

## LITORIA ELECTRICA: A NEW TREEFROG FROM WESTERN QUEENSLAND

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*Litoria electrica* sp. nov. is a member of the *L. rubella* complex. Morphologically, it is very similar to *L. rubella* but readily distinguished by its distinctive colour-pattern and mating call. *L. electrica* inhabits semi-arid country in northwest and west central Queensland. It is sympatric with *L. rubella*. A lectotype for *Hyla rubella* Gray, 1842, is designated. □ *Litoria electrica*, *Litoria rubella*, *Hylidae*, *Queensland*.

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In 1975, at Polygammon Creek, west central Queensland (WCQ), one of us (CC) heard a frog's call with which he was unfamiliar. When the frog was located and captured, he was convinced it was an undescribed species. The frog was very similar in morphology to *Litoria rubella*, which was also common at the locality. In 1981, Ingram found the frog again near Cloncurry, WCQ. Like Corben, he was impressed with the differences between the calls of the frog and nearby *Litoria rubella*.

In this paper, we describe the frog as a new species. Although it is generally very similar to *L. rubella*, we consider that the differences in the mating calls indicate the presence of specific-mate recognition systems (*sensu* Paterson, 1985)

maintaining the genetic isolation of two species in sympatry. In addition, the new species differs consistently, though subtly, in colouration and body form.

To check which taxon the name '*rubella*' designated, we examined two of the three syntypes of *Hyla rubella* Gray, 1942 (British Museum (Natural History) numbers 1947.2.24.7 and 1947.2.24.9: we select the latter as lectotype) from Port Essington, Northern Territory. The syntypes are typical frogs of the taxon traditionally called *Litoria rubella* (*sensu* Copland, 1957), hence the name has been correctly applied. Despite fading, they lack the brown dorsal bars and the brown blotching on the posterior of the thighs of the new taxon.

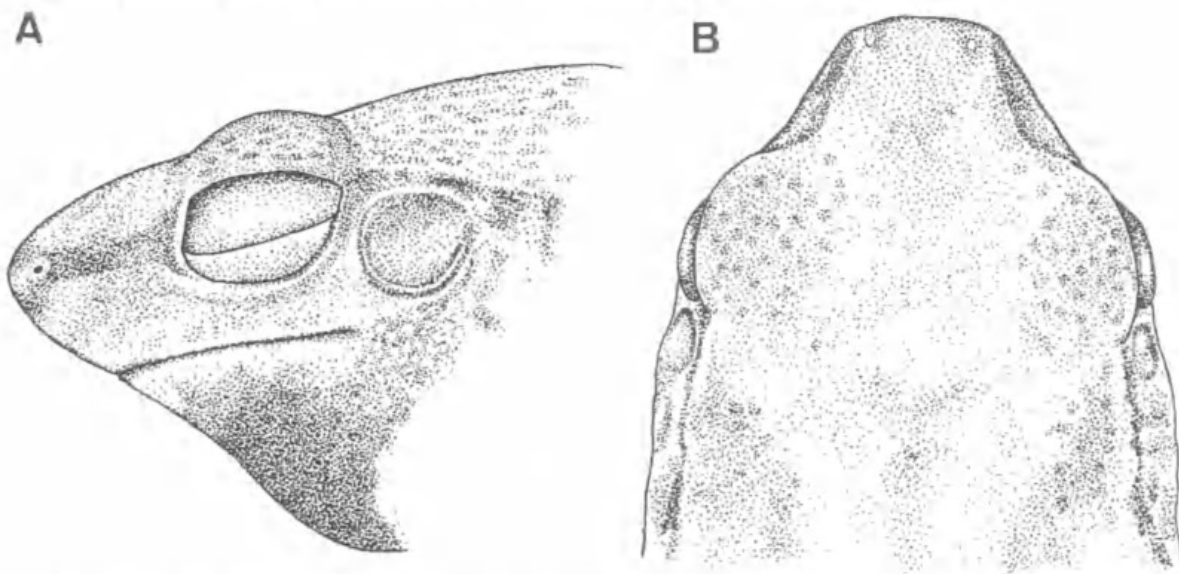


FIG. 1. *Litoria electrica* sp. nov., holotype, J38963. A. Lateral view of head. B. Dorsal view of head.

The following abbreviations are used in the text: SV - snout-vent length; TL - tibial length; HW - width of head at broadest part; ED - diameter of eye opening between anterior and posterior borders; EN - distance between the external nostril and anterior border of eye opening; IN - distance between the two external nostrils. Specimens with registration numbers prefixed by 'J' and 'R' are housed in the Queensland and Australian Museums respectively. Measurements are in millimetres and ratios are expressed as percentages. The sonograms were made on a Kay Sonograph.

*Litoria electrica* sp. nov.  
(Figs 1-4)

MATERIAL EXAMINED

HOLOTYPE: Adult ♂, J38963, 25.1 km E of Cloncurry on Julia Creek-Cloncurry road, WCQ (20°43'S, 140°39'E). Collected by G.J. Ingram and G.V. Czechura on 21 January, 1981.

PARATYPES: Floraville, NWQ (R129391); Floraville Crossing, NWQ (R129393-396, 129407-16); Lawn Hill Station, NWQ (J49227-8); 13.7 km E of Cloncurry on Julia Creek-Cloncurry road, WCQ (J38964); 20 km E of Cloncurry on Julia Creek-Cloncurry road, WCQ (J38973-4); 25.1 km E of Cloncurry on Julia Creek-Cloncurry road, WCQ (J38976-7); Polygammon Creek, on Middleton-Hamilton Hotel road, WCQ (J27240-3).

DESCRIPTION OF HOLOTYPE

SV 38, TL 11, TL/SV 28.9, HW 9, HW/SV 23.7, HW/TL 81.8, ED 2.5, ED/HW 27.8, EN 3.0, IN 2.0, EN/IN 150.

Eye small. Snout pointed in lateral view; blunt in dorsal view. Canthus rostralis poorly defined, curving in then out to the nostril. Loreal region concave. Tympanic annulus prominent. Supratympanic fold present, poorly defined. Neck slightly elongate.

Subarticular tubercles on hand rounded, one each on first and second fingers and two each on third and fourth fingers; one outer metacarpal tubercle. Subarticular tubercles on feet rounded, one each on first and second toes, two each on third and fifth toes, three on fourth toe; two metatarsal tubercles, outer small, inner elongated. Hands and toes poorly webbed. Finger disks large, bigger than toe disks. Nuptial pads present, covering three-quarters of dorsal and lateral surfaces of first finger.

Dorsal surface of skin finely granular, ventral surfaces coarsely granular. Vocal sac distended.

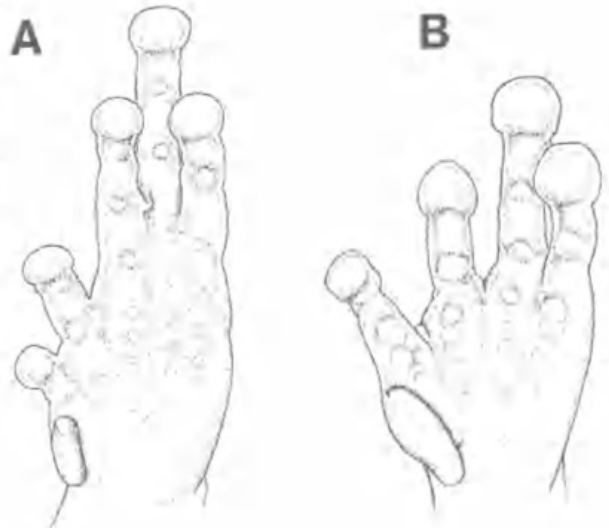


FIG. 2. *Litoria electrica* sp. nov., holotype, J38963. A. Underside of foot. B. Underside of hand.

Ground colour of dorsum yellow-brown, with an indistinct chocolate mark across the upper back; a chocolate forward-pointing chevron across the lower back; also a chocolate blotch above the cloaca. Sides speckled and blotched with chocolate markings that tend to coalesce above and form a distinct dark line running from nostril to eye, beginning again behind eye and continuing to hind leg. Back of thighs with brown and yellow (white in preservative) blotching. Skin of vocal sac dark grey. Nuptial pads purple-brown.

VARIATION IN THE PARATYPES

There are 26 paratypes. SV 26-38 (mean 31.1), TL 9-12 (mean 10.2), TL/SV 30-35 (mean 33.1), HW 7-10 (mean 8.6), HW/SV 26-31 (mean 27.9), HW/TL 78-91 (mean 84.4), ED 2.4-3.4 (mean 2.77), ED/HW 28-35 (mean 32.1), EN 2.6-3.4 (mean 3.14), IN 2.0-2.9 (mean 2.47), EN/IN 100-149 (mean 127.9).

The two bars across the dorsum can vary from bold and well-defined to indistinct. The brown blotching on the back of the thighs can be faint.

DIAGNOSIS

*L. electrica* closely resembles *L. rubella*. It can be readily distinguished by the banded dorsal markings and the pattern on the posterior surface of the thigh. In *L. rubella*, this area is unicolourous or finely dusted with brown, whereas in *L. electrica* the area is patterned with well-defined dark blotches. In life, *L. electrica*

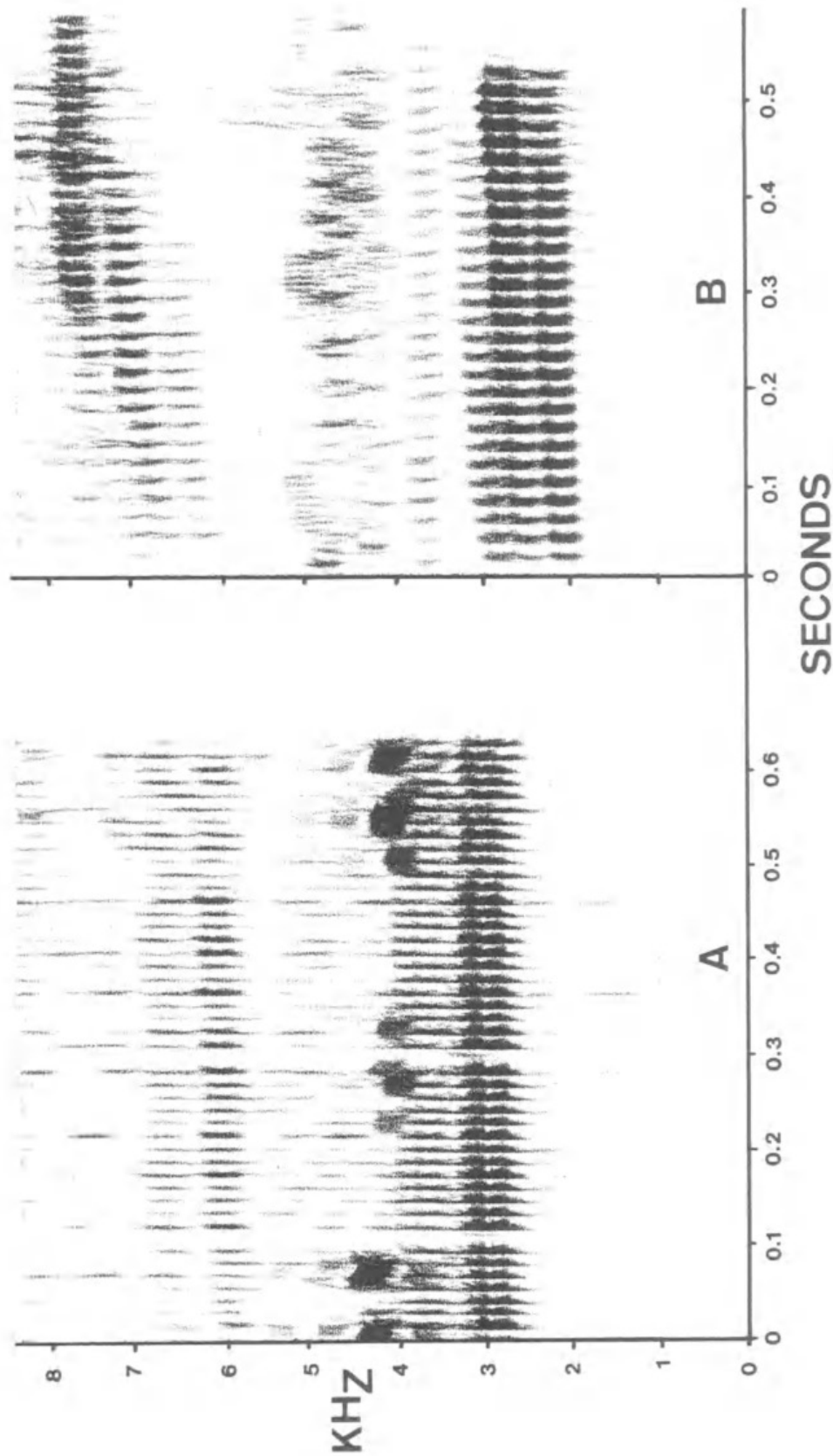


FIG. 3. Sonograms of calls. A. *L. electrica* sp. nov., recorded at Polygammon Creek, on Middleton-Hamilton Hotel road, WCQ, 27 October, 1975; the large dark patches at c. 4.5KHz are representations of the call of *Ranidella deserticola*. B. *L. rubella*, recorded at 8km E of Toowoomba, SEQ, 22

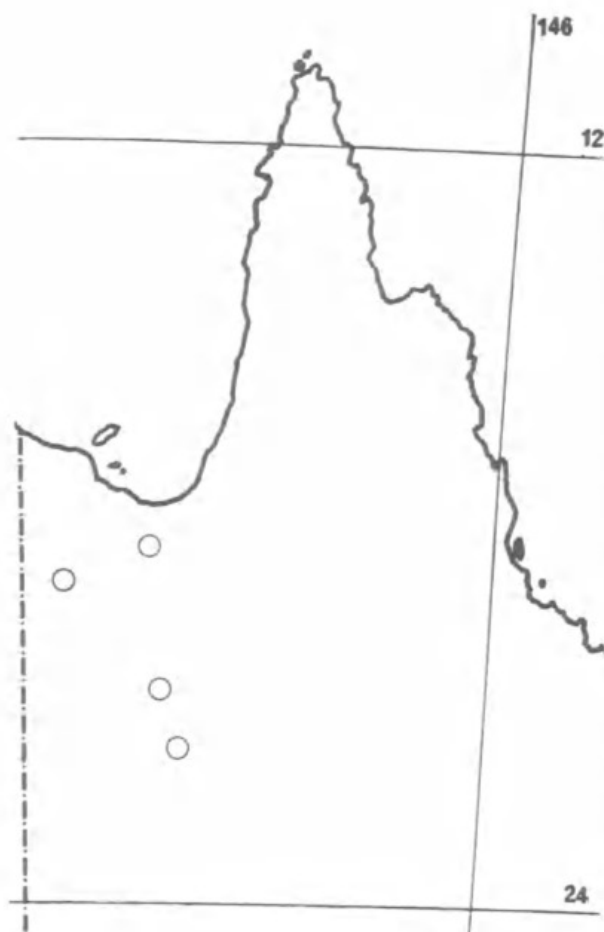


FIG. 4. Distribution of *L. electrica* sp. nov.

further differs from *L. rubella* by its longer necked appearance, darker irides, yellower colouration and distinctive mating call.

#### CALL

The call of *L. electrica* has a wavering quality that suggests the sound of a high voltage, long duration, electric arc. This appears to be due to irregular variations in amplitude between pulses of a call. Moreover, some pulses may be left out altogether (Fig. 3A)

*L. electrica* has a higher pitched call compared with that of *L. rubella* (3.1 vs 2.0-2.7KHz respectively. See Fig. 3). As well, the pitch remains

much the same throughout the call while that of *L. rubella* rises. The pulse repetition rate is higher than in *L. rubella* (70 vs 55Hz respectively) and the duration is longer (585 vs 510 milliseconds respectively). Thus, the number of pulses per call is much greater in *L. electrica* (40+ vs 30).

#### DISTRIBUTION

Known only from the semi-arid northwest and central west of Queensland (Fig. 4) in the Gulf drainage: Gregory, Leichardt and Flinders Rivers; and in the Lake Eyre drainage: Hamilton River.

#### REMARKS

During breeding, *L. electrica* is usually found calling from the ground next to, or from low emergent vegetation in, temporary water.

#### ACKNOWLEDGEMENTS

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