FROGSHEET

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AN UPDATE ON KROOMBIT TOPS FROGSEARCH

Kroombit Escarpment. Credit: E. Meyer

In November 2019, the Queensland Frog Society received funding from the Queensland Government's Community Sustainability Action Grant to undertake surveys and monitoring for threatened frog species at Kroombit Tops, including the critically endangered Kroombit Tinkerfrog and endangered Kroombit Treefrog. Funds provided by the state government are also being used to fence out pigs from areas of Kroombit Tinkerfrog habitat.

Surveys involving QFS members were undertaken successfully in December 2019 and February of 2020 (see Frogsheet Summer 2020 and Autumn 2020). However, plans to install fencing at Kroombit during winter were postponed due to uncertainty regarding COVID-19 restrictions earlier in the year.

With the easing of restrictions during the middle of the year, we are planning to undertake surveys at Kroombit Tops again in late November/early December of 2020, with follow-up surveys planned for late February/early March of 2021. If you're interested in joining us for this next round of surveys and/or subsequent surveys in 2021 and 2022 then contact our events and initiative coordinator Jono Hooper for further details (events_initiatives@qldfrogs.asn.au). We are also keen to hear from QFS members interested in assisting with the installation of pig-proof fencing at Kroombit Tops next winter.

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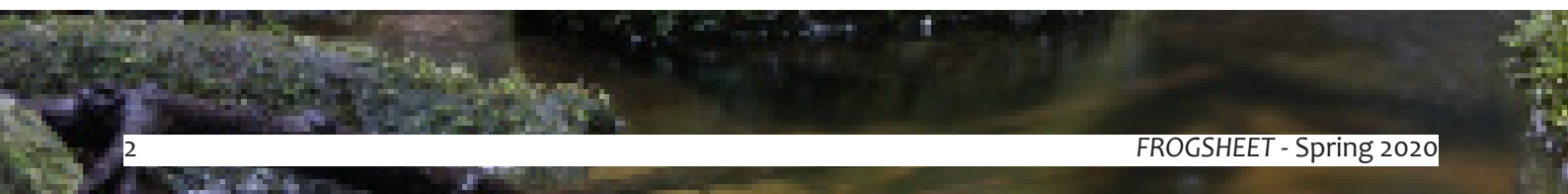
RIC NATTRASS RESEARCH GRANT

The QFS Trust Fund was created with the purpose to help save QLD frogs through education and research by means of this Research Grant, and now stands at **$5,377.08** (+$200.69 since Winter edition)



For those of you that are unable to join us in the field, there are opportunities for QFS volunteers to support this project by assisting with the analysis of call recording form automated recording devices (more on this later). You can also experience the sights and sounds of Kroombit Tops (including calls of the Kroombit Tinker-frog) from home by logging on to the QFS website and accessing the 360 degree, surround-sound, virtual reality app created by QFS member (and former QFS president) Jono Hooper. Be sure to check it out!

Dr Ed Meyer

CHANGES TO LEGISLATION RELATING TO COLLECTING FROGS

Until recently, under the Nature Conservation Act 1992 (section 50 of the Nature Conservation (Wildlife Management) Regulation 2006), a person could collect and keep least concern amphibians from the person's property for private enjoyment without requiring a permit or licence.
From 22 August 2020, this activity is no longer authorised under the Act. The Nature Conservation (Animals) Regulation 2020, which replaces the Wildlife Management Regulation 2006, does require a person to source their frogs from captive-bred populations, and keep and use these animals under a licence.

The Nature Conservation (Animals) Regulation 2020 does provide a transitional provision to allow a person to continue to keep animals that were collected from their property prior to 22 August 2020 without requiring an authority. An exemption is provided to educational institutions for the in situ collection of tadpoles and release of metamorphosis for educational purposes.

The decision to repeal recreational take of amphibians is consistent with the take, keep and use principles for all other vertebrate classes under the Act. It also addresses issues such as misidentification and collection of threatened species (especially tadpoles), significant disease threats and facilitating illegal trade of native animals.

DEALING WITH AMPHIBIANS FOR EDUCATION.

Nature Conservation (Animals)Regulation 2020

(1) This section applies in relation to an educational institution that does not hold an animal authority for taking, keeping or using amphibians.

(2) The educational institution, or a relevant person for the educational institution, may carry out any of the

UPCOMING EVENTS

31 Oct 2020 - QFS Annual General Meeting. 10am.
Location to be advised. Please RSVP by 15 October 2020

Keep updated via E-news Emails & our Facebook.

FROG QUESTIONS EMAIL

Email questions [at] qldfrogs.asn.au with your frog and toad questions

FROG HABITAT WORKING BEES

Bowman Park, Bardon
First Wednesday and Sunday of each month, during the morning. Contact Phil for more info and/or visit https://www.facebook.com/bowmanparkfroghabitatgroup/

WELCOME, NEW MEMBERS

Carey Jones, Paul Giankoulidis, Karen Davey-Thorpe, Tracey Roads, Megan McKinney, Emily Fleming, Archer Family, Sue Jackson, Patricia Williams, Niall Bradley, Vic Patterson.

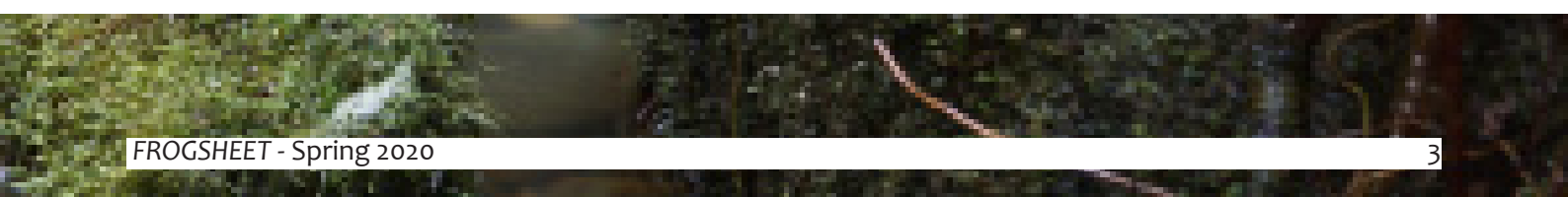
NEWSLETTER EDITOR POSITION VACANT

We're seeking a new Editor to produce our *Frogsheet* newsletter on a quarterly basis.
As Editor, you'll be responsible for:

- Sourcing of content for the newsletter; and
- Layout of all content in the newsletter so that it is visually pleasing and straight-forward to read.

We welcome a fresh newsletter design, too!

Please email editor [at] qldfrogs.asn.au to express your interest or request further information.



following activities— (a) catch a tadpole that is a least concern amphibian on land owned by or for the educational institution; (b) keep the amphibian on the land, for educational purposes, until the amphibian undergoes metamorphosis; (c) use, other than sell, give away or process, the amphibian on the land, for educational purposes, until the amphibian undergoes metamorphosis; (d) release the amphibian into the wild— (i) at the place where the amphibian was taken; and (ii) in the way stated in the reptile and amphibian code for the amphibian.

Jenny Holdway & Dan Ferguson

Editor note: refer to http://www.qldfrogs.asn.au/keeping-frogs-tadpoles/ for further information.

PRESIDENT REPORT

Hello Fellow QFS members,

It is that time of the year when we are seeking nominations for our 2021 committee.

Again, we are looking for a President this year.

I have to stand down – not because of this position but because my family has decided to be chaotic now that I am home & will be so for quite a while next year – so I am not able to continue.

QFS has quite a stable committee at present. We have 4 management meetings a year & the AGM. Our meetings are in the evenings & have been done by Skype for the past couple of years.

We are going to now try & join the 21st Century & have the meetings via Zoom. (I dare not tell my sons as I can see their eyes rolling now as they do whenever I & computers are included in the same sentence.)

Anyway, I think trying to save our frogs and their environment is a worthwhile endeavour.

So if you are interested & have any queries – just give me a buzz on 0438 690 359.

By the way, starting as President now is a good time to do so as COVID19 has limited our activities considerably so you can ease into the position & not be thrown in at the deep end.

Regards, Jennifer Singfield

OBITUARY: MICHAEL JAMES TYLER AO, MSc, DSc, 1937-2020

Below is an excerpt of an Obituary written by Margaret Davies. Full obituary available at https://www.tandfonline.com/doi/full/10.1080/03721426.2020.1781026

Given the depth of Mike's service to the profession by way of Committee work, it is quite amazing that he had time for his first love: researching frogs.

The breadth of Mike's research interests was nothing short of astounding. He never lost his love and excitement of Taxonomy and Systematics. His commitment to and enjoyment of field work, particularly in the wet/dry tropics, were legendary and indefatigable.

He collaborated with a number of workers who could provide the expertise that he lacked. Angus Martin and Graeme Watson from the University of Melbourne, had experience with frog calling behaviour and life history studies, while Margaret Davies, University of Adelaide colleague, provided osteological insights, illustrations and photography and, later, tadpoles; Keith McDonald from Queensland National Parks and Wildlife Service found and dispatched specimens of new species (and recognised ones) from Queensland, adding greatly to the material in the University of Adelaide Herpetology Laboratory. It was Keith who sent a female gastric brooding frog, *Rheobatrachus silus*, with young in her stomach (image below), that resulted in the unique photographs of oral birth in this species. To further investigate gastric brooding, Mike collaborated with gastroenterologists David Shearman and Paul O'Brien, electron microscopist Joe Fanning and smooth muscle expert, Ian Gibbins, together with members of their teams. Keith also sent a female *R. silus* which regurgitated tadpoles on arrival. These were rescued and reared in aerated, dechlorinated tap water to metamorphosis. It was noted that a mucus-like exudate emerged from their mouths, so

every time the water was changed, the old water was collected and frozen. It was from this material that Prostaglandin E2 was identified, a substance known to switch off gastric acid secretion. Thus developed the study of gastric acid secretion, using a Cane Toad model, with the able assistance of Patsy Taylor.

These were exciting times.

Mike pioneered studies of frogs as environmental monitoring organisms, initiating a program at the Ranger Uranium Mine in Kakadu in the Northern Territory prior to the commencement of mining. Many hundreds of tadpoles were reared from spawn collected in the area and their abnormalities were recorded.

Always asking questions, he turned his interest in his later years to naturally occurring substances in frog skins and their possible medicinal properties. Early work on natural products pharmacology in the genus Uperoleia by University of Queensland and Italian scientists, entailed the sacrifice of horrendous numbers of frogs for their skins. But Mike developed a method of milking substances from frog skin causing no distress to the animals and no sacrifice of life, hence individuals could continue to provide material. For the skin work, his collaborator was organic chemist John Bowie and colleagues.

Michael Tyler and friend, the Magnificent Tree Frog, *Litoria splendida*. Credit: Ella P. Tyler.

Another collaboration was with the CSIRO, investigating the adhesive properties of secretions from the skin of members of the genus Notaden.

His many collaborations with fellow herpetologists and other scientists are instanced in his publication list.

Mike also pioneered the study of frog fossils, identifying the ilium as the disarticulated bone that was identifiable to genus. This led to him being awarded the Riversleigh Medal in 1998 for his contribution to Australian Palaeontology. In the same year he was made a Fellow of the American Association for the Advancement of Science.

A gifted communicator both with the written and spoken word, Mike was an oft-invited speaker to community groups, ranging from Junior Field Naturalists to professional groups, both in Australia and overseas. It is unsurprising, therefore, that he was an excellent teacher of Zoology. It has been said that his lectures were discursive, entertaining and widely loved by his students. He supervised numerous honours and postgraduate students, instilling in them his thirst for knowledge and enthusiasm for their studies.

Mike wrote numerous books, ranging from field guides to scientific volumes, and included numerous children's books. The second edition of his final book, Tyler, M. J. and Knight, F. (2020) Field Guide to the Frogs of Australia was published just prior to his death. He had an innate ability to express even the most complex ideas in a manner intelligible to the professional as well as the lay person. He worked with Sir David Attenborough on The Nature of Australia series and was the subject of an ABC Natural History Unit documentary produced by Dione Gilmour, The Man who Loves Frogs (1990).

Mike was awarded the City of Adelaide, Australia Day

Citizen of the Year in 1993 (for contributions to the community). His science communication skills were recognised by the award of the Michael Daley Eureka Prize for Science Communication in 1997.

His quirky sense of humour was legendary; he would have been delighted when he and his former students were awarded in 2005 an Ig Nobel Prize for Biology for their paper: Smith, B. P. C., Williams, C. R., Tyler, M. J. & Williams, B. D. (2004). A survey of frog odorous secretions, their possible functions and phylogenetic significance.

National recognition saw Mike invested as an Officer of the Order of Australia, AO, in 1995 for his contribution to Zoology.

Did this man ever sleep? Mike had a passion for books, particularly early volumes. He was an inveterate forager through op shops, looking for treasures. It therefore should be no surprise that he spent leisure hours sorting through book donations to Red Cross that fortuitously came under the aegis of Ella Tyler, as head of Health and Safety Services. Some volumes went to second-hand bookshops, others to a seemingly unending list of private collectors (if you weren't already a collector, Mike would persuade you that you really should be). During every school holiday period, one-day monster book sales, with nothing priced over A$ 2.00, were organised. Over the years, Mike raised thousands of dollars for Red Cross and had a ball doing it.

Michael Tyler searching for frogs. Credit: M.Tyler

When SA Red Cross decided to restructure, and Ella lost her position, Mike turned to fundraising for the Mary Potter Hospice through the Order of Saint John of Jerusalem Knights Hospitaller-Australasia. He was made a Knight of the Order in 2003 in recognition of his fundraising efforts. Ella joined him as a Dame of the Order in 2012.

Mike Tyler was a profoundly complex person. Blessed with an extraordinary brain, matchless communication skills and an ability to enthuse all and sundry in whatever area they happened to occupy, underneath he was insecure. He never quite believed that others took him and/or his science seriously. He had not entered the cut-throat world of academia by the usual route. His research did not generate substantial support from the standard academic granting bodies, but his energy and enterprise enabled him to attract support from a great variety of unorthodox sources. Curiosity-driven research is not the flavour of academe in this day and age, yet it is from just such efforts that some of the greatest ideas and discoveries are generated. It is to be hoped that the award of Mike's D.Sc. from the University of Adelaide in 2002 laid some of his personal doubts to rest. His publication list is testament to an outstanding scientific career.

His work and accomplishments are all the more remarkable given that Mike suffered from ill health since his early thirties. The autoimmune disease, polyarteritis nodosa, resulted in him having to endure many periods in hospital, bouts of excruciating pain and, in his later years, a range of major side effects of 50+ years of debilitating medication. Few knew of this battle, since he was determined not to allow it to stand in the way of his activities and achievements. The love and support of Ella and his family were invaluable. Tragedy struck in 2011 with the untimely death of Mike and Ella's beloved son Paul. This was a parent's worst nightmare, so difficult for any family to comprehend. On a happier note, Mike was a veritable Pied Piper with little children, so his and Ella's grandson, James, son of Libby, gave him enormous pleasure for the last ten years of his life.

Finally, his longstanding health challenges overwhelmed him and Mike Tyler (The Frog Man) passed away on 26 March 2020, a few hours short of his 83rd birthday. Vale an extraordinary person, scientist, teacher, colleague, mentor, administrator, author, editor, public speaker, friend, fund-raiser and family man.

DETECTING AMPHIBIAN PATHOGENS IN THE WATER TO BOOST FROG CONSERVATION

Dr Laura A Brannelly | University of Melbourne

Detection of small amounts of DNA in environmental samples like water or soil is a new and exciting technology. Environmental DNA (eDNA) detection is a valuable conservation tool that can be used to identify and monitor imperilled or invasive species and even pathogens.

One such pathogen that is of global conservation concern is the fungus, Batrachochytrium dendrobatidis, Bd. Bd is a pathogen of conservation concern because it is a leading cause of frog declines around the world, by causing the disease chytridiomycosis.

Populations of many Australian frog species have declined, and some are even on the verge of extinction because of this disease, including the southern corroboree frog and the baw baw frog which are now classified as critically endangered.

Bd is thought to have spread out globally from Asia, causing massive declines around the world over the last few decades. Human global movement is a likely cause of this spread.

Frogs are intentionally moved internationally through the amphibian pet trade and even as food in many countries. And they can also be stealthy hitchhikers and easily travel internationally or interstate with the movement of produce and the plant trade.

By looking for a unique sequence of DNA from a pathogen, eDNA can be used to monitor disease outbreaks or identify disease introductions, which are essential steps in any conservation effort.

The traditional method of detecting disease in frogs is by catching them and swabbing them for the presence of the pathogen.

To test for Bd, scientists gently rub a medical grade swab, just like one used to test for strep throat, across the frog's skin, focusing on the hands and feet where the infection tends to concentrate on the animal. Catching animals can be challenging in difficult to access sites, or places with few or well-hidden frogs, such as the baw baw frogs that bury themselves deep in the mud of mountain gullies, or the southern corroboree frogs where there are only a handful of individuals left in the wild.

In our recent study, we developed a method to detect Bd from both water and soil samples using lab-generated samples. Then we went into the field to see if we could potentially monitor disease using our eDNA method.

Our team of international scientists from the University of Melbourne and the University of Pittsburgh, USA, collected water and soil samples, and skin swabs from animals in multiple sites over six months of surveying.

The sites studied included highland streams, beaver ponds, swamps and seasonal forest pools in Pennsylvania and Louisiana USA. Some of these sites had over 10 species of amphibians.

Our results showed that eDNA techniques could detect the Bd fungal pathogen in the environment through both water filters and soil samples.

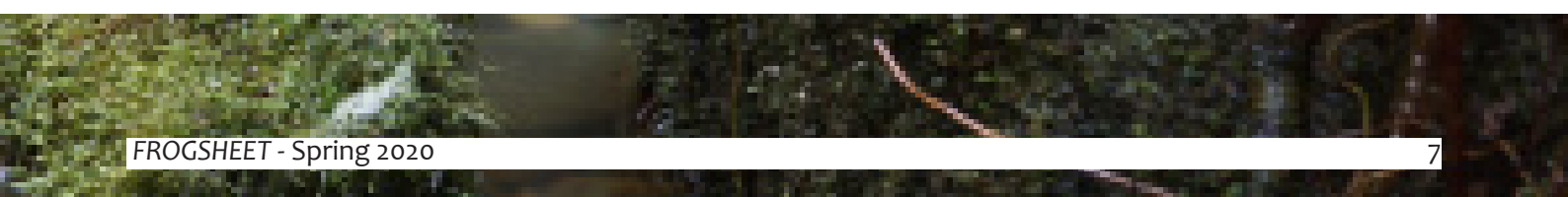
In fact, Bd detection in water samples was found to be just as good at detecting the pathogen in skin swab. While we were able to detect the pathogen in soil samples, it was not as accurate as water or skin swabs.

This is good news for studying pathogens that affect amphibians as there is plenty of water to test in their environments.

The difference in the samples was that while we could detect the pathogen in water samples, the pathogen load estimates (the amount of pathogen detected) was more accurate in swab samples than from environmental samples.

This is somewhat surprising because chytrid fungi as a group are mostly soil dwellers, but makes sense because the infectious Bd zoospores are aquatic and move by swimming toward their next host. Also, with water filters, the larger volume of water filtered means a better rate of detection.

Read more at https://pursuit.unimelb.edu.au/articles/detecting-amphibian-pathogens-in-the-water-to-boost-frog-conservation



#qldfrogs

Each newsletter features a selection of photos by our keen Instagram followers who tag their QLD frog photos with #qldfrogs! Tag yours to be featured here.

Painted Burrowing Frog (*Neobatrachus sudelli*) by @jradbarnes

Ornate Burrowing Frog (*Platyplectrum ornatum*)
Credit: B.Revell

Orange-thighed Treefrog (*Litoria xanthomera*) by @jonohooper92

NEXT EDITION

Thankyou to those of you who contributed to this newsletter.
Deadline for Summer *Frogsheet* contributions is 19 November 2020

If undelivered, please return to
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