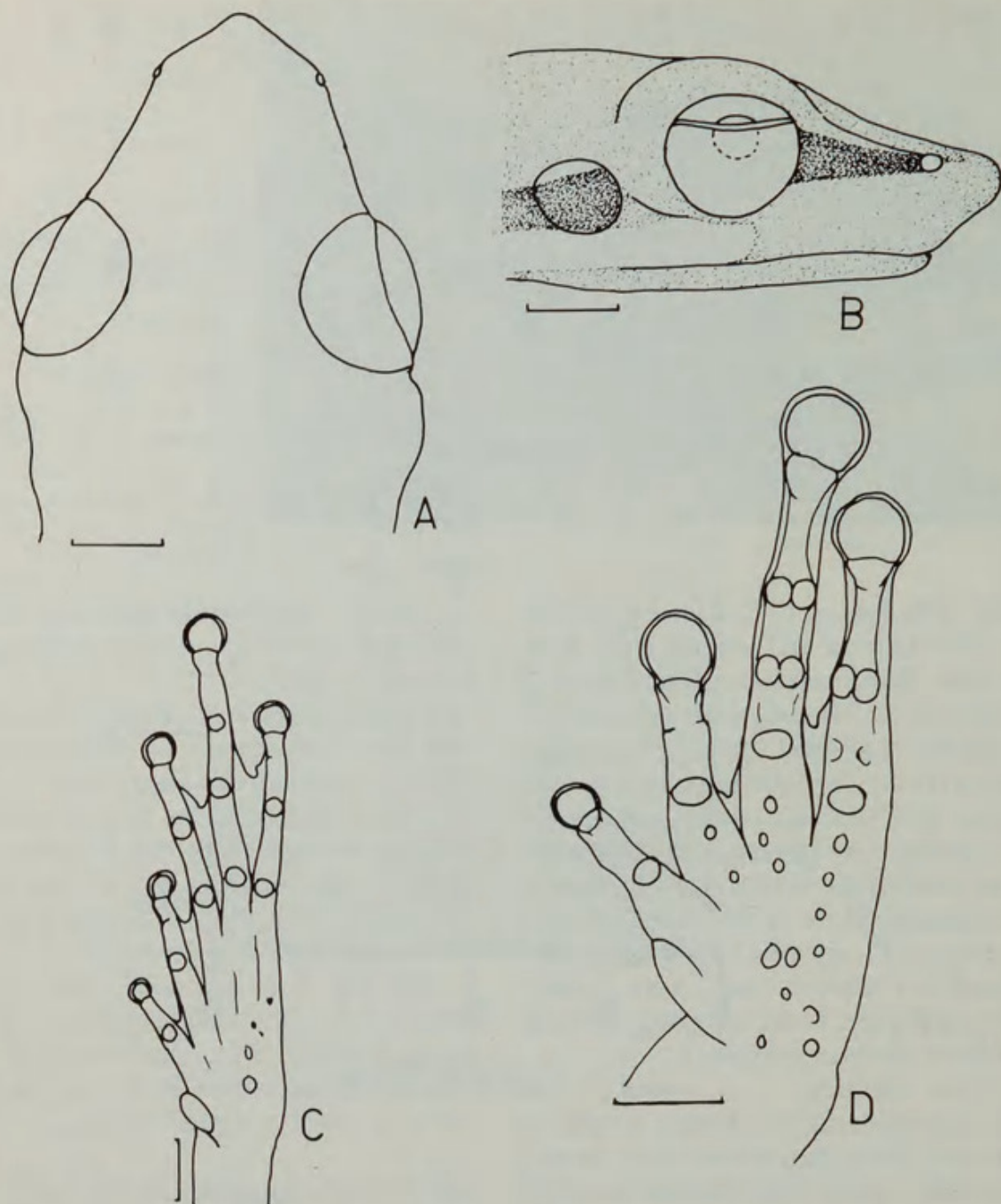


Fig. 4.—*Litoria olongburensis* Holotype (J22652). A. Dorsal aspect of the head, B. Lateral aspect of the head, C. Ventral aspect of the left foot, and D. Ventral aspect of the left hand. Line equals 1 mm.

29.xii.1973; J27500 Ditto, xi.1973; J27493 Teewah Creek, Cooloola, G. J. Ingram & G. Czechura, 30.xii.1973; J28230-1 Teewah Creek, Cooloola, G. J. Ingram & R. Raven, 13.vii.1973; J28229 Bribie Island, southeast Queensland, D. Barry, 30.xi.1976; J22954-5 3 km from Pt. Look-out Dunwich Road, North Stradbroke Island, C. Corben & G. J. Ingram, 10.iii.1973; DSL 713 Brown Lake, North

Stradbroke Island, C. Corben, 25.iv.1972; NE New South Wales: J28433 Tick Gate Swamp, nr. Woolgoolga, B. Timms, 25.iii.1977.

### Diagnosis

A small, slender treefrog with pointed protruding snout. It can be distinguished from any other Australo-papuan treefrogs by the following combination of characters:



1. small, slender treefrog, less than 22 mm in SVL; 2. pointed protruding snout; 3. presence of vomerine teeth; 4. prominent brown loreal streak from nostril to eye; 5. prominent brown streak from behind eye through tympanum to halfway down the flank; 6. prominent cream whitish streak from below the eye to halfway down the flank, lying ventral to the brown head streak.

### Description of holotype

SVL 21.4 mm; TL 12.0 mm, 56.1% of SVL; head narrow, HW 6.0 mm, 28.0% of SVL; EN 2.2 mm; IN 2.3 mm; IN/EN 104.5; SE 4.0 mm; EN/SE 55.0; ED 2.5 mm; TW 1.5 mm, 60.0% of eye diameter.

Tip of snout pointed (fig. 4A); snout protruding beyond lower jaw (fig. 4B); canthus rostralis sharp, angular in cross section; loreal region flat, vertical; dorsal view of head pointed; tympanum more or less distinct; supratympanic fold absent; tongue oval, free posteriorly; vomerine teeth in short rows at level of anterior edge of choanae; upper jaw toothed.

Distal segment of fingers expended into disc; its diameter is approximate by half the tympanum width; length of fingers from shortest to longest 1-2-4-3; phalangeal formula of hand 2-2-3-3. Subarticular tubercles present, one each on 1st and 2nd fingers, two on 4th finger, and three on 3rd finger; distal subarticular tubercle of 4th finger, and the two distal subarticular tubercles of 3rd finger are bifid. There is one inner and a small indistinct outer metacarpal tubercle; supernumerary tubercles present of palmar region and on the metacarpals.

Fingers slightly webbed between 1st and 2nd fingers free of web; web between 2nd and 3rd fingers reaches the proximal subarticular tubercles; web between 3rd and 4th fingers reaches the 2nd subarticular tubercle of the 4th finger and halfway down the proximal phalanx of the 3rd finger (fig. 4D).

Hindlimbs long; distal segment of toes expanded into disc with ventrol-marginal groove; length of toes from shortest to

longest 1-2-3-5-4; subarticular tubercles present, one each on 1st and 2nd toes, two each on 3rd and 5th toes, and three on 4th toe; supernumerary tubercles arranged in rows along the metatarsals; inner metatarsal tubercle oval, and the outer one is small rounded.

Toes moderately webbed; reaching the proximal subarticular tubercle of 1st toe, base of penultimate phalanx on outer margin of 2nd, 3rd and inner margin of 5th toes; it reaches the 3rd subarticular tubercle on outer margin, and the 2nd subarticular tubercle on inner margin of the 4th toe; it reaches the proximal subarticular tubercle on inner margin of 3rd toe, and halfway along the inner margin of the metatarsal of the 2nd toe (fig. 4C).

Dorsal surface shagreen; abdomen and postero-ventral surfaces of the thighs coarsely granular; throat lightly granular. A skin fold across chest present. Pupil horizontally oval.

### Colour

In life uniform light brownish; a dark brown loreal streak runs from eye to nostril, and a brown head streak from behind the eye through tympanum to halfway down the flank; the head streak is bordered ventrally by a cream maxillary streak; ventral surfaces of body and limbs cream; throat peppered with brown pigments.

In preservative the dorsal colour is dull brown, limbs greyish brown, and ventral surfaces white cream; throat peppered with brown.

### Variation

The ten paratypes differ little from the holotype: SVL 13.6-28.8 (mean  $24.24 \pm 1.580$ ); TL/SVL 50.7-88.1 (mean  $53.77 \pm 0.838$ ); HW/SVL 27.1-33.8 (mean  $28.49 \pm 0.696$ ); IN/EN 73.4-100.0 (mean  $88.0 \pm 3.564$ ); TW/ED 48.3-74.1 (mean  $58.97 \pm 2.938$ ); EN/SE 63.8-68.8 (mean  $65.15 \pm 0.695$ ). The one juvenile specimen differs from the adults by a markedly brownish pigmented throat.



## Call

To the ear, the call of *L. olongburensis* is an uneven trill similar in effect to the call of *L. bicolor*.

## Habitat

*Litoria olongburensis* occurs along creeks and in marshy or swampy lowland habitats amongst emergent vegetation and reeds in the low pH waters of the wallum. Ingram and Corben (1975) termed it an "acid" frog, along with *L. freycineti*, *L. cooloolensis* and *Ranidella tinnula*, because these species are confined to the sandy heaths and their acidic waters.

## Remarks

Based on morphological evidence *L. olongburensis* is more closely related to *L. dorsalis* and *L. microbelos* than to *L. adelaidensis*. The presence of vomerine teeth is shared with *L. dorsalis* and *L. adelaidensis*, and the distinct head streak and body colouration are shared with *L. microbelos*.

The occurrence of *L. olongburensis* in SE Queensland and *L. adelaidensis* in Western Australia suggests that the *Litoria dorsalis* species group originated in Australia. Not until more information is known could satisfactory phylogenetic relationships within the *Litoria dorsalis* species-group be deduced.

## Distribution

Southeast Queensland and northeastern New South Wales. Fraser Island and Cooloola, south to Caloundra, Beerwah, Moreton and North Stradbroke Island in Queensland. In New South Wales, Evans Head south to Iluka (G. & R. Czechura pers. comm.), Lake Hiawatha near Grafton (B. Timms pers. comm.) and Woolgoolga nr. Coffs Harbour.

## Etymology

The specific name refers to the aboriginal

tribe, Olongbura, who once lived in the Northern half of Fraser Island.

## Other material examined:

*L. adelaidensis* (DSL 3016-19, 4719, 4723-24).

## Acknowledgements

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