FROGCALL

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NEWSLETTER No. 155 JUNE 2018

CELEBRATING 25 YEARS OF FATS SMITHS LAKE FIELD TRIPS

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

Arrive from 6.30 pm for a 7pm start.

Friday 1 June 2018

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

Easy walk from Concord West railway station and straight down Victoria Ave. Take a torch.
By car: Enter from Australia Ave at the Bicentennial Park main entrance, turn off to the right and drive through the park. It is a one way road. Or enter from Bennelong Rd / Parkway. It is a short stretch of two way road. Park in P10f car park, the last car park before the Bennelong Rd. exit gate.

FATS meeting Friday 1 June 2018

6.30 pm Lost frogs seeking forever homes: Several cheery Green Tree Frogs *Litoria caerulea,* one huge Litoria infrafrenata White-lipped Tree Frog and one lonely *Litoria peroni* Perons Tree Frog. Priority to new pet frog owners. Please bring your membership card and cash $50 donation. Sorry, we don't have EFTPOS. Your current NSW NPWS amphibian licence must be sighted on the night. Rescued frogs can never be released.

7.00 pm Welcome and announcements

7.30 pm Our main speaker is Arthur White discussing "Are frogs primitive?". The talk is about the origins of frogs and some of the characteristics that they have retained which, to human eyes, appear very basic or primitive.

Punia Jeffery's presentation is on Keeping Axolotls.

Natalia Sabatino's talk is about Yabbies and their diet.

9.00 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.

CONTENTS **PAGE**

LAST FATS MEETING 6 APRIL 2018

Another great & loaded FATS meeting at Bicentennial Park Homebush last night! Our key speaker was Grant Webster about Frogs of Korea from his 2017 trip where he ticked off 9 of the 12 species & saw frogs and salamanders- very informative & entertaining.

FATS President, Arthur White spoke on NSW 2017 legislative changes flowing from the Biodiversity Act (NSW Environment portfolio) and subsequent animal keepers/ display requirements (NSW Dept. Primary Industries portfolio) which are changes already in place! These are little known changes, not consulted on and with dire consequences for field trip and education displays by amateur, natural history groups and more, such as FATS. Herpetological societies in response have just formed a federation and lobbying has commenced, petition cards were handed out in the meeting. More detail in our next FATS Newsletter too.

Arthur also unpacked some recent misinformation in the press about Dr Simon Clulow's Lower Hunter work on salinity trials in relation to only Bell Frogs & chitridomyosis http://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/frogs/threats-to-frogs/frog-chytrid-fungus), a great continuum of this line of research but not quite the salvation claimed in some recent radio press in particular.

Then there was Punia Jeffery's wonderful reflections on the March 2018 at Smith's Lake. She chatted to Michelle Toms wonderful picks from that field trip too.

Raffles with chocolate frogs, solar lights +++ & wonderful conversations, supper & more. If you have not attended, check out the next June meeting too. PS Frog-O-Graphic entries are open now & early this year. **Giselle Howard**

2018 FATS FROG-O-GRAPHIC COMPETITION

Ten years ago FATS conducted our first Frog-O-Graphic competition. This proved very successful as we have many creative people in the group. So start photographing. We look forward to seeing your entries.

The FATS members' 2018 Frog-O-Graphic competition opens 1st May and closes 31st August, 2018

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

Category winners to be decided by a panel of judges.

People's Choice will be decided by everyone present at the December FATS meeting. All entries are by email to photos@fats.org.au Please state: your name, confirm that you are a financial FATS member, 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. The winning entries may be featured in FrogCall, FATS 2019 calendar and other FATS publications. **Arthur White**

FATS ON FACEBOOK: FATS has over 2,400 Facebook members from almost every continent. Posts vary from husbandry and frog identification enquiries to photos and posts about pets, gardens, wild frogs, research, new discoveries, jokes and habitats from all over the world. The page includes dozens of information files.
https://www.facebook.com/groups/FATSNSW/

FATS AGM NOTICE FRIDAY 3rd August 2018

The FATS AGM will be held on Friday 3 /8/2018, commencing 7pm. FATS meet 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 and to submit items. We appreciate fresh ideas and new members on our committee. No experience required. The FATS committee meet 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**

GROUND ZERO OF AMPHIBIAN 'APOCALYPSE' FINALLY FOUND

An ancient skin-eating fungus is killing off hundreds of species—and the Korean War may have helped spread it. (extracts)

Since the 1970s, the aquatic fungus *Batrachochytrium dendrobatidis* has triggered die-offs in hundreds of amphibian species such as the common midwife toad (*Alytes obstetricans*). These frogs—arranged in rows by researchers documenting the fungus—died in the French Pyrenees. Many of the world's amphibians are staring down an existential threat: an ancient skin-eating fungus that can wipe out entire forests' worth of frogs in a flash. This ecological super-villain, the chytrid fungus *Batrachochytrium dendrobatidis*, has driven more than 200 amphibian species to extinction or near-extinction—radically rewiring ecosystems all over Earth.

Now, a global team of 58 researchers has uncovered the creature's origin story. A groundbreaking study published in *Science* on Thursday reveals where and when the fungus most likely emerged: the Korean peninsula, sometime during the 1950s. From there, scientists theorize that human activities inadvertently spread it far and wide—leading to amphibian die-offs across the Americas, Africa, Europe, and Australia.

"[The pathogen's spread] could have happened from any one event, from the cumulative number of events, or maybe some big anthropogenic events like the Korean War," says Imperial College London researcher Simon O'Hanlon, the study's lead author. Now that researchers know where the fungus came from, they can monitor this hotspot of chytrid diversity for new, deadly species. The findings also serve as a stark reminder that if left unsecured, global trade can unwittingly fuel ecological catastrophes.

The fungus—called *Bd* for short—is so deadly because it targets amphibians' porous skin, which the animals use to breathe and drink water. *Bd* unspools the skin's proteins and feasts on the resulting spaghetti of amino acids. As it does, infected animals grow lethargic, shedding their skin in a death spiral that ends with heart failure in a matter of weeks. Some amphibians can tolerate or resist *Bd*, but the fungus can infect at least 695 species to varying degrees.....

Similar die-offs started popping up in the 1970s, but researchers didn't realize these "enigmatic declines" were a global phenomenon until the 1990s. In 1997, researchers first described *Bd*, and within a decade, they had connected it to the slaughters. Meanwhile, *Bd*'s killing spree continued. From 2004 to 2008, one site in Panama lost 41 percent of its amphibian species to the fungus.

Most of the once-mysterious slaughters are now attributed to the "Global Panzootic Lineage," a lethal strain nicknamed *Bd*GPL. But where did this killer come from? And when and how did it blaze a trail around the world? To find out, researchers spent a decade building a global genetic library of *Bd*, a quest that has taken scientists across six continents. For instance, study coauthor and National Geographic Young Explorer Jennifer Sheltonspent part of 2017 exploring the mountains of Taiwan, searching for infected salamanders.

When researchers found a sick amphibian, they first snipped off one of the animal's toes, a non-lethal way to sample its tissue. Scientists then had to isolate the severed toe's *Bd*, grow it in a petri dish, and then sequence O'Hanlon and Fisher's team sequenced 177 *Bd* genomes from around the world, combining them with 57 previously published ones. Researchers compared these 234 genomes to map out a fungal family tree, which revealed four distinct *Bd* lineages.

A captive Oriental fire-bellied toad (*Bombina orientalis*) imported into Europe from South Korea. The global pet trade is partially to blame for the spread of *Bd*, a deadly fungus that can infect nearly 700 species of amphibians. p h o t o g r a p h b y f r a n k p a s m a n s

Continued on P10

SMITHS LAKE

25 Years of FATS Field Trips

In the Beginning..

It seems hard to believe that FATS has been going to Smiths Lake for 25 years. During that time many hundreds of FATS members have journeyed to Smiths Lake and revelled in the wonders of the place. Yes it has a high diversity of mammals, birds, reptiles, frogs and invertebrates as well as a breathtaking assortment of native plants. The lake (Figures 1 and 2) and surrounds is one of those idyllic panoramas that requires being photographed every time that we go up there. Nearby is Seal Rocks which is a favoured swimming and snorkelling spot. A great place to see schools of rays, colourful fish, the occasional turtle and shark.

Figure 1 **Mist on Smiths Lake Image: Punia Jeffery**

But what is it that makes Smiths Lake so special? It has everything going for it. The accommodation at the University of New South Wales field station is simple but very comfortable. The wildlife is worth seeing. But I think it is simply the atmosphere of the place that effects people the most. As soon as you arrive you can feel your cares and woes disappearing and your vitality being restored. It is a great tonic for life's ills.

To commemorate the 25th anniversary of FATS going to Smiths Lake I have cobbled together a few remembrances for some of those who have ben to Smiths Lake. The first that I include here is from Karen White who says..

My first trip to Smiths Lake was just after we were married in 1975. Arthur and I both worked at the University of New South Wales and we went there on an insect collecting trip. It was the start of a great love for the field station and we have visited every year since then. We spent many weekends for a couple of years doing fauna surveys there. Arthur had prepared a submission for the extension of the Myall Lakes national park and the proposed sand mining of the national park. When our two children came along they came to Smiths Lake often and it was like a home away from home for them.

We first started to bring FATS groups up to Smiths Lake in 1993. For the first few years the groups were small but as time went on more and more people wanted to come- now we have to limit the numbers that can come at one time. So fats has been going to Smiths Lake for 25 years and the allure of the place has not waned. Many budding frog-lovers and naturalists have been introduced to the fauna through Smiths Lake and most have retained an active interest in natural systems ever since.

We have had some tremendous frogging trips to Smiths Lake. We retained all of the data from each trip and now we have a detailed record of the changes in the frog communities over time. We have had dry trips when frogs were scarce, but Smiths Lake always makes up for that by providing birds or reptiles or plants in abundance- -always enough to make us feel happy to be there. We have made many wonderful friendships over the years and have many fond memories of Smiths Lake.

Arthur and I have been there more than 100 times. It is a special place and we will keep going there for as long as we can.

THE FIELD STATION 25 YEARS AGO

Our newer members may not appreciate how much the field station has changed over the years. The field station site was leased from the National Parks and Wildlife Service-the land was recently purchased by the NPWS as part of the planned expansion of the Myall Lakes National Park. The land had been pastureland before that and had been owned by the Brambles family, who had lived on Smiths Lake since the early 1900s. When the University took over the lease, the first structure that was built was a brick and cement pad that was roofed (Figure 3). This structure still stands and is used as our eating area when we visit Smiths Lake.

Figure 2: **Rainbow over the lake Image: Punia Jeffery**

Image: Arthur White

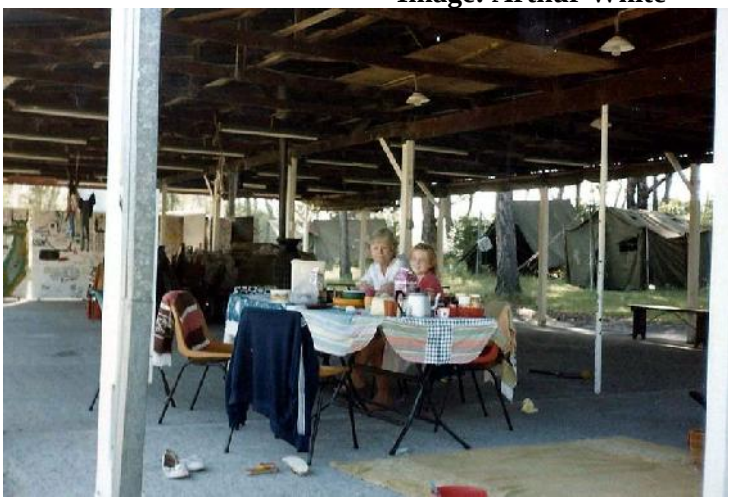

Figure 3: **The open eating area at the field station 1982**

The field station was originally called the A.K. O'Gower Field Station after Prof. Ken O'Gower, a marine biologist at the University. Ken fought to get the field station at Smiths Lake as he was keen to use the lake as a teaching resource for marine biology students. An old pot-bellied stove used to bear the name of the field station. But this is now gone.

The second structure to be built was the old laboratory and rat-proof room. The third structure to be built was the outdoor kitchen, beside the creek and this was followed by a fourth structure, a rather basic toilet block. So, by 1971, the first year that I visited Smiths Lake, it was already a functional field station capable of holding 25 students. Accommodation was basic- the university purchased some old ex-army tents and stretchers (Figure 4). We hated sleeping in them as they were cold and draughty and full of spiders.

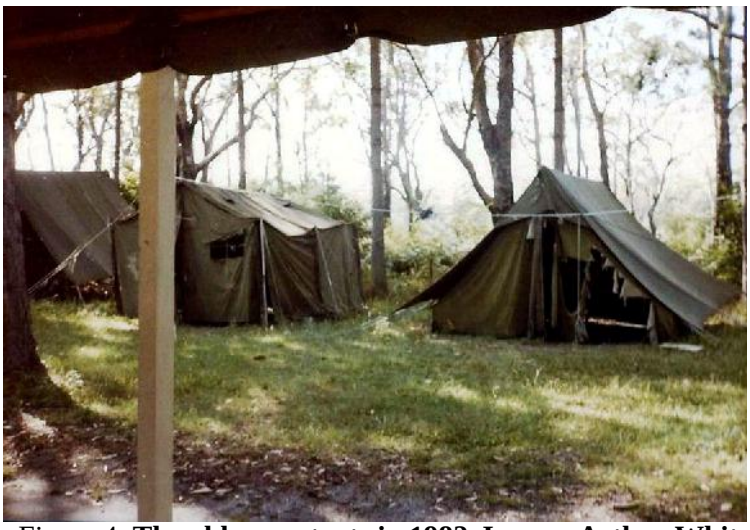

Figure 4: **The old army tents in 1982 Image: Arthur White**

The lake was still being commercially fished in those days. The Brambles family held the fishing and prawning licences for Smiths Lake and part of Myall Lakes. An old shed stood at the bottom of the site where the prawn nets were stored on flat-bottomed dories. It was common to see the fishermen arrive before dawn and dray the dories out into the lake and hitch them to be back of their boats and motor off into the gloom to set their nets.

Although the field station was originally set up for marine biology the university quickly realised its potential for land-based animal studies (Figure 5).

My family had come to regard Smiths Lake as a second home. Our son Ben spent many weekends and holidays at Smiths Lake and has written about his early memories as a child.

My earliest memories of the Smiths Lake field station are a confusing jumble of images. I remember watching a goanna climb a casuarina tree next to the kitchen, I remember exploring the shoreline of the lake and swimming across the various tea-tree-stained creeks, I remember climbing every one of the paperbarks that fringe the shore in order to find the most comfortable branches to sit upon, I remember spending hours in shallow, salty water and eventually being big enough to swim to the buoy and back on my own; I remember sunburn and jellyfish stings, I remember a twisted ankle from running heedlessly across the expansive lawn, I remember playing in the old teepee-like tents when they became defunct, and being terrified of the old toilets as they were filled with spiders beyond count.

Fig 5 **Karen, Arthur & Billie 1982 Photo Barbara Bohdanowicz**

I remember endless trips to Bungwahl shops to buy newspapers and canned goods, I remember visits to the fish co-op and to Sugar Creek Toymakers, I remember running across the rows of whale-sized mounds at Lighthouse Beach after a mass stranding, and I remember a can of baked beans thrown into a camp fire at Number One Beach exploding with a resounding bang, to the great surprise of the kids who encircled the flames. They're memories of school holidays, and idle hours, and exploration, and swimming, and summertime fun.

The Threat of Sand Mining

Sand mining had been taking place along the coast near Smiths Lake since the 1960s. Vast beds and dunes of Holocene/Pleistocene sands had been dumped there during a phase of sea-level change about 100,000 years ago. The sands were rich in zircon, rutile (titanium oxide) and ilmenite. In 1976, the NSW government approved a mineral sand mine

on the dune known as Bridge Hill (to the south of the field station (Figure 6).

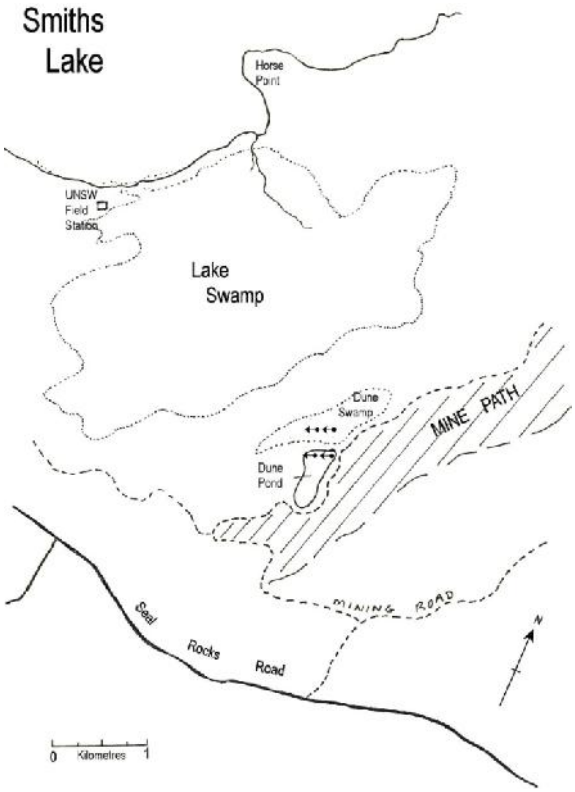

Figure 6: **Map of the Smiths Lake area showing the extent of the Bridge Hill Dune.**

Mining in a national park was contentious and public enquiries had been held to help the government consider this application by the miners. Like many people who were familiar with Smiths Lake, I put in a submission to the enquiry and also had the opportunity to speak at an open forum about the proposed mining.

Mining commenced at the eastern end of the dune and the mine took a further 8 years to strip and 400 metre wide, 9 kilometres long area of dune. The majestic Bridge Hill dune, a towering but fully forested dune, was stripped bare and the minerals were removed. The miners eventually tried to re-shape the remaining sands into a dune but the present-day dune is a much lower and more rounded structure with far fewer tall trees.

A Great Place for Frogs

Immediately behind the field station is a large, wallum swamp (Figure 7). The fringes of the swamp are ringed with paperbark trees and Swamp Mahoganies (*Eucalyptus robusta*). The centre of the swamp is full of sedges, *Xanthorrhoea,* sphagnum mosses and other peculiar freshwater plants. There are a few small creeks running from the swamp and they carry dark-brown tannin-rich water into the lake. The creeks flow all years round and the swamp is fed from rainwater that is trapped in the dunes.

In the early days we spent a lot of time looking at the frogs in the Lake Swamp and surrounding creeks and eventually got to know the frog fauna in some detail.

Just when we thought that we knew all of the frogs in the area, I picked up the calls of a small *Crinia* that I had never heard there before. I eventually caught the frog- it looked rather similar to the Common Eastern froglet *Crinia signifera* but it inhabited different parts of the swamp and had a very different call. Eventually I realised that this was the Wallum Froglet *Crinia tinnula* (Figure 8).

Figure 8 ***Crinia tinnula*, Image: Harry Hines.**

The discovery of this frog at Smiths Lake was a big deal as the known distribution of the species was from Fraser Island in southern Queensland to Ballina in northern NSW (Cogger 1982). This was a range extension of hundreds of kilometres. Very soon afterwards I was to find this frog in areas further south, and in 1995, I found a population residing at Kurnell in Sydney's south. This little frog was doing some strange things- in the northern part of its distribution is called mostly in the summer months but from Smiths Lake southwards it called mainly in the winter months (this was why it had not been detected in sites along the Central Coast and near Sydney).

Figure 7: **Lake Swamp. Image: Arthur White.**

1993 the First FATS Trip

By the time that FATS started coming to Smiths Lake dormitories had been built and new indoor kitchen area had been constructed. The old toilet block had been replaced with a more respectable shower/toilet block. In the early years we spent most of the time frogging around the Lake Swamp but eventually we moved out into other areas, such a Wallingat State Forest.

FATS continued to amass a great battery of fauna records for Wallingat SF, so much so that the state forest was turned into a national park in 1999.

Monica Wangmann first visited Smiths Lake in 2000, she recounts one of her trips:

Bill, Katherine and I fondly remember Smiths Lake. My most vivid memory was the surprise finding 11 year old Katherine covered in leaches after an excellent night frogging, blood trickling down, in little streams. I had visions of “African Queen” the movie. Smiths Lake is never boring.

On the same weekend, we watched a sneaky kookaburra swoop with lightning speed from the rafters of the common outdoor dining room to successfully grab a rocket frog being photographed. Katherine chased the bird across the field station, screaming obscenities and demanding the bird return its snack. Onlookers helplessly watched with horror as the event unfolded. They were so distressed about Katherine being upset and the frog loss.

Arthur White, Katherine Wangmann, field trippers and the pot bellied stove 2,000. Image Monica Wangmann

Despite the drama, Smiths Lake with FATS, was one of the best adventures our family have ever had. It wasn’t just the scenery, swimming, frogging, comfortable accommodation, eating together, walks and biodiversity, it is the generous and hospitable FATS members who make everyone feel welcome. Katherine still likes camp fires and glamping.

Its Not always Fair Weather and Bright Sunshine

We have a had many brilliant trips to Smiths Lake with sunny skies and warm nights. If you get a few showers the frogs come out in abundance. But occasionally, the gods are less kind and it gets cold and wet and windy. One such occasion occurred in 2010, a great southern change hit the area and the temperature plummeted. Driving rain lashed the area and lake quickly field to over-flowing. Waves appeared on the lake (Figure 9)

Fig 9: **Waves on Smiths Lake 2010, Image Punia Jeffery**

Robert Wall, a long-time FATS member was treating his Canadian visitor to a tour of eastern Australian and their purposefully returned from Queensland to Smiths Lake because Robert had told Dalyce how wonderful the place was. When they arrived, they found the camp site a wreck, wet and cold bodies huddled around a pot-bellied stove (left) shawled in blankets. The Canadian visitor quickly stated” This kind of weather is what I came to Australia to get away from”- they left with poor Robert apologising and trying to convince her that it really was a nice place.

Robert also writes:

My most memorable experience of Smiths Lake was my first visit as a newcomer, twenty years ago, sitting down at mealtimes. Fiorella, a lady quite unknown to me at the time (but as it turned out, an intrinsic part of the history of Smiths Lake), insisted on me joining her family every mealtime to share in some of her glorious, wonderfully-prepared, gourmet food. Karen happily supplied me with inexhaustible supply of tea/coffee cakes and slices that she had carefully prepared. It seemed this tradition of Smiths Lake had been born many years before, and it is a tradition kept alive (Figure 10). Smiths Lake is not just about showing newcomers the wildlife, but about the extraordinary generosity of members welcoming others into the FATS fold.

Fig 10: **A typical Smiths Lake feast. Photo: Arthur White**

Linda and Scott Martin are relative new-comers to Smiths Lake but they have already become besotted with the place. They add..

I can still remember the first Smith's Lake field trip our family attended; we were so blown away with how picturesque the location was when we got there on the Friday afternoon that we had great expectations of how amazing the weekend was going to be.

Through a perfect combination of excellent company and comfortable facilities, with fantastic frogging at night and great bird watching during the day and the opportunity for some relaxation and snorkelling at the beach not only did the weekend meet our expectations but far exceeded them. We have since attended many field trips to Smith's Lake and we have had the privilege of learning so much about not only frogs but also a wide variety of other wildlife through discussion with the many highly knowledgeable and experienced individuals that also attended these field trips. However as a family I would say that the greatest thing about the Smith's Lake field trips has been the lifelong friendships we have made with some of the greatest people we have ever met.

Summing Up

To conclude I attached a poem composed by a long-time Smiths Lake visitor Punia Jeffery. Perhaps this will give you another taste of the magic of the place.

Field Station Afield

Morning brightens,
Bees hum in the melaleucas.
Birds fearless from years of kind regard.
Studious plovers deliberate over grass blades,
Kookaburras eye cricketers noting joyful yells,
Magpies chorus assent

We eat in a no-wall cave.
Grandstand to cricket and bird.
Like-minded conversations sparkle
No feigned interest here.
Talk of craft, food and creativity,
University and the field.
Our kitchen, mouse protected
Treasure trove, has every style of spoon
Known to man.

Near Seal Rocks, a death adder on a sealed road.
Beach squeaks and twitters with every step.
Clear sea, fine sand swirls. Rays flap, hover.
No, not a nursery for grey-nurse sharks.
Why do they gather here?
Nights over Bulahdelah and Wallingat
a-frogging we go. Bright eyes, sharp beams
find *Litoria wilcoxi, revelata, fallax*
and names long known take form.

Following are a selection of photos from over the years of Smiths Lake and those who attended.

***Litoria jervisiensis* 2014**

***Litoria revelata* 2015**

Punia Jeffery and friend October 2010

Lake view 2011

Froggers 2014

Kangaroos on the lawn 2009

2014

Katherine, Bill & forest trails discoveries, 2000

Smiths Lake with field station in the distance, 2000

2015

Golden Crown & Namkhai, October 2010

Continued from page 3

Samples from the Korean peninsula showed greater genetic diversity than any other *Bd* site on Earth, confirming earlier hunches that the region was *Bd*'s ground zero. And once researchers figured out *Bd*'s mutation rate, they learned that the ancestor of today's *Bd*GPL emerged out of Asia in the early 20th century. Until its global export around the 1950s, the fungus had coexisted peacefully with local fauna.

Researchers theorize that human activity spread infected amphibians worldwide, either through shipping, the once-booming trade in live-frog pregnancy tests, the amphibian meat and pet industries, or massive events such as the Korean War. At the conflict's height, millions of soldiers and pieces of equipment entered and exited the region—giving amphibians ample opportunity to hitch a ride.

Despite international trade guidelines, it's clear that the global pet trade continues to spread *Bd*.

When team members combed pet stores and markets in Belgium, the U.K., the U.S., and Mexico, they found infected frogs and toads that carried all known lineages of *Bd*, including the deadly *Bd*GPL.

Topical fungicides can heal *Bd*-stricken amphibians, a method that's been tried out successfully in the wild. But at present, wild populations can't be cured on a global scale. For now, researchers say that our best option is to prevent the fungi's further spread. But stopping chytrid is a tall order—especially since there are deadly species other than *Bd*. In 2013, researchers identified *B. salamandrivorans*, a sister species of *Bd* known as *Bsal*. Its name translates to "salamander-devouring" for a reason. From 2009 to 2012, the fungus slashed Dutch fire salamander populations by more than 99 percent.

In 2016, U.S. wildlife officials banned the importation of 201 salamander species, expressly to keep *Bsal* out of the country. However, a 2017 appeals court ruling means that if these salamanders were already in the U.S. before the ban went into effect, their interstate transport remains legal.

The new study also underscores the threat of *Bd* hybrid strains. Previously, researchers knew that the native Brazilian strain of *Bd* could hybridize with the killer *Bd*GPL; now, researchers have shown that the African lineage of *Bd* can do the same. As once-separated fungi mix and mingle on a global scale, who knows what virulent hybrids might arise?

"To me, this is one of the scariest things," says Lips. **TO SAVE AMPHIBIANS, BAN THEIR TRADE?** *Bd*GPL is already in the U.S., and the U.S. Fish and Wildlife Service is actively monitoring its spread. However, the agency isn't blocking the arrival of its sister lineages. In March 2017, it stopped considering a 2009 petition to ban all amphibian imports unless they were *Bd*-free.

"The *Bd* fungus is already widely present in the environment in the United States, so regulating importation of amphibians will do little to protect native amphibians ... [and] would be minimally effective at preventing the fungus from further spreading across State lines," said Dave Miko, the U.S. Fish and Wildlife Service's chief of fisheries and aquatic conservation, in a statement.....

At a minimum, Lips says that internationally traded amphibians should be tested for *Bd*, which doesn't happen consistently today. The U.S. Department of Agriculture, for one, doesn't require health screenings on imported pet amphibians. For O'Hanlon and Fisher, the most promising solution to *Bd* and *Bsal* is the most sweepingly idealistic: a complete ban on the global amphibian pet trade.....
Michael Greshko writes online science news Forwarded to FATS by Lothar Voigt. https://news.nationalgeographic.com/2018/05/amphibians-decline-frogs-chytrid-fungi-bd-animals-science/ 10/5/2018 Also see https://www.sciencedaily.com/releases/2018/05/180510150039.htm forwarded to FATS from Fred Parker.

And http://www.bbc.com/news/science-environment-44075687 forwarded from Alan Lane.

Watercolour by Garth Coupland *Mixophyes fleayi*

ELEVATED SALINITY BLOCKS PATHOGEN TRANSMISSION AND IMPROVES HOST SURVIVAL FROM THE GLOBAL AMPHIBIAN CHYTRID PANDEMIC: IMPLICATIONS FOR TRANSLOCATIONS

Congratulations Dr Simon Clulow, John Gould, Hugh James, Michelle Stockwell, John Clulow, Michael Mahony and the University of Newcastle.

Research breakthrough for amphibians and the fight against Chytrid fungus in wild populations. Newcastle research article First published: 12 November 2017 Full publication history **DOI:** 10.1111/1365-2664.13030 http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.13030/full and https://www.facebook.com/simon.clulow/posts/10156089575475477 continued on P11

FATS MEETINGS commence at 7 pm, (arrive from 6.30 pm) and end about 10 pm, at the Education Centre, Bicentennial Park, Sydney Olympic Park, Homebush Bay. They are usually held on the **first Friday of every EVEN month** February, April, 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 attend many community fairs and shows. Please contact 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.

RESCUED FROGS seeking forever homes are at our meetings. Contact us in advance if you wish to adopt a frog. Cash donation ($30 to $50) required to cover care costs. Sorry we have no EFTPOS. FATS must sight your current amphibian licence. Licences can be obtained from NSW National Parks and Wildlife Service, Office of Environment and Heritage. http://www.environment.nsw.gov.au/wildlifelicences/GettingAnAmphibianKeepersLicence.htm We request you join FATS before adopting a frog. This can be done on the meeting night. Most rescued frogs have not had a vet visit unless obviously ill. Please take you new, formerly wild pet to an experienced herp vet for a check-up, possible worming and/or antibiotics. Consider having annual checks for your frog pets. Some vets offer discounts.

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Continued from P10 **Assessing host response to disease treatment: how chytrid-susceptible frogs react to increased water salinity** By: Klop-Toker, K., Valdez, J., Stockwell, M., Edgar, M., Fardell, L., Clulow, S., Clulow, J. & Mahony, M. (2018). Wildlife Research, 44(8): 648-659. | **Forwarded to FATS by Wendy Grimm** **Abstract:**

1 Emerging infectious diseases are one of the greatest threats to global biodiversity. Chytridiomycosis in amphibians is perhaps the most extreme example of this phenomenon known to science. Translocations are increasingly used to fight disease-induced extinctions. However, many programmes fail because disease is still present or subsequently establishes in the translocation environment. There is a need for studies in real-world scenarios to test whether environmental manipulation could improve survival in populations by generating unfavourable environmental conditions for pathogens. Reintroductions of amphibians impacted by chytridiomycosis into environments where the disease persists provide a scenario where this paradigm can be tested.

2 We tested the hypothesis that manipulating environmental salinity in outdoor mesocosms under near-identical environmental conditions, present in a nearby translocation programme for an endangered amphibian, would improve survival and determine the mechanisms involved. One hundred and sixty infected and 288 uninfected, captive-bred, juvenile frogs were released into 16 outdoor mesocosms in which salinity was controlled (high- or low-salinity treatment). The experiment was run for 25 weeks from the mid-austral winter to the mid-austral summer of 2013 in a temperate coastal environment, Australia.

3 Increasing salinity from *c*. 0.5 ppt to 3.5–4.5 ppt reduced pathogen transmission between infected and uninfected animals, resulting in significantly reduced mortality in elevated salt mesocosms (0.13, high-salt vs. 0.23, low-salt survival at 23 weeks). Increasing water temperature associated with season (from mean 13 to 25°C) eventually cleared all surviving animals of the pathogen.

4 *Synthesis and applications*. We identified a mechanism by which environmental salinity can protect amphibian hosts from chytridomycosis by reducing disease transmission rates. We conclude that manipulating environmental salinity in landscapes where chytrid-affected amphibians are currently translocated could improve the probability of population persistence for hundreds of species. More broadly, we provide support for the paradigm that environmental manipulation can be used to mitigate the impact of emerging infectious diseases.

CELEBRATING 25 YEARS OF FATS FIELD TRIPS TO SMITHS LAKE

Species list 2017

***Pseudophryne coriacea* 2014**

Karen White Fiorella Nelson and Henry Cook 2009

Seal Rocks

Gumboot parade 2014