FROGCALL

THE FROG AND TADPOLE STUDY GROUP NSW Inc.
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ABN: 34 282 154 794

NEWSLETTER No. 178 APRIL 2022

Litoria chloris Springbrook NP South-East QLD Image by Peter Spradbrow

You are invited to our FATS meeting. It's free. Everyone is welcome.

Arrive from 6.30 pm or a 7pm start.

Friday 1st April 2022

FATS meets at the Education Centre, Bicentennial Pk, Sydney Olympic Park

Easy walk from Concord West Railway Station and straight down Victoria Ave. Take a torch in winter.

By car: Enter from Australia Ave at the Bicentennial Park main entrance, turn off to the right and drive through the park. It's a one way road. Turn right into P10f car park.

Or enter from Bennelong Rd/Parkway. It's a short stretch of two way road. Turn left.

Park in P10f car park, the last car park before the Bennelong Rd. exit gate.

FATS MEETING 7PM FRIDAY 1st APRIL 2022

At the time of printing, there were no restrictions, (due to COVID19), by SOPA, for our FATS meeting.

6.30 pm Lost frogs seeking forever homes: Please bring your membership card and cash $50 donation. Sorry, we don't have EFTPOS. Your NSW NPWS amphibian licence must be sighted on the night. Adopted frogs can never be released. Contact us before the night and FATS will confirm if any frogs are ready to rehome.

7.00 pm Welcome and announcements.

7.30 pm The main speaker is Sarah Stock from Newcastle Uni. She is talking about "Genetic isolation in *Litoria littlejohni* and *Litoria watsoni*". Peter Spradbrow will speak about Lismore area Frogs. Michelle Toms will talk about the recent FATS Smiths Lake field trip.

9.30 pm Show us your frog images. Tell us about your frogging trips or experiences. Guessing competition, frog adoptions continue, supper, relax and chat with frog friends and experts.

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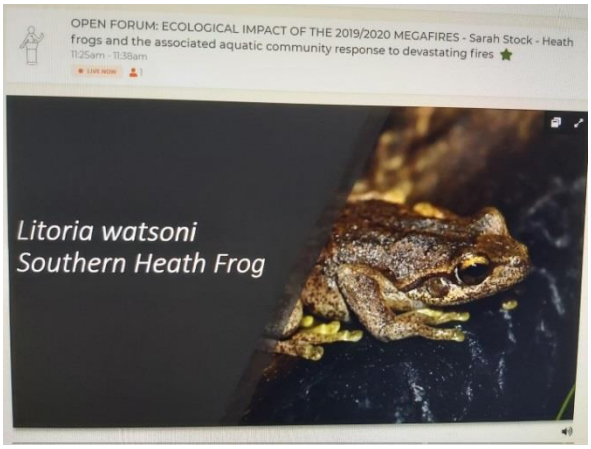
NEXT FATS MEETING FRIDAY 1 APRIL 2022

The main speaker at the FATS April meeting will be Sarah Stock from Newcastle University. She will be talking about genetic isolation in *Litoria littlejohni* and *Litoria watsoni*.



These are two poorly known frogs that were, until recently, thought to be the same species.

"The southern and northern heath frogs *Litoria watsoni* and *Litoria littlejohni* are sister treefrog species experiencing an enigmatic decline across large parts of their range. Their naturally low abundance, uncommon habit of breeding sporadically throughout the year, and restriction to high elevations, make these species some of the most poorly recorded frogs in Australia."

Introduction statement to the abstract for "The Decline of Australian Heath Frogs and Summary of Current Threats." Authors Kaya Klop-Toker, Samantha Wallace, Sarah Stock and Matt W Hayward

Peter Spradbrow and frogs of the Lismore NSW area

Peter Spradbrow will talk about frogs of the Lismore area See map bottom left of page. The *Litoria chloris* below is from Springbrook NP (Natural Bridge section) in South-East QLD Image by Peter Spradbrow.

Michelle Toms will talk about the recent March 2022 FATS Smiths Lake field trip.

Smiths Lake 3/2019 images above & below Andre Rank

FATS AGM NOTICE FRIDAY 5 AUGUST 2022

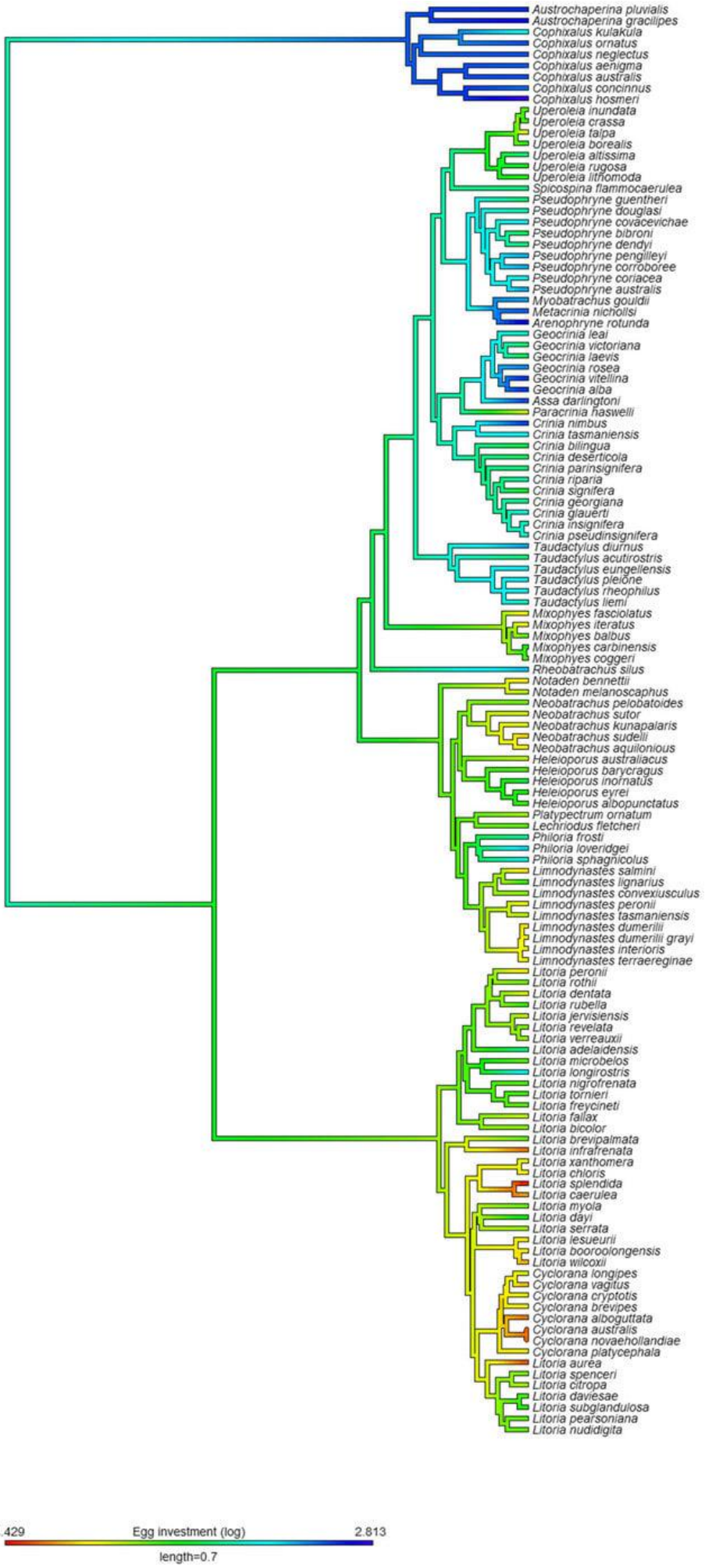
The FATS AGM will be held on Friday 5/8/2022, commencing 7pm. FATS meets at the Education Centre, Bicentennial Park, Sydney Olympic Park.

If you would like to ask any questions about joining the FATS committee, please give us a call. Contact our President Arthur White at least two weeks before the meeting for further information or to submit items.

We appreciate fresh ideas and new members on our committee. No experience required. The committee meets 6 times a year. No task commitments or time expected of committee members, other than what you are able to spare.

See contacts details on page 11. **Arthur White**

QUANTITY VERSUS QUALITY: A BALANCE BETWEEN EGG AND CLUTCH SIZE AMONG AUSTRALIAN AMPHIBIANS IN RELATION TO OTHER LIFE-HISTORY VARIABLES



Abstract Due to resource limitations and physical constraints of the reproducing female, a trade-off must be made between the number of eggs she produces and their size per clutch. This generally results in an inverse relationship between egg and clutch size, which has been found repeatedly across animal groups.

Few studies have investigated this relationship with respect to selection pressures, environmental variables and other lifehistory traits. We aimed to test current hypotheses regarding the trade-off between egg and clutch size among the three Australian Anuran families (Hylidae, Myobatrachidae and Microhylidae). Specifically, we used a comparative phylogenetic approach to look at the influence of environmental selection pressures (egg-laying location, environment persistence and bioregion) and life-history traits (female body size, egg development type, parental care level, breeding period and temporal breeding pattern) on this trade-off.

As expected, a strong inverse relationship was found between egg and clutch size. Smaller clutches of larger eggs tended to be produced by species with smaller female sizes that (i) oviposit terrestrially and arboreally compared with aquatically, (ii) have prolonged compared with explosive breeding periods, (iii) directly develop compared with having a feeding tadpole stage and (iv) exhibit high compared with low levels of parental care. These findings show that the shift towards producing larger eggs in smaller clutches is associated with the transition away from the ancestral amphibian reproductive pattern. We highlight how the balance made when provisioning finite resources to egg within a clutch differs between species that have evolved diverse life histories, providing a framework for future examinations of the trade-off between egg and clutch sizes among anurans.

We dedicate this study to the incredible and comprehensive natural history work of Marion Anstis, which has allowed the formulation of this study.

JOHN GOULD,1 CHAD BERANEK,1,2 JOSE VALDEZ3 AND MICHAEL MAHONY1 1 Conservation Science Research Group, School of Environmental and Life Sciences, University of Newcastle, Callaghan, New South Wales, 2308, Australia (Email: john.gould@uon.edu.au); 2 FAUNA Research Alliance, PO Box 5092, Kahibah, New South Wales, 2290, Australia; and 3Department of Bioscience – Kalø, Aarhus University, Gren_avej 14, 8410, Rønde, Denmark **Austral Ecology (2022) 0, 1–13** **Continued on page 4**

Continued from page 3

AUSTRALIAN AMPHIBIANS EGG & CLUTCH SIZE

A new publication is out from the University of Newcastle, from Dr. John Gould, Dr. Chad Beranek, Dr. Jose Valdez and Prof. Michael Mahony, who investigated life history patterns of Australian amphibians in relation to egg size and clutch size.

This publication was inspired by the work of Marion Anstis and her phenomenal book "Tadpoles and Frogs of Australia". This book is essentially the bible of Australian amphibian tadpoles and is a comprehensive work which enabled us to extract morphological and life history data to analyse the trends presented in this publication.

In summary, we found obvious trends across Australian amphibians: smaller clutches of eggs were associated with larger egg sizes, terrestrial oviposition, prolonged breeding periods, direct development and parental care. This is in-line with the classical "r-K type strategy continuum" theory, where r-types are boom and bust species with high reproductive output and low parental care and K-type is the opposite.

While many people associate K-type strategies with mammals, here we point out that this strategy exists in Australian amphibians, and indeed many species have some form of parental care and in turn also produce larger eggs with small clutch sizes.

I have included (on Facebook) photos of a few species from a wide range of genera with info regarding which strategy they fall into along the continuum.

I have also included a figure (page 3) from the publication which demonstrates a taxonomic representation of this continuum. Species are only included if there were egg and clutch size data available.

White-lipped tree frog *Litoria infrafrenata* - r type strategist

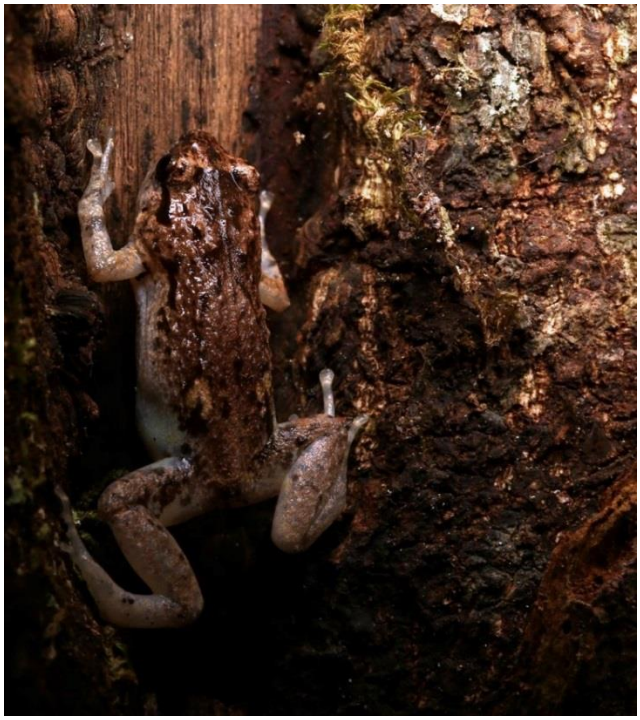
Any guesses as to which species of frog in Australia have the largest and smallest recorded clutch sizes? hint: the figure P3 will help to point you in the right direction. To read the open access publication you can click either of the following links:

https://www.researchgate.net/publication/358743297_Quantity_versus_quality_A_balance_between_egg_and_clutch_size_among_Australian_amphibians_in_relation_to_other_life-history_variables

https://onlinelibrary.wiley.com/doi/10.1111/aec.13154

Images and article on page 4 by Chad Beranek

https://www.jstor.org/stable/2459020 On r- and K-Selection



Ornate nursery frog *Cophixalus ornatus*
K type strategist

Alpine toadlet *Uperoleia altissima* - half way between r and K

TWO NEW FROG SPECIES FROM THE LITORIA RUBELLA SPECIES GROUP FROM EASTERN AUSTRALIA Abstract

The bleating tree frog (Litoria dentata) is one of the more prominent pelodryadid frogs of eastern Australia by virtue of its extremely loud, piercing, male advertisement call. A member of the Litoria rubella species group, L. dentata has a broad latitudinal distribution and is widespread from coastal and subcoastal lowlands through to montane areas. A recent mitochondrial DNA analysis showed a deep phylogeographic break between populations of L. dentata on the mid-north coast of New South Wales. Here we extended the mitochondrial survey with more geographically comprehensive sampling and tested the systematic implications of our findings with nuclear genome wide single-nucleotide polymorphism, morphological and male advertisement call datasets.

While similar in appearance and in male advertisement call, our integrative analysis demonstrates the presence of three species which replace each other in a north-south series. We redescribe *Litoria dentata*, which is restricted to coastal north-eastern New South Wales, and formally describe *Litoria balatus* sp. nov., from south-eastern Queensland, and *Litoria quiritatus* sp. nov., from the mid-coast of New South Wales to north-eastern Victoria.

ZOOTAXA ISSN 1175-5326 (print edition)
ISSN 1175-5334 (online edition) Accepted by M. Vences: 1 Nov. 2021; published: 22 Nov. 2021 1 Zootaxa 5071 (1): 001–041 https://www.mapress.com/j/zt/ Copyright © 2021 Magnolia Press Article
https://doi.org/10.11646/zootaxa.5071.1.1
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J. J. L. ROWLEY 1,2* , M. J. MAHONY 3 , H. B. HINES 4,5, S. MYERS 6,7 , L.C. PRICE8, G.M. SHEA 1,9& S. C. DONNELLAN 6 1 Australian Museum Research Institute, Australian Museum, 1 William St, Sydney 2010, Australia. 2 Centre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, NSW 2052, Australia. 3 School of Environmental and Life Sciences, The University of Newcastle, University Drive, Callaghan, 2308, Australia. michael.mahony@newcastle.edu.au; https://orcid.org/0000-0002-1042-0848 4 Department of Environment and Science, PO Box 64, Bellbowrie, Qld, 4070, Australia. Harry.Hines@des.qld.gov.au; https://orcid.org/0000-0001-5547-5693 5 Honorary Research Fellow, Biodiversity, Queensland Museum, PO Box 3300, South Brisbane, QLD 4101. 6 South Australian Museum, North Terrace, Adelaide, Adelaide, 5000, Australia. Steve.donnellan@samuseum.sa.gov.au; https://orcid.org/0000-0002-5448-3226 7 ALS Water Resources Group, 22 Dalmore Drive, Scoresby, Victoria, 3179, Australia. Steven.Myers@alsglobal.com; https://orcid.org/0000-0001-8885-8770 8 School of Biological Sciences, University of Adelaide, 5005, Australia. 9 Sydney School of Veterinary Science B01, University of Sydney, NSW 2006, Australia. glenn.shea@sydney.edu.au; https://orcid.org/0000-0002-0052-4205 ***Corresponding author. Jodi.Rowley@austmus.gov.au; https://orcid.org/0000-0002-2011-9143**

Martyn Robinson comments that the newly described Slender Bleating Tree Frog (*Litoria balatus)* is found in Queensland, including Brisbane, while the Screaming Tree Frog (*Litoria quiritatus*) can be found around Taree in NSW down the east coast to just over the border in Victoria. The Robust Bleating Tree Frog (*Litoria dentata*) is inbetween the two newly described species from around Taree up to the Qld border.

WORLD FROG DAY. 20 MARCH 2022

Guess which Australian frog is featured by Taronga Zoo on Facebook today! Yep, it's our favourite little black and yellow stripey fella. A big thanks to Taronga and other organisations for their work in breeding corroboree frogs, and to all you Reclaim Kosci supporters who are helping ensure the frogs have a home to go to. Did you know Australia is home to more than 200 species of frogs, but sadly 47 of these are currently listed as critically endangered, endangered or vulnerable? Their thin, porous skin as well as small size means they vulnerable to threats such as pollution, habitat loss and degradation, climate change, introduced species and Chytrid Fungus which has severely impacted several frog species since it was introduced to Australia in the 1970s.

At Taronga, our team of keepers, scientists, vets and conservationists are hard at work every day, working as the last line of defence to keep some of our most threatened species from the brink of extinction. Great conservation doesn't happen in isolation, so a big thanks so our partners at Department of Planning, Industry and Environment, Zoo and Aquarium Association, Zoos Victoria, UOW: University of Wollongong, Australia, The University of Newcastle, Australia, Australian Department of Agriculture, Water and the Environment who help us in our fight, and Cadbury Dairy Milk who have today donated $8k in honour of World Frog Day. To find out how you can help support us to save some of our most iconic frog species, please visit: https://taronga.org.au/donate/corroboree-frog

https://taronga.org.au/donate/corroboree-frog-appeal?fbclid=IwAR3vCYYNWEKu4MVqOXhqE216Gozq0fNG23KxUmCtkPR7dtvTtSvdGYM9JtI

SPECIATION - REPRODUCTIVE ISOLATION

Reproductive Isolation The Frogs Tell All

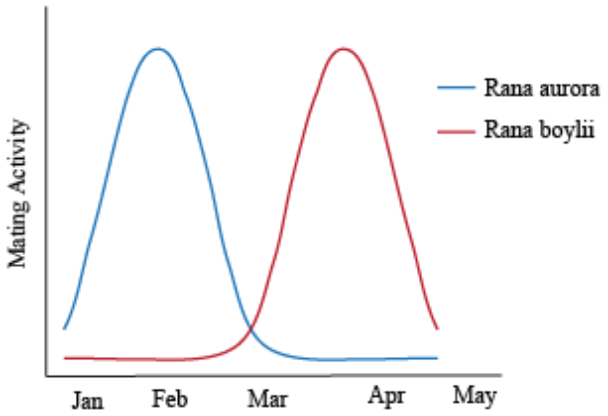
One of the pillars of speciation, reproductive isolation starts it all. Speciation is not possible without some form of isolating barrier that disrupts gene flow. This isn't always a geographic barrier, although it certainly can be. An isolating barrier can be anything that prevents some individuals in a population from reproducing with other individuals. Reproductive isolation has been the topic of a bazillion studies on speciation, and it comes in two main flavours: prezygotic and postzygotic.

Prezygotic isolation occurs when an isolating barrier prevents fertilization. This means that individuals might mate, but for some reason their gametes never form an embryo. In a lot of cases it means that individuals never even get to the mating part, and there can be lots of reasons for this. Maybe they don't live in the same microhabitat. Maybe they have different preferences in courtship dances. Maybe they think the other one smells funny. Many things can cause prezygotic isolation. We'll break it down into smaller categories to make sure we cover it all:

Ecological Isolation: Even if individuals live in the same place, they might use the space differently and so they rarely come into contact with each other. This might be the difference between birds that nest on the ground versus high in the trees, or beetles that spend their days eating different fruits. It's amazing that even small differences in microhabitat use can lead to major isolation.

One such example can be found in different types of frogs. *Notaden bennettii* lives underground and only emerges after heavy rains, and is really funny looking. *Litoria rubella* lives in trees and does not burrow underground. Even though these two species both inhabit Australian deserts, their chances of meeting are slim because of their different ecological requirements

Temporal Isolation: Fertilization is prevented if plants flower during slightly different times or if animals mate during different seasons or times of day, even if those individuals are technically capable of producing offspring. They might be in the same gene pool, but they're in different dating pools.



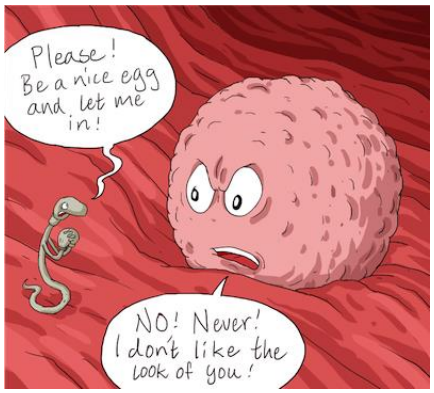
Rana aurora

Rana boylii

Behavioural (or Sexual) Isolation: For some reason, individuals just don't see the other individuals as mates. This can be because of slight differences in courtship behaviors, songs, dances, pick-up lines, or other mating cues.

Pollinator Isolation: This is limited to plants that rely on pollinators to do their business. Pollinators have a lot of control in determining which flowers pollinate other flowers, and if the pollinator decides only to visit a subset of flowers then isolation starts to occur. We don't have a frog example. To our knowledge, frogs don't pollinate plants. Although we're sure there's an exception to this. This is speciation, after all.

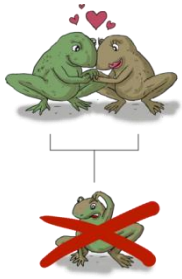
Gametic Isolation: This is the only form of prezygotic isolation in which mating actually occurs. However, it's an unsuccessful attempt because the gametes (egg and sperm) of the mating individuals are incompatible or not attracted to each other and so they never form a zygote.



Mechanical Isolation: It can happen that some individuals are just not physically capable of doing the deed with other individuals. Even though Great Danes and toy poodles are the same species, it's hard to imagine them successfully mating, at least without veterinary assistance. 'Nuff said?

Postzygotic isolation occurs if individuals successfully mate and a zygote is formed, but the resulting offspring is unsuccessful. This could be due to:

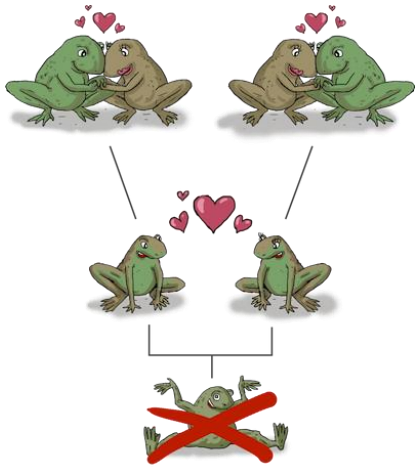
Hybrid inviability: The hybrid offspring is either weaker than the parent species, or totally inviable (meaning it cannot stay alive). This could be caused by minor or major genetic defects, and even slightly reduced viability can cause big decreases in reproduction.



Hybrid Sterility: Even if the hybrid offspring is otherwise perfectly healthy, either one or both sexes is sterile. This means it doesn't have functional gametes. We have hybrid sterility to blame for one of the biggest bummers in biology: ligers. Unfortunately, a liger cannot mate with another liger to make a baby liger, because ligers are sterile hybrids between tigers and lions. We'll just have to face our disappointment head on with this one.

Liger. Too cool. Image from here.

Hybrid Breakdown: This is similar to hybrid inviability or sterility, but skipping a generation. We get successful mating with viable, fertile offspring, but when the offspring try to have offspring, things go wrong. The second generation can be either inviable, infertile, or show reduced fitness. Either way it's just not working out.



The terms intrinsic barrier and extrinsic barrier are also tossed around in the speciation seas. These terms are straightforward: **intrinsic barriers** are those that are caused by some incompatibility with the organism, like behavioural incompatibility or hybrid sterility. **External barriers** are external to the organism, like geographical barriers. In fact, even reduced hybrid fitness is considered an extrinsic barrier, because the organism's poor performance is a result of its environment.

Now that we've mentioned it, geography is a big deal in speciation. Most speciation studies have considered geography at length, and incorporated a lot of geographical terms into the science. In order to be speciation-savvy, you have to know your geography. Read on, we promise it will be easier than memorizing state capitols.
https://www.shmoop.com/study-guides/biology/speciation/reproductive-isolation

Photo: Stephen Mahony Mount Ballow Mountain Frog *Philoria knowlesi*
https://www.frogid.net.au/frogs/philoria-knowlesi

A NEW SPECIES OF *PHILORIA* FROM THE UPLANDS OF THE GONDWANA RAINFORESTS WORLD HERITAGE AREA OF EASTERN AUSTRALIA

The Mount Ballow Mountain Frog *Philoria knowlesi*, QLD's latest described frog. Congrats to the authors of the paper out yesterday in Zootaxa describing this frog! Whilst it is both morphologically and sounds like the related Masked Mountain Frog, molecular genetic analysis reveals this is a unique species, occurring at Levers Plateau and Mount Barney.

It was also great to see the 2019-2020 bushfires hadn't reached the headwaters of the main creek where we heard the frogs calling.

Abstract

The six species of mountain frogs (*Philoria*: Limnodynastidae: Anura) are endemic to south-eastern Australia. Five species occur in headwater systems in mountainous north-eastern New South Wales (NSW) and south-eastern Queensland (Qld), centred on the Gondwana Rainforests of Australia World Heritage Area.

A previous molecular genetic analysis identified divergent genetic lineages in the central and western McPherson Ranges region of Qld and NSW, but sampling was inadequate to test the species status of these lineages.

With more comprehensive geographic sampling and examination of the nuclear genome using SNP analysis, we show that an undescribed species, *P. knowlesi* **sp. nov.**, occurs in the central and western McPherson Ranges (Levers Plateau and Mount Barney complex). The new species is not phylogenetically closely related to *P. loveridgei* in the nuclear data but is related to one of two divergent lineages within *P. loveridgei* in the mtDNA data.

We postulate that the discordance between the nuclear and mtDNA outcomes is due to ancient introgression of the mtDNA genome from *P. loveridgei* into the new species.

Male advertisement calls and multivariate morphological analyses do not reliably distinguish *P. knowlesi* **sp. nov.** from any of the *Philoria* species in northeast NSW and southeast Qld.

The genetic comparisons also enable us to define further the distributions of *P. loveridgei* and *P. kundagungan*. Samples from the Lamington Plateau, Springbrook Plateau, Wollumbin (Mt Warning National Park), and the Nightcap Range, are all *P. loveridgei*, and its distribution is now defined as the eastern McPherson Ranges and Tweed caldera. *Philoria kundagungan* is distributed from the Mistake Mountains in south-eastern Qld to the Tooloom Scrub on the Koreelah Range, southwest of Woodenbong, in NSW, with two subpopulations identified by SNP analysis.

We therefore assessed the IUCN threat category of *P. loveridgei* and *P. kundagungan* and undertook new assessments for each of its two subpopulations and for the new taxon *P. knowlesi* **sp. nov.**, using IUCN Red List criteria. *Philoria loveridgei*, *P. kundagungan* (entire range and northern subpopulation separately) and *P. knowlesi* **sp. nov.** each meet criteria for "Endangered" (EN B2(a)(b)[i, iii]).

The southern subpopulation of *P. kundagungan*, in the Koreelah Range, meets criteria for "Critically Endangered" (CE B2(a)(b)[i, iii]).

These taxa are all highly threatened due to the small number of known locations, the restricted nature of their breeding habitat, and direct and indirect threats from climate change, and the potential impact of the amphibian disease chytridiomycosis. Feral pigs are an emerging threat, with significant impacts now observed in *Philoria* breeding habitat in the Mistake Mountains.

MAHONY, M. J. ., HINES, H. B. ., BERTOZZI, T. ., MAHONY, S. V. ., NEWELL, D. A. ., CLARKE, J. M. ., & DONNELLAN, S. C. . (2022). A new species of Philoria (Anura: Limnodynastidae) from the uplands of the Gondwana Rainforests World Heritage Area of eastern Australia. *Zootaxa, 5104*(2), 209–241. https://doi.org/10.11646/zootaxa.5104.2.3
DOI: 10.11646/zootaxa.5104.2.3

IN NSW, FROG KEEPER RECORD BOOKS NEED TO BE LODGED BETWEEN 1 & 30 APRIL 2022

Licence holders must keep records of their native animal pets in an electronic record book or 'e-book'. If you hold a Native Animal Keeper Licence you must keep records. For licences:
https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/frog-keeper-licences

To complete your yearly frog returns if you have more than one frog:

https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/native-animal-keeper-record-book

FATS FROG-O-GRAPHIC COMPETITION

The FATS members Frog-O-Graphic competition opens on the 1st May and closes on the 31st August 2022.

Categories:

Best Frog Image,
Best Pet Frog Image,
Most Interesting Image and
People's Choice.

Winners are decided by a panel of judges.
People's Choice is voted for by everyone present at the October FATS meeting. Alternate arrangements will be made if we can't meet in October.

All entries are by email to photos@fats.org.au

Please state:

*** your name,**

*** confirm that you are a financial member,**

*** identify the frog species preferably by scientific name (in the file name) and location, if known,**

*** whether the image is a pet frog and**

*** your contact phone number**

Max 6 entries per person

Max attachment size 6 MB

Fabulous prizes awarded. Entries must be original and your own work. They don't have to be recent images. The entries may appear in FrogCall, FATS Facebook, our web site and other FATS publications. **Arthur White**

FATS AT THE 2022 ROYAL EASTER SHOW

FATS will be at the 2022 Royal Sydney Easter Show. We have a display on the last 2 days,

Where: Pet Pavilion, Riverina Avenue

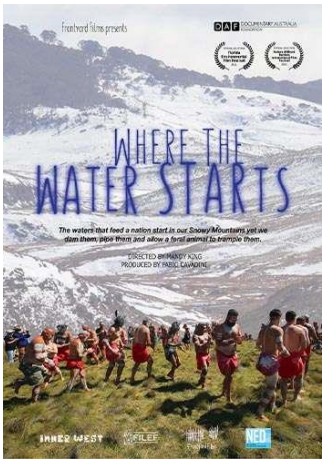
8.30am-5pm 18 April 2022 snakes, frogs and geckos,

and 19 April 2022 lizards, frogs and geckos

Established in 2011 this is now one of the biggest frog and reptile competitions in Australia as well as one of the most popular amongst all Show visitors. Non-venomous snakes, lizards and a range of frogs are judged on appearance and breed standard, so they are certainly not your common garden variety lizards!Although the competition is held on two days only – 18 & 19 April, Australian Wildlife Displays will be hosting talks and displays every day of the Show inside the Pet Pavilion.https://www.eastershow.com.au/explore-plan/animals/frog--reptile-show/ **MW**

Our FATS fieldtrips have concluded for the 2021/2022 Spring/Summer season.
They will recommence in September 2022.

WHERE THE WATER STARTS



This film brings to light the challenges facing the Snowy Mountains through respected Indigenous community leaders, scientists and others who shar the quest to protect the high country. If you live in one of these locations, please invite your family and friends and secure your ticket by clicking on the below links. Or if you know someone who would lov to attend, please share this event:

4th April, Event Cinemas Kotara NSW, 7pm
5th April, Mount Vic Flicks NSW, 7.40pm
26th April, Palace Electric Cinemas ACT, 7pm
27th April, Dendy Cinema Newtown NSW, 7pm

It's sure to be a great, informative night.

info@reclaimkosci.org.au

SAVE THE FROGS!

Invites students, teachers, scientists and amphibian enthusiasts to attend the World Summit, which will take place April 6th & 7th, 2022. Registration is free, but spaces are limited. If you seek frog saving knowledge and inspiration, the SAVE THE FROGS! World Summit is for you!
https://savethefrogs.com/world-summit-online-2022/

Speakers include: SAVE THE FROGS! Founder Dr. Kerry Kriger, who will announce the winner of this year's SAVE THE FROGS! Grants, answer attendee questions on all things amphibian, and lead a worldwide human frog chorus;

Biologist Rob Grasso, who will discuss the imperiled but recovering amphibians of Yosemite National Park;

Wetland expert Tom Biebighauser, who has restored over 2,700 wetlands and streams across the USA, Canada and Taiwan since 1979;

Dr. Pedro Peloso, an award-winning field biologist and nature photographer, who will give a slideshow on the diversity of amphibians of Brazil, and the conservation challenges they face;

Chris Berry, an environmental protection professional with 37 years of experience, who will discuss the City of Santa Cruz, California's efforts to assist threatened California Red-Legged Frogs;

Razzaq Sarker, a Bangladeshi amphibian biologist based in Australia, who will discuss acoustic monitoring of frog populations, and frogs' responses to river flow;

Arturo Munoz, a Bolivian biologist who has spent the past 15 years studying and protecting the Water Frogs of the genus Telmatobius, which live in the high Andes and are under significant threat of extinction.

More speakers will be announced soon for this two day online event. Learn more about the SAVE THE FROGS! World Summit and register today as attendance is limited! Since 2008, SAVE THE FROGS! has been at the forefront of worldwide amphibian conservation efforts, having created, restored and protected habitat for threatened amphibian populations; spearheaded successful local, state and federal legislation on behalf of amphibians; and educated millions of people worldwide about amphibians.

RARE FROG SPECIES JUMPING FOR JOY IN NEW HOME

The future of an endangered frog species is looking hoppier thanks to a new, purpose-built facility that supports a captive breeding program at Taronga Zoo.

Environment Minister James Griffin said 58 rare Booroolong frogs are thriving in their new home, after severe drought almost wiped out the species from their habitat. "Booroolong frogs are usually found in streams in the Northern Tablelands of New South Wales, and they were badly affected by the 2019 drought when many waterways dried up," Mr Griffin said. "To help protect this threatened species, our experts from the *Saving our Species* (SoS) program and Taronga Zoo joined local ecologist Phil Spark and the Australian Museum's Dr Jodi Rowley to rescue 58 healthy frogs to develop a captive breeding program. "We've now successfully established an insurance population of Booroolong frogs, and they're thriving in their state of the art home following a $178,000 NSW Government-funded upgrade." The facility now has advanced features that replicate the frog's natural environment, including special UV lighting, flowing water and temperature controls that mimic seasonal changes.

Most Booroolong frogs live for a only single breeding season. One failed breeding season can cause significant population decline, while 2o consecutive years of failed breeding may result in local extinction. "Australia's amphibians are experiencing widespread declines due to threats such as recent droughts fires, and the devastating chytrid fungus," Mr Griffin said. "That's why this World Wetlands Day, we're celebrating the success of the Booroolong frog captive breeding program, and we're hoping it'll ultimately help revive their wetland habitat. "We know that habitat protection and conservation is critical for securing the future of this important native species."

The project team will next determine whether the Booroolong frog managed to survive in the wild, and whether captive breeding and release is required to re-establish important populations. For more information visit the **https://www.environment.nsw.gov.au/news/rare-frog-species-jumping-for-joy-in-new-home** **2 February 2022**

The FATS meeting commences at 7 pm, (arrive from 6.30 pm) and ends about 10 pm, at the Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay. FATS meetings are usually held on the **first Friday of every EVEN month** February, April (**except Good Friday**), June, August, October and December. Call, check our web site, Facebook page or email us for further directions. We hold 6 informative, informal, topical, practical and free meetings each year. Visitors are welcome. We are actively involved in monitoring frog populations, field studies and trips, have displays at local events, produce the newsletter FROGCALL and FROGFACTS information sheets. FATS exhibit at many community fairs and shows. Please contact Events Coordinator Kathy Potter if you can assist as a frog explainer, even for an hour. No experience required. Encourage your frog friends to join or donate to FATS. Donations help with the costs of frog rescue, student grants, research and advocacy. All expressions of opinion and information in FrogCall are published on the basis that they are not to be regarded as an official opinion of the FATS Committee, unless expressly so stated.

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FATS ON FACEBOOK: FATS has over 4,040 Facebook members worldwide. Posts vary from husbandry, disease and frog identification enquiries, to photos and posts about pets, gardens, wild frogs, research, new discoveries, jokes, cartoons, events and habitats from all over the world. The page was created 10 years ago and includes dozens of information files – just keep scrolling to see them all. https://www.facebook.com/groups/FATSNSW/

RESCUED FROGS are at our meetings. Contact us if you wish to adopt a frog. A cash donation of $50 is appreciated to cover care and feeding costs. Sorry we have no EFTPOS. FATS must sight your current amphibian licence. NSW pet frog licences, can be obtained from the NSW Department of Planning, Industry and Environment (link below). Please join FATS before adopting a frog. This can be done at the meeting. Most rescued frogs have not had a vet visit unless obviously sick. Please take you new, formerly wild pet to an experienced herpetological vet for an annual check-up and possible worming and/or antibiotics after adoption. Some vets offer discounts for pets that were rescued wildlife.

https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/native-animals-as-pets/frog-keeper-licences

FATS has student memberships for $20 annually with electronic FrogCall (but no hard copy mail outs).
https://www.fats.org.au/membership-form

Thank you to the committee members, FrogCall supporters, talented meeting speakers, Frog-O-Graphic competition entrants, event participants and organisers David, Kathy and Harriet Potter, Sarah and Ryan Kershaw. The FrogCall articles, photos, media and webpage links, membership administration and envelope preparation are greatly appreciated. Special thanks to regular newsletter contributors, Robert Wall, George Madani, Karen & Arthur White, Grant Webster, Andrew Nelson, Josie Styles, Wendy & Phillip Grimm and Marion Anstis.

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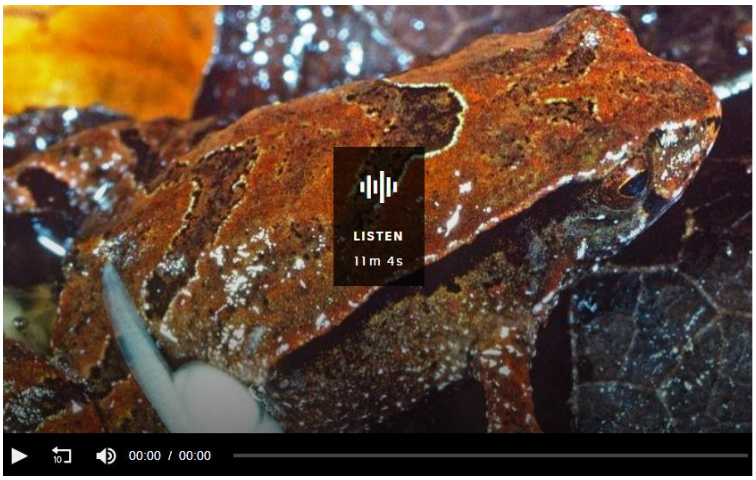
TINY TEENY NEW FROG SPECIES DISCOVERED IN NORTHERN NSW NATIONAL PARK



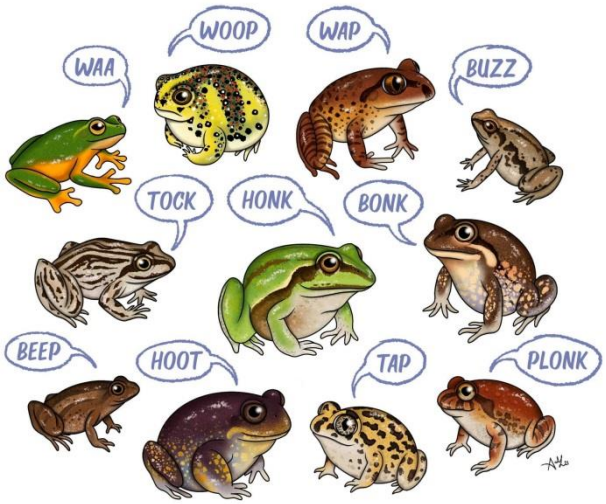
There is only one place in the world you will find this tiny new 16mm species of frog - the iconic Wollumbin National park within Gondwana Rainforests of Australia World Heritage Area.

It is one of only two known species that store their tadpoles on their bodies in "hip pockets" and it is the male that carries its developing tadpoles.

The new species has been named *Assa wollumbin sp.nov.* in consultation with Aboriginal Elders of the Wollumbin Consultative Group.

Dr Michael Mahony from University of Newcastle is one of the researchers and says the hip-pocket frog is not only unique for its amazing breeding biology among Australian frogs, but it is also unique among frogs of the world, since there are only four of the 4000 species worldwide that have male parental care.

Download Tiny new frog species found in northern NSW World Heritage National Park (5.07 MB)
Download 5.07 MB Forwarded to FATS by Punia Jeffery Broadcast: 8 Nov 2021, Breakfast with Joanne Shoebridge ABC
https://www.abc.net.au/radio/northcoast/programs/breakfast/assa-wollumbin-frog-discovery-new-species/13621446



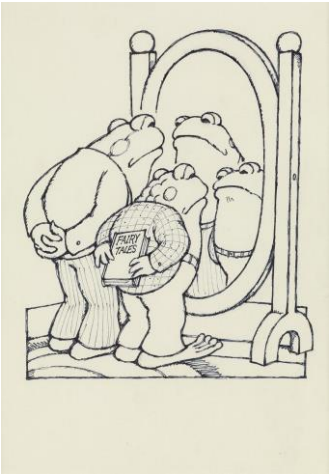
GUMNUT NATURALIST

Frogs need our help! We have a surprising way you can help frogs out while sitting at home from your desk during COVID lockdowns.
Following bushfires, floods and a host of other threats including water pollution and disease, our frogs really have their backs against the wall.

Frog Find uses frog sounds recorded from streams, ponds and wetlands to work out who is calling where. Researchers have put recorders in places where frogs were historically detected and new places where we might expect to find them. Now they need your ears to help them in this detective work!

In just 30 seconds you can identify whether there is a threatened frog calling at one of the sites. Thanks to the help of local community groups the research team has been able to increase our monitoring programs to include areas in and around national parks and even right in people's backyards!

Frog Find has been developed by the Conservation Science Research Group at the University of Newcastle, working to preserve frog populations now and into the future. Information gathered from Frog Find will help researchers identify immediate threats to frog survival and how populations respond to these threats. This will help shape conservation efforts.
Learn more, and get involved at
https://www.zooniverse.org/projects/ollibruuh/frog-find?fbclid=IwAR3DlIhFeRIr8zfAcExTIedPf13XW1ziuS32ATFdIAYXHLkDO1Vl4_SVa8g
Chadley Beranek



"Be brave, Frog, even if half our family has been split off to a new genus."

FROG CALLS (left)

I made this in honour of #FrogIDWeek! 🐸 Australian frogs have some pretty funky calls. Get out and record them wherever you can with the Australian Museum's free Frog ID app. By taking part in you can find out what frogs are in your local area, as well as provide scientists with valuable data for the conservation of frogs 💚 **Alana de Laive**