

**A new genus and two new subspecies of tree frog from south-east Australia.**

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**ABSTRACT**

As part of an audit of the Australasian herpetofauna, the Australasian Tree Frogs (Amphibia: Anura: Pelodyadidae) was scrutinized by Hoser (2020).

That paper formally named 62 new species and 12 new subspecies.

The genus *Euscelis* Fitzinger, 1843, type species: *Hyla lesueurii* Dumeril and Bibron, 1841, was resurrected for the relevant species group, being 23.5 MYA divergent from nearest relatives.

However, that name is a junior homonym for *Euscelis* Brullé, 1832 being a leafhopper genus in the subfamily Deltocephalinae.

This paper therefore formally assigns a new genus name to the group, being *Aaarvo* gen. nov..

Two unnamed subspecies inadvertently omitted from being named in that paper, being within the *Hyla lesueurii* Dumeril and Bibron, 1841 complex are formally named herein according to the rules of the *International Code of Zoological Nomenclature* (Ride et al. 1999).

Conservation of Australian fauna cannot be properly executed in the absence of a full inventory of taxa and this paper represents an important step in that direction.

**Keywords:** Taxonomy; nomenclature; frog; tree frog; Pelodyadidae; Australia; New South Wales; Victoria; Litoria; Euscelis; lesueurii; new genus; Aaarvo; new subspecies; invadens; riparia.

**INTRODUCTION**

As part of an audit of the Australasian herpetofauna, the Australasian Tree Frogs (Amphibia: Anura: Pelodyadidae) was scrutinized by Hoser (2020).

That paper formally named 62 new species and 12 new subspecies.

The genus *Euscelis* Fitzinger, 1843, type species: *Hyla lesueurii* Dumeril and Bibron, 1841, was resurrected for the relevant species group, being 23.5 MYA divergent from nearest relatives.

However, that name is a junior homonym for *Euscelis* Brullé, 1832 being a leafhopper genus in the subfamily Deltocephalinae.

This paper therefore formally assigns a new genus name to the group, being *Aaarvo* gen. nov..

Two unnamed subspecies inadvertently omitted from being named in that paper, being within the *Hyla lesueurii* Dumeril and Bibron, 1841 complex (now placed in the genus *Aaarvo* gen. nov.) are formally named herein according to the rules of the *International Code of Zoological Nomenclature* (Ride et al. 1999) as amended (ICZN 2012).

Conservation of Australian fauna cannot be properly executed in the absence of a full inventory of taxa and this paper represents an important step in that direction.

**MATERIALS, METHODS AND RESULTS**

All are as for Hoser (2020).

The relevant subspecies named in this paper were shown by Donnellan and Mahony (2004) to have species-level divergence from the nominate form of "*Hyla lesueurii* Dumeril and Bibron, 1841" with a type locality of Port Jackson, Sydney, New South

Wales, or nearby.

Duellman et al. (2016) gave a 5.8 MYA divergence between "*Aaarvo lesueurii sensu lato* and other species in the genus. Donnellan and Mahony (2004) showed species-level divergences in some populations of putative *A. lesueurii* which they called *Litoria lesueurii* in their phylogeny at Fig. 2., although their results were ambiguous.

Call differences between Goulburn River Valley populations in Victoria (west of the Great Dividing Range) and the nominate form from coastal New South Wales, identified by myself while doing fieldwork in the Jamieson River area in Victoria, flagged a potentially unnamed subspecies.

Notwithstanding significant individual variation between specimens, the Goulburn River Valley populations are sufficiently divergent to warrant being formally named as a new subspecies and so are formally identified herein as *Aaarvo lesueurii invadens* subsp. nov..

The geographically isolated population from west of Melbourne is also formally named as a new subspecies, being *Aaarvo lesueurii riparia* subsp. nov..

Both are formally named according to the rules of the *International Code of Zoological Nomenclature* (Ride et al. 1999) as amended (ICZN 2012).

In terms of online references within this paper, they were checked as correct, online and accurate as of 7 January 2025.

In terms of the formal descriptions below, the descriptions are of adult male specimens, noting that in the relevant species and/or subspecies, females do differ morphologically and are on average of larger adult size.

**AAARVO GEN. NOV.**

LSIDurn:lsid:zoobank.org:act:E136D74B-1343-498A-A215-4A02A218C888

**Type species:** *Hyla lesueurii* Dumeril and Bibron, 1841.

**Diagnosis:** The genus *Aaarvo* gen. nov. is separated from all other Australasian Tree Frogs

(Pelodyadidae) by the following unique suite of characters:

Colouration is a pale fawn to dark brown above, usually immaculate, or with darker markings, ranging from flecks to blotches and including one that forms a transverse bar between the eyes; the tympanum has a pale rim; dorsal surface generally smooth or sometimes leathery, with one species having slight warts; webbing may reach the disc of the fifth toe, but usually not, and generally extending no more than halfway along the penultimate phalanx; discs on fingers and toes are small and inconspicuous and barely wider than digits; fingers unwebbed; second finger slightly longer than first; anterior head stripe is present, usually narrow but always continuous, but sometimes ill-defined, not interrupted by a vertical bar in front of the eye; posterior head stripe is narrow, no more than half as wide as and not enclosing the tympanum; there is a moderate inner metatarsal tubercle and a small outer metatarsal tubercle is present; vomerine teeth present; groin is yellow and heavily blotched with black. Whitish ventrally with granular skin. No dorsolateral skin fold.

Duellman *et al.* (2016) found that the nearest living relative of this genus diverged from these species 23.5 MYA.

The genus *Euscelis* Fitzinger, 1843, type species: *Hyla lesueurii* Dumeril and Bibron, 1841, was resurrected by Hoser (2020) for the relevant species group, being 23.5 MYA divergent from nearest relatives. However, that name is a junior homonym for *Euscelis* Brullé, 1832 being a leafhopper genus in the subfamily Deltocephalinae.

**Distribution:** Wetter parts of the east coast of south-east Australia, extending, from Victoria, through New South Wales and southeast Queensland and then to the wet tropics of north-east Queensland.

**Etymology:** "Aaarvo" is Australian slang for afternoon, being a time of day that may people locate these frogs in their riverine habitats.

**Content:** *Aaarvo lesueurii* (Dumeril and Bibron, 1841) (type species); *A. booroolongensis* (Moore, 1961); *A. jungguy* (Donnellan and Mahony, 2004); *A. wilcoxi* (Günther, 1864).

**AAARVO LESUEURII INVADENS SUBSP. NOV.**

LSIDurn:lsid:zoobank.org:act:18E8E1F4-9521-42DC-B32C-B3CF5BFE1B7D

**Holotype:** A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.85463 collected from Jamieson, Victoria, Australia, Latitude -37.3 S., Longitude 146.133 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Nine preserved specimens at the Australian Museum in Sydney, New South Wales, Australia, specimen numbers R.85466, R.85468, R.85469, R.85471, R.85475, R.85476, R.85479, R.85480 and R.85508 all collected from Jamieson, Victoria, Australia, Latitude -37.3 S., Longitude 146.133 E.

**Diagnosis:** Until now *Aaarvo lesueurii invadens* subsp. nov. from the Goulburn River drainage system in north-east Victoria, west of the Great Dividing Range and *A. lesueurii riparia* subsp. nov. endemic to the Lerderderg River and upper Maribyrnong River basins in central south Victoria, have been treated as the same taxon as nominate *A. lesueurii* (Dumeril and Bibron, 1841) with a type locality of Port Jackson (Sydney), New South Wales, Australia.

*A. lesueurii invadens* subsp. nov. is separated from the nominate form of *A. lesueurii* by the hidden colours at the back of the hind limbs that are aqua blue in colour, versus a light and more faded yellow bluish green in colour in the nominate form. These coloured areas are also well separated in *A. lesueurii invadens* subsp. nov. with distinct uncoloured "brown" zones in the midbody area versus barely so in the nominate form of *A. lesueurii*.

*A. lesueurii invadens* subsp. nov. has heavy black peppering on the lower parts of the upper labial area, versus none or lightly

so in the nominate form of *A. lesueurii*. The back of *A. lesueurii invadens* subsp. nov. has limited dark markings or faded blotching, versus a lot in the nominate form.

*A. lesueurii riparia* subsp. nov. differs from the previous two subspecies in that the upper labial area is either immaculate or any black present is in the form of small spots, usually on the jawline, as opposed to peppering.

Under the forelimbs and anterior flank, yellowish colour in *A. lesueurii riparia* subsp. nov. is in the form of well-defined blotches, rather than as an ill-defined overlay or colour change as seen in the other two subspecies, enabling separation of the subspecies *A. lesueurii riparia* subsp. nov..

*A. lesueurii* is separated from all other species in the genus *Aaarvo* Fitzinger, 1843, type species *Hyla lesueurii* Dumeril and Bibron, 1841 by having bright blue or green-yellow spotting in the hidden parts of the hind limbs, versus white cream or otherwise dull coloured spots in the other species as listed in Hoser (2020).

The species within *Aaarvo* Fitzinger, 1843 are separated from all other Australasian tree frogs by their call which is a soft "qrk, qrk, qrk", and/or the following unique combination of characters:

Pale fawn or dark brown above, variable in colour and intensity depending on time of day, temperature and other factors. Usually there are some form of darker flecks, or blotching in the dorsal colour. This includes a light then dark transverse bar across the anterior and posterior of the eyes.

There is a moderately well-defined black canthal streak that runs from the snout, unbroken, to the eye, above the distinct tympanum and to the upper axilla of the forelimb. Groin is yellowish and patched in the hidden areas at rear of limbs with spots that are blue, greenish-yellow, well defined or otherwise ranging to whitish and pale and poorly defined.

Venter is mainly whitish.

Skin is smooth, shagreened above, smooth on the throat and slightly granular ventrally. There is no dorsolateral skin fold. Fingers are free and with no webbing. Toes have well developed webbing. There is a moderate inner and minute outer metatarsal tubercle. Adults range from 45 to 75 mm.

*A. lesueurii invadens* subsp. nov. is depicted in life online at:

<https://www.flickr.com/photos/reptileshow/54249717078/>

and

<https://www.flickr.com/photos/reptileshow/54249901750/>

and

<https://www.inaturalist.org/observations/257550538>

and

<https://www.inaturalist.org/observations/257550618>

*A. lesueurii lesueurii* of the nominate form is depicted in life in Anstis (2013) on pages 228 (right) to 230, Cogger (2014) on page 170 at top right and online at:

<https://www.inaturalist.org/observations/249830950>

and

<https://www.inaturalist.org/observations/194559437>

*A. lesueurii riparia* subsp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/92043606>

and

<https://www.inaturalist.org/observations/254068325>

**Distribution:** *A. lesueurii invadens* subsp. nov. is presently treated as endemic to the upper Goulburn River basin in north-east Victoria, where it is a riverine species. It may also have jumped the Great Dividing Range to the south of herA.

**Etymology:** The subspecies name "*invadens*" reflects the fact that it is an invasive subspecies in that it readily enters and inhabits riverine habitats heavily altered by human activity, often to the detriment of less adaptable species, like *Fiacumminganurea timdalei* Hoser, 2020 that otherwise occupy the same riverine areas.

Heavily human trafficked and altered parts of the Upper Goulburn River system appear to have increased populations of *A. lesueurii invadens* subsp. nov. versus *F. timdalei* Hoser, 2020 which otherwise remain relatively strong in the less trafficked areas only.

**Conservation:** There are no known threats to the subspecies *A. lesueurii invadens* subsp. nov. and at the present time, there is no

need for separate conservation action or regulation of the species at all.

General monitoring of populations over long periods is the only immediate conservation action required.

Any other money likely to be spent, is better spent elsewhere!

**AAARVO LESUEURII RIPARIA SUBSP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:F66C4BD8-D770-4722-A6DE-207CB514AD20

**Holotype:** A preserved specimen at the Museums Victoria Herpetology Collection, Melbourne, Victoria, Australia, specimen number D9546 collected from the Wombat State Forest, Blackwood, Victoria (Lerderderg River drainage), Australia, Latitude -37.48 S., Longitude 144.32 A.

This government-owned facility allows access to its holdings.

**Paratypes:** Nine preserved specimens at the Museums Victoria Herpetology Collection, Melbourne, Victoria, Australia, specimen numbers D9548, D9549, D9551, D9553, D9556, D9713, D9714, D9715 and D10140 collected from the Wombat State Forest, Blackwood, Victoria (Lerderderg River drainage), Australia, Latitude -37.48 S., Longitude 144.32 A.

**Diagnosis:** Until now *Aaarvo lesueurii invadens subsp. nov.* from the Goulburn River drainage system in north-east Victoria, west of the Great Dividing Range and *A. lesueurii riparia subsp. nov.* endemic to the Lerderderg River and upper Maribyrnong River basins in central south Victoria, have been treated as the same taxon as nominate *A. lesueurii* (Dümeril and Bibron, 1841) with a type locality of Port Jackson (Sydney), New South Wales, Australia.

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*A. lesueurii invadens subsp. nov.* has heavy black peppering on the lower parts of the upper labial area, versus none or lightly so in the nominate form of *A. lesueurii*. The back of *A. lesueurii invadens subsp. nov.* has limited dark markings or faded blotching, versus a lot in the nominate form.

*A. lesueurii riparia subsp. nov.* differs from the previous two subspecies in that the upper labial area is either immaculate or any black present is in the form of small spots, usually on the jawline, as opposed to peppering.

Under the forelimbs and anterior flank, yellowish colour in *A. lesueurii riparia subsp. nov.* is in the form of well-defined blotches, rather than as an ill-defined overlay or colour change as seen in the other two subspecies, enabling separation of the subspecies *A. lesueurii riparia subsp. nov.*

*A. lesueurii* is separated from all other species in the genus *Aaarvo* Fitzinger, 1843, type species *Hyla lesueurii* Dümeril and Bibron, 1841 by having bright blue or green-yellow spotting in the hidden parts of the hind limbs, versus white cream or otherwise dull coloured spots in the other species as listed in Hoser (2020).

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Venter is mainly whitish.

Skin is smooth, shagreened above, smooth on the throat and slightly granular ventrally. There is no dorsolateral skin fold. Fingers are free and with no webbing. Toes have well developed webbing. There is a moderate inner and minute outer metatarsal tubercle. Adults range from 45 to 75 mm.

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<https://www.inaturalist.org/observations/92043606> and

<https://www.inaturalist.org/observations/254068325>

**Distribution:** *A. lesueurii riparia subsp. nov.* is presently treated as endemic to the Lerderderg River and upper Maribyrnong River basins in central south Victoria, where it is a riverine species.

The Yarra Valley, from which *A. lesueurii* of any form appears to be absent (save for specimens potentially translocated by people in recent years) appears to form a contemporary barrier that separates this subspecies from the others.

**Etymology:** The subspecies name "*riparia*" reflects the fact that it is a riparian subspecies.

**Conservation:** There are no known threats to the subspecies *A. lesueurii riparia subsp. nov.* even though it is range-restricted and currently there is no need for separate conservation action or regulation of the species at all.

General monitoring of populations over long periods is the only immediate conservation action required.

Any other money likely to be spent, is better spent elsewhere!

**REFERENCES CITED**

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**CONFLICT OF INTEREST - NONE.**



*A. lesueurii invadens subsp. nov.*  
from Jamieson, Victoria.