

# FROGSHEET

[www.qldfrogs.asn.au](http://www.qldfrogs.asn.au) | questions [at] qldfrogs.asn.au | [f/qldfrogsociety](https://www.facebook.com/qldfrogsociety)

The annual Queensland Garden Expo was held again this year from the 13-15th July.

We were again invited by Sunshine Coast Council to participate in the 'Living Backyard' area of the showgrounds, where Council kindly provided a tent and free site for our display. Albeit cold, the weather was fantastic over the whole three days, helping to draw in the crowds. We had many QFS members help out the few Committee members at the display, answering the usual most-asked questions, but always having people leave with the satisfaction of their question now answered!

This year though we had an old friend hop by. For those of you who have been members for long enough, you might remember 'Pobbles', our larger-than-life Scarlet-sided Pobblebonk mascot. He's been burrowed under the ground for a fair few years, but with some elbow-grease and TLC, Pobbles was once again able to bring a smile to many faces, and experience the relatively new craze of having selfie photos taken with many requesting folk!

Upon making his way around and handing out our *Be Toadally Sure* brochures, Pobbles met the ever-keen gardening guru, Costa from Gardening Australia! After drawing a bit of attention and of course a few photos, Pobbles was invited to share a ride with Costa in a golf buggy for a segway on the program (which aired on the



31 August - check it out on ABC iView). It certainly isn't every day you take a ride in a golf buggy with Costa! Stay tuned next year for the special birthday episode

## LARGER THAN LIFE AT THE QLD GARDEN EXPO



Pobbles and Costa

of Gardening Australia, where Pobbles lands another few seconds of air time wishing Gardening Australia a happy birthday.

After spending a fair bit of time above ground, Pobbles returned below the surface in the heat of the day, and we continued answering people's questions and selling items. Whilst crowds appeared a little smaller to other years, it was still a fantastic event with many sales and new memberships received!

Thanks again to everyone who helped setup, attend the display and packup, and for Council's continued support of non-profit environmental groups such as ours.

## EXECUTIVE COMMITTEE

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## WELCOME NEW MEMBERS

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## ASHGROVE REPORT

Unfortunately I am still not able to attend the Bowman Park working bees and I haven't had a report from Phill Bird but I am sure they are going along well.

I did manage to get up to Nambour with the help of my youngest daughter and we worked the 3 days at the Garden Expo which was great. Luckily the rain went through the day before setting up on the Thursday which just meant it was muddy underfoot but the days were just glorious.

I felt that there was a different crowd this year with the lack of the country folk but that is possibly because of the trying times they are going through. We did still have many questions to answer and people would just wanting to know what frogs they have and we are looking forward to seeing a photo of the "Glowing frog" next year.

One of the highlights this year was our President dressed up in Pobble's costume and meeting Costa from Gardening Australia. I do hope you get to see the segment on the 31 August programme. Again it was

### UPCOMING EVENTS

**20 October** - QFS AGM, Downfall Creek, McDowell. 10am, followed by BBQ lunch at 12pm.

**2 November** - Frog Workshop at Mary Cairncross Reserve. Further details provided closer to date on Facebook & E-news emails.

**Keep updated via our E-News Emails and Facebook**

### ANSWERING EMAILS

We are seeking a proactive member with decent frog knowledge to regularly attend to our Questions email Inbox. Please contact us if you are interested.

### FROG HABITAT WORKING BEES

**Bowman Park, Bardon**

8-11am - Contact Phil for more info or visit the Facebook group at <https://www.facebook.com/bowmanparkfroghabitatgroup/>

important for the society to be there to inform and help out where we can to encourage frog friendly gardens.

I personally like to thank the members who volunteered their time to help out and of course the Sunshine Coast Council for supplying such a great venue and the marquee.

Jenny Holdway

## HOW TO: BUILDING A FROG POND

With all the frog pond projects the QFS has been involved in over the last year, why not have a go at building one yourself! Our President Jono shares his recent adventures in doing just that.

After purchasing our acre block and building our home at Kilcoy late last year, an early project I had set my sights on was building my first frog pond. Priorities, I know!

Our land was formerly used for cattle grazing, and as such, was devoid of vegetation with the exception of two very large and very old QLD Blue Gums. I wasn't

### 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 **\$5,563.42** (+ \$128 since Winter edition)

### STAY IN THE LOOP

If you have a newer preferred email address, please contact us and let us know.

### HELPING HAND

We are always in need of an extra pair of hands to assist at community event display stalls. Many hands make light work, even if you can spare 30 minutes to help unpack and pack up our display gear from and to a vehicle. Most of our displays are within the Brisbane area.

Please contact our Secretary if you can help us out.

sure how many frogs would live nearby, but you don't know until you try, right?

I wanted this pond to replicate a natural small body of water, as best I could. One that would fill up after heavy rainfall and dry out during periods of no rain - an ephemeral water body. Therefore I had to place the pond in an area that receives overland flow during heavy rain. Using our property contour plan and online mapping, I determined such a spot and began digging! When planning for your pond, keep in mind to avoid placing pond directly beneath a bedroom window, as during breeding season frogs can get pretty loud. Also avoid positioning a frog pond in direct sunlight, as this will quickly encourage algal blooms.

Local council regulation meant my pond could not be greater than 3 x 3m in size or deeper than 60cm without obtaining approval. I had visions of a pond far big-

ger but this would have to do. When designing ponds, you will want to create both shallow and deeper areas in the pond. Also consider if your pond will be inground or above ground. Above ground ponds will prevent ground frogs from accessing the water, so I preferred an inground pond. Or you could provide both an inground pond and an above ground pond out of an old bath tub or other water-holding object. So, after digging out a fair bit of dirt and creating a small propped-up wall on one side, I soon realised I would need a liner as the clay soil didn't quite hold water long enough.

Pond liners. How much money do you want to spend? For a decent pond, I recommend a pond liner. Liners come in PVC, EDPM and HDPE material. PVC is the most affordable, whilst EDPM is the most expensive, but most durable. I recommend PVC liners of at least 0.5mm thick, and ensure they have some level of UV



The initial dig.



Old carpet underlay laid in pond

### QFS Annual General Meeting

Our Annual General Meeting will be on Saturday, 20 October at Downfall Creek Bushland Centre, beginning at 10am and finishing with a BBQ at 12pm.

We are very excited to have two guest speakers attending; Alannah Filer, recipient of the Ric Nattrass Research Grant, speaking on the research she is undertaking on acid frogs and competitor species, and Harry Hines of the QLD Parks and Wildlife Service, providing us an update on QLD frogs.

The AGM will be followed with a BBQ on-site, allowing plenty of time to catch up with our guest speakers and friends.

You will receive additional information in the post regarding the AGM and confirming your attendance.

We look forward to seeing you there!

resistance. HDPE liners more durable than PVC and more affordable than EDPM, but also have some compromising characteristics. Take a look into each to determine which liner is best for you and your budget.

Equally as important is the underlay; the soft liner beneath the waterproof liner. Laying an underlay provides a soft bottom preventing sharp objects from protruding the upper liner, but also help to deter roots seeking water and puncturing the upper liner. Sourcing underlay is easy and usually free; just call up your local commercial carpet company and ask if you can grab some old carpet foam underlay from their skip bins, discarded from jobs where new old carpet has been removed and new carpet installed. This handy tip was given to me by Sean Morrow, a professional in

backyard pond installation.

Once you have the liner and dug out the dirt for your pond, lay the carpet underlay so that it covers the same area your pond liner will. Then spread out your liner and fit into your excavated hole, ensuring enough extra liner to cover 20-30cm over the edge of the pond. Wear a soft soled shoe or bare feet when you need to step on the liner to work it to shape.

I next began placing heavy rocks carefully onto the liner, beginning at the base of the pond. Where rocks were sharp, I placed a piece of excess liner beneath the rock to reduce the risk of puncturing the main liner. I then worked around the base of the pond until all rocks were in place, before placing rocks and fallen

timber/logs/bark up the banks of the pond, using the larger rocks at the base to support the rocks and timber up the sides. Arrange these in a loose fashion to replicate the natural edges of a pond. These items will also create shelter and calling platforms for frogs and other small wildlife.

Once I finished working inside the pond, I filled with water. You'll want to mark the water level on a rock in the pond and check the next day to determine if there are

any leaks. If not, place sand or fine gravel in the base of the pond for a natural look and to protect the liner beneath.

Finally, I continued placing additional pond furniture in and around the pond, including a small tree limb in the



**Pond with liner and first 'layer' of rocks at the base**



**Completed pond.**

water that will also poke above the water level for additional perch space for frogs or birds during the day. If your property doesn't have much fallen timber or rocks laying around, keep an eye out on the sides of roads, particularly after wild weather where excess timber is lying about. A family member or friend may have a pile of rocks they don't want which you could take off their hands, too!



**Fallen tree branches, bark and rocks as additional hiding places**

Finally, I have planted some native water plants in the pond and around shallower areas, including around the outside pond edge. A plant barrier will discourage cane toads accessing the pond whilst also provide further perch space for frogs and habitat during the day.

The next step requires the most patience - waiting for resident frogs to find your pond! It is illegal to move frogs, tadpoles and eggs to other areas and from property to property. I built my pond during winter, so

it's been a waiting game for the warmer weather finally upon us now, that entices the frogs out of hiding.

And sure enough, just last week, one of the many Spotted Marshfrogs (*Limnodynastes tasmaniensis*) I have hiding out on the property has made his way into the pond and began calling! Needless to say, this was a very exciting moment. Again I find myself wait-

ing for him to meet a lady friend and breed, so that the tadpoles can eat the mosquito larvae. In the meantime, I could introduce some native Pacific Blue-eye fish to the pond as they predate on mosquito larvae but not frog eggs or tadpoles. Whatever you do, don't introduce goldfish or other large fish as no eggs or tadpoles will survive!

Well there you have it. Hopefully you can use some of these tips along the way when building your pond. This is by no means the only way to build a frog pond, but it has worked for me!

Jono Hooper 

### Junior Frogsheet Editor Position Available

Thankyou Tim for your efforts in providing Junior Frogsheet contributions over the last couple of years!

If one of our members would like to take up this role, please contact the Editor -  
editor [at] qldfrogs.asn.au



**Spotted Marshfrog Credit: J. Hooper**

# HOW A PREGNANCY TEST CAUSED A CATASTROPHE FOR FROGS



Zoe Cormier |  
BBC Earth

© E. Tyler - Southern Gastric Brooding Frog

**By the time we realised what was happening, it was too late.**

“In the 1980s, people just didn’t think frogs were disappearing. Scientists said ‘don’t panic, we need the stats to prove it, all populations have natural fluctuations over time,’ and so on,” says Dr Lee Berger of James Cook University in Australia.

“By the time of the World Congress of Herpetology [the study of reptiles and amphibians] in 1990, researchers had to admit that the frogs had disappeared, they couldn’t find them and they didn’t understand why they had vanished or what to do.”

The crisis had started as early as the 1970s, when frogs began to quietly vanish from the rivers, marshes and forests of the world, taken down by a new and insidious menace: *Batrachochytrium dendrobatidis*, a pathogenic fungus that is lethal to frogs. Also known as “chytrid”, the fungus slowly suffocates the frog as it impairs the normal functioning of its skin. Animals can die within a week of infection. Entire populations seem to vanish overnight.

“It was shocking to watch the spread of the disease happen in real time 15 years ago,” says Jamie Voyles,

assistant professor at the University of Nevada. “In Panama, spots in the rainforest were deafeningly loud with amphibian calls. Their abundance was incredible; you couldn’t even walk through the forest without worrying about stepping on them. The next summer they were just gone.”

Just as the disappearance of birdsong alerted scientists to the devastating impacts of pesticides on eggshells, the eerie quiet of the rainforest told biologists something was wrong.

The most famous casualty: the Costa Rican golden toad (*Incilius periglenes*), which has not been seen since 1989. Australia’s spectacularly quirky gastric-brooding


frogs (*Rheobatrachus*), which gestated froglets in their stomachs, are also gone.

It’s hard to know for sure how many species chytrid has consigned to extinction, but a recent study estimates 200 species of frog have been wiped out by the fungus. Many now are just hanging on after being decimated by the disease, which has affected 700 species worldwide.

“Older people say the Australian mountains used to be positively noisy with the calls of the Corroboree frog – they were so abundant people used them as fishing bait. Now there are less than 100 in the wild,” says Berger.

Today, the remaining frogs have been sequestered in a 30 sq m outdoor enclosure, protected by a 3m-high metal fence. “It’s not an ideal solution, but it has been a success,” she says.

Her diagnosis is not to be taken lightly. Berger has studied chytrid since the beginning; she is one of the co-discoverers of the fungus, which she tracked as part of her PhD thesis and described in the journal PNAS in 1998.



It is believed the international trade in the African clawed frog *Xenopus laevis* - widely used as pregnancy tests in the 1950s and '60s - released the fungus into the wild. As the African amphibians co-existed with the fungus in their native habitats they had some resistance to it. But other amphibians were not so lucky.

By the time Berger identified chytrid in 1998, it had spread to every continent but Antarctica.

Because amphibians' skin is permeable, they are vulnerable to any environmental factor that interferes with their epidermal layers, such as pesticides, fertilizers, UV radiation and pharmaceuticals in wastewater. As amphibians spend part of their lives in water and part on land, they are doubly susceptible to any environmental threat. No wonder some biologists think of amphibians as "canaries in the coal mine": they can signal wider environmental catastrophes as they begin to unfurl.

In the most recent official estimate, the Global Amphibian Assessment of 2004, 43 per cent of amphibians are listed as being in decline and 30 per cent are threatened to some degree (contrasting darkly with a quarter of mammals and about a tenth of birds). These "official" numbers are more than a decade out of date, and most herpetologists believe 50 per cent of amphibians are at risk of extinction within the next five years.

"Diseases don't pay attention to park borders - many of these extinctions have taken place in beautiful, pristine forest reserves," says Dr Simon Clulow of the University of Newcastle in Australia.

"It is important to recognise that chytrid is the most devastating wildlife disease ever to emerge, and it's not going away anytime soon. I expect I will be working on how to combat this disease for the rest of my career."

Clulow discovered one reason for optimism. In outdoor field experiments, he found raising the salinity of water by just 0.5 parts per trillion was enough to dramatically reduce infection rates and increase survival rates.

"It's really just a slight increase in the salinity. You

could drink a glass of this and not taste the salt," says Clulow. The technique would not work for all environments, but in ponds or artificial habitats this simple trick would be an easy way for biologists to protect frogs while having negligible effects on the rest of the ecosystem.

In another study yet to be published in the journal *Conservation Physiology*, Clulow reports successfully producing embryos and one sexually mature adult from cryopreserved testicular tissue from male eastern dwarf tree frogs (*Litoria fallax*). This he says is a proof of concept that assisted reproductive technologies could be used in the future to bring threatened populations back from the brink.

"We need to be ready to rescue 'insurance populations' straight away from the wild and put them into captive breeding programs, and use modern tools to save them," he says.

One major research focus should be identifying the genetic factors that make some frog species or individuals more resilient than others, says Berger.


"If we can find the genetic factors that make some frogs immune, we could look at using artificial selection or transgenesis to breed resistant strains of frogs and release them back into the wild," she says.

On the bright side, biologists know a lot more about the disease now than they did in the 1980s, so for the few species of amphibian that are still unaffected, conservationists will be far better equipped to protect them.

One major priority: the island of Papua New Guinea is home to six per cent of the world's frog species and is the largest land mass the fungus has not reached (apart from Antarctica).

"So far Papua New Guinea has just been lucky, but I think it's only a matter of time, I think it's a question of when, not if the fungus will arrive," says Clulow.

Research suggests that some frogs naturally have symbiotic microbes on their skin which have evolved to fight off the fungus. "In Papua New Guinea we have been taking skin samples from frogs and performing



transcriptomics to identify what's living on their skin, and test out various hypotheses, so we can be ready to battle chytrid when it lands."

Other biologists have been exploring the possibility of creating a vaccine of sorts by spraying animals with dead samples of the disease, inoculating them to fight off virulent, living pathogens.

Another reason for cautious optimism: wild populations appear to be evolving resistance to the fungus. This year, Voyles reported in the journal *Science* that some wild populations in Panama are bouncing back because they have naturally evolved greater resistance to the fungus.

In areas of Panama where the fungus had been present for many years, Voyles found clown frogs (*Atelopus varius*) were more capable of fighting off the infection. This would indicate a shift from the epidemic stage of the outbreak, to a more stabilised pandemic phase, where animals have naturally become more resistant and co-exist with the fungus. Though only 12 per cent of Panama's frog species have returned to pre-outbreak levels, this does suggest amphibians around the world have the capacity to naturally recover and stabilise.

"It's only a small subset of all the species that declined, so it's not a simple end to the problem, but it does give me a glimmer of hope," says Voyles. "We still want to send out a call to arms to mobilise the world to tackle this, because there are other chytrid fungi out there that could still pose a threat."

In May, an international team of scientists reported in the journal *Science* that they had tracked down where *Batrachochytrium dendrobatidis* originally came from: Korea, in the mid-twentieth century.

We can use this knowledge to prevent other outbreaks of a similar nature. Korea is home to many more fungal species that could also spread globally. Already a related fungus, *Batrachochytrium salamandrivorans*, is wiping out salamanders worldwide. Scientists only reported the discovery of this pathogen in 2013, so it is early days yet in the outbreak.

"There will be more amphibian extinctions as long as

our population keeps growing and the resources we direct towards conservation don't keep pace," says Kerry Kriger of Save The Frogs. "We can't do anything about that for now – but what we can do is stop the international trade in amphibians, which was the biggest driver behind the spread of chytrid in the first place. As long as we ship 100 million amphibians a year for the pet trade and for food, amphibian diseases will continue to spread with them. The state of California for example has known for a decade that imported bull frogs are infected with chytrid, but the government has done nothing to stop the importations."

Professor Karen Lips of the University of Maryland, who has been studying the chytrid outbreak for 20 years, agrees that the biggest precautionary step we could take would be to limit the international trade in amphibians as pets and food.

"We need new laws that require testing and quarantine of animals that are imported. Right now people can easily buy a pet frog that hasn't been certified as clean, and if they just bury it in the backyard when it dies, that can be a new source of infection," she says. "Based on what they saw in Korea just now, we know there will be more amphibian chytrid diseases out there."

In addition to the new salamander fungus, bats in North America have been affected by a strange new fungal disease known as "white nose syndrome," and the continent's snakes are being wiped out by a new fungal disease called *Ophidiomyces ophiodiicola*, only identified by scientists in 2015.

"Chytrid is the worst wildlife disease we have ever seen, so the least we can do is take lessons from this and apply them to other new and emerging pathogens," says Prof Lips. "And with changing human migration patterns and climate change, we are bound to see more."

Prof Berger agrees that chytrid should act as a call to arms to bring in new regulations and dedicate resources to stopping emerging diseases before they cause global catastrophe.

"The lack of a global effort and dedicated funding has been very frustrating," says Berger. "It's important to remember that the reason a lot of species haven't gone extinct is because of the dedication of a few individuals who really have just handed their lives over to stop these animals from going extinct. Without their commitment things would be so much worse." ■

## PRESIDENT'S REPORT

These last few months have been relatively busy. It was a lot of fun to help out at our QFS Display at the QLD Garden Expo again, particularly when dressed as a frog! I have also spent some time in discussions with local council and a landcare group organising a few frog workshops which I hope to share further details of soon, particularly as we approach National Frog Week from 4-10 November.

I look forward to seeing as many of you as possible at our upcoming AGM on 20th October at Downfall Creek. We have some intriguing speakers lined up for the day and the casual BBQ lunch after will provide plenty of opportunity to get around to everybody.

These warm nights bring out the frogs I have residing on our property. Some will brave the cold weather too! I have counted close

to 20 juvenile Green Treefrogs around the property, plus our resident Emerald-spotted Treefrog, Bleating Treefrog, Naked Treefrog and a good half dozen Spotted Marshfrogs.

Whilst pulling out some old pond liner in July, I came across over a dozen Green Treefrogs and Spotted Marshfrogs sheltering beneath the disturbed pond liner.

Conveniently, I had already built a rough 'frog motel' out of disused PVC pipe, of which I relocated the treefrogs too. Many of these now reside permanently here, and pop out at night for a feed.



Cheers,

*Jono Hooper*

**NEXT EDITION**

Thankyou to those of you who contributed to this newsletter.

**Deadline for Summer *Frogsheet* contributions is  
15 November 2018**

If undelivered, please return to  
**QLD Frog Society Inc**  
**PO Box 7017**  
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**SURFACE MAIL**



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