

[***A javelina got into a pickup truck to eat some snacks and got trapped***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:656P-DN91-JCG7-80VG-00000-00&context=1516831)

CE Noticias Financieras English

April 11, 2022 Monday

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**Length:** 544 words

**Body**

**An American wild boar -also**  known as peccary or tagua- **got into a vehicle to eat a bag of Cheetos and could not get out**

. The photos of the animal locked in the vehicle went viral on networks and soon appeared in the accounts of the Yavapai County Sheriff, who reported how the strange situation ended.

The animal was tempted by some good snacks in Cornville, Arizona, on April 6. The situation was resolved after a person who noticed a javelina trapped in a private van called a deputy's office to alert them to the strange situation.

When the Cornville officer arrived on scene he saw a Subaru with the javelina inside. After speaking with neighbors and the van's owner, Yavapai police concluded that the vehicle spent the night parked with the rear window open and that the peccary got in through there with the intention of stealing some snacks.

"Can you blame her, who doesn't like midnight Cheetos?" he asked. Her entrance rattled the rear window and locked her inside. After licking the bag of Cheetos free of crumbs, her attempt to get out of the vehicle proved more cumbersome than getting in," reads the Yavapai Sheriff's release on the case.

The mischief continued to escalate: upon getting into the Subaru, the javelina ripped out a portion of the dashboard, the inside of the tailgate and put the vehicle in neutral, which found the pickup walking on its own and cruising across the street until it lightly hit some trees.

"YCSO is pleased to report that no one was injured during this escape, including the animal. The deputy safely opened the hatch, which allowed the javelina to carefully jump out and run back into the desert," advises the Yavapai Sheriff in the release.

In closing with the story, Yavapai reminds, "If you're in the Southwest, you probably already know that it's best not to feed the boar. Yes, it's tempting to create, but when people feed wild animals, they attract them to neighborhoods and can necessary conflicts. Encourage your neighbors not to do so either."

**Goodbye to the national dish**

Dominicans will not be able to eat their national dish, prepared from a native giant frog, because the long fight against the fungus that threatens the amphibian could not prevent it from remaining endangered.

"It will be a long time before we can consider eating the mountain chicken again," said Monday the wildlife expert of the Department of Forestry of the Caribbean island, **Janelle Brisbane**

, alluding to the popular name of the frog.

Brisbane explained in declarations to a local radio station that the fungus that affects the so-called "mountain chicken" is of the ***chytrid*** type.

This fungus causes chytridiomycosis in amphibians, a disease that damages their skin. The expert also said that the ***chytrid*** fungus, which is found in the soil and is "very difficult to eliminate", is "here to stay in Dominica", after having been detected in 2002.

This larger than normal frog, which inhabits Dominica and Montserrat, is classified as an endangered species due to the drastic decline of its population due to hunting, volcanic activity and the ***chytrid*** fungus

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For many years, "mountain chicken" was the traditional dish in Dominica, as well as in the neighboring Caribbean islands of St. Lucia, Martinique and Guadeloupe.

Source: EFE

See

also.

**Load-Date:** April 12, 2022

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[***UCSB Researchers Join Baja California Scientists to Assess Amphibian Disease***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64RH-18K1-DXVP-V1BB-00000-00&context=1516831)

Noozhawk (Santa Barbara, CA)

February 8, 2022 Tuesday

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**Section:** UCSB

**Length:** 1178 words

**Byline:** Harrison Tasoff

**Body**

There's a pandemic sweeping across the globe. No, not COVID, a different one. For decades, a brutal fungal infection has been decimating amphibians worldwide.

"We call it a panzootic," said Andrea Adams, an assistant researcher in the Earth Research Institute at UC Santa Barbara. "It's like a pandemic, only with animals."

Scientists are hard at work investigating the disease's origin, trajectory, genetics and impact in an effort to safeguard vulnerable and valuable biodiversity. Biologists from Southern and Baja California have published the first major account and most comprehensive study of the amphibian disease chytridiomycosis in the Mediterranean region of Baja California.

Their results, which appear in Global Ecology and Conservation, indicate the disease is more prevalent on the peninsula than in similar areas of Southern California.

"Contrary to what we had expected, what's going on in Baja California is very different than what's going on with ***chytrid*** fungus in Southern California, where the species are pretty much the same, and the environment is very similar," said Adams, the lead author.

Chytrids form a large group of mostly soil-dwelling fungi. They're quite common, and generally pose no harm. However, two species have evolved to infect the skin of amphibians. In highly infected animals, the skin responds by thickening.

This has a downside. "You probably heard frogs drink through their skin," Adams said. It's true. They also exchange salts and minerals through their skin. So when their skin thickens, it can be a death sentence for many individuals.

The team wanted to know what environmental and biological factors influence ***chytrid*** infection in Baja California, particularly at different elevations. Unfortunately, there has been little research on the topic in the Mediterranean region of Baja California.

"We knew ***chytrid*** was here, but we didn't know how it was affecting different species or which variables mattered most," said co-author Anny Peralta-García, director of Conservación de Fauna del Noroeste, a nonprofit organization dedicated to research and conservation in Baja California, especially for less charismatic species.

Along with UCSB professor Cherie Briggs, Adams teamed up with Peralta-García's group and Carlos A. Flores-López, a researcher at the Autonomous University of Baja California, to carry out a survey of the disease in local frogs.

The scientists collected samples quarterly from November 2015 to October 2016. They visited three sites in Baja California, each at a different elevation. The lowest is a perennial stream about 12 miles south of Ensenada. The area's hot springs make it a popular recreational spot.

The middlemost location is about 2,000 feet up in the foothills of the Sierra San Pedro Mártir, a mountain range in northern Baja California.

Lastly, the team surveyed a mountain meadow 6,700 feet high in Sierra de San Pedro Mártir National Park, where despite some impacts from livestock, native amphibians still appear to thrive.

The Mexican team spent two to three days per location catching animals at night. They swabbed the frogs' skin to collect samples of the fungus, then released them back into the wild. Altogether, they collected enough data to analyze the disease prevalence and load in four species, including the endangered California red-legged frog and the invasive American bullfrog.

"We found that when it comes to ***chytrid*** infection, the most important things are where you live and who you are," Adams said. In other words, elevation and species. ***Chytrid*** infections were more common and more intense at higher elevations, where the cooler, moister environment provides ideal conditions for the fungus.

Some species are also more susceptible to the infection than others. For instance, the California red-legged frog was among the most infected, with the highest observed infection intensity and prevalence compared to other species.

The team found that ***chytrid*** was much more prevalent in Baja California, where 68% of animals they surveyed had the fungus, compared to 15% in Southern California, as observed in a previous study.

The difference was particularly striking for California red-legged frogs. In another study in Southern California, only 30% of the species was infected. "In Baja California, we found that 99% of the California red-legged frogs at the highest-elevation site were infected," Adams said.

Not only was the disease more prevalent, infected animals also carried a higher pathogen load in Baja California. The team was curious when the fungus first arrived in Baja California. If it appeared recently, that could help explain the high infection intensities compared with Southern California.

"When the fungus first arrives to a place it can cause die-offs and declines in susceptible species," Adams said.

Fortunately, the San Diego Natural History Museum has a wealth of amphibian specimens from Baja California that the team used to investigate the history of ***chytrid***'s arrival. The scientists found the fungus in specimens collected as early as 1932. Previous research found the earliest record of ***chytrid*** detection from Baja California is 1926.

For comparison, the first record of the fungus in Southern California was found in specimens from Los Angeles County in 1915. This makes some sense, as invasive species often arrive at ports of entry and then fan out into the landscape. The combined ports of Los Angeles and Long Beach are the largest on the West Coast.

So, if ***chytrid*** has been in both places Baja California and Southern California for about the same amount of time, what could explain the differences the team found?

Much like the SARS-CoV-2 virus, the ***chytrid*** fungus has evolved over time. As the fungus mutates and adapts, more virulent or infectious strains may emerge in different locations.

Understanding what's going on will require long-term monitoring, tracking individuals over time and establishing baselines. "These data help us prioritize sites that need conservation actions," Peralta-García said. "For example, La Grulla, our highest elevation site, needs to continue to be monitored for disease."

The group is continuing their sampling and rehabilitation work, though getting samples tested will require more funding.

"Right now, our main focus is trying to increase populations of California red-legged frogs in Baja California and Southern California," Peralta-García said.

They've had success reintroducing eggs, which lack keratin, so are not susceptible to the fungus, to historical sites in California. This means eggs can't transfer the fungus from one site to another.

Adams does similar work in the United States. "Anny and I are actually doing very similar things," she said. "We are both working to find the best ways to bring these frogs back to places they've disappeared from, and we learn a lot from each other."

***Chytrid*** is always part of the discussion, she added. "We can still be moving forward on ***chytrid*** questions and ***chytrid*** monitoring, while also trying to remedy species declines."

**Graphic**

Endangered California red-legged frog is highly susceptible to chytridiomycosis. (Conservación de Fauna del Noroeste)

**Load-Date:** February 9, 2022

**End of Document**



[***Beautiful but deadly alpine newt discovered in three Irish counties***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6539-7X81-DYTY-C12G-00000-00&context=1516831)

Sunday Independent

March 27, 2022

Edition 1, National Edition

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**Section:** NEWS; Pg. 17

**Length:** 390 words

**Byline:** NIAMH HORAN

**Body**

Scientists have found an invasive species of alpine newt in three counties in Ireland.

The amphibian has been found in five different locations in Co Offaly, Co Tipperary and Co Down.

The alpine newt has the potential to have a detrimental impact on local biodiversity by acting as competition to native species, and by transmitting a disease called ***chytrid*** to native amphibian species such as the common frog, smooth newt and natterjack toad.

***Chytrid*** has driven many species of frogs to extinction in the tropics.

Zoologist Éinne Ó Cathasaigh, who works with the Herpetological Society of Ireland (HSI), said the alpine newt was most likely introduced here through the pet trade by someone keen to add colour to their garden pond. With gold irises and black pupils, it is one of the most striking species among European newts.

"They are very similar to our smooth newts but the defining difference is that they don't have a spotted belly like our native species. Instead they have an unmarked orange stomach. They are really beautiful but they are also dangerous - and that's the issue," he said.

On the HSI's discovery, he added: "We found them in a disused swimming pool. There were hundreds of them. In Offaly, we've already recorded around 30 this year. They are highly resilient to environmental conditions here and they reproduce very, very quickly."

Describing the potential threat posed to the local environment if alpine newts harm local amphibians, he said: "Frogs, for example, are a keystone species. They have a huge impact on our environment. They eat so many insects that we would be overrun without them.

"A huge amount of flies return to stagnant water to breed, and where do frogs also breed? Stagnant water. So they keep the number of flies low."

The HSI is asking people to report any new sightings of alpine newts to the organisation. They normally live in still or slow-moving water that is clear and full of vegetation.

Mr Ó Cathasaigh said the new discovery should should make people more conscious of invasive species, particularly their local area and gardens.

"It is the perfect example of why we need to be a lot more careful of what we introduce. Realistically speaking, when people are building an artificial pond they should leave it, and nature will take care of it. Put a few plants in and amphibians will come," he said.

**Graphic**

Smooth newts, native to Ireland, have a spotted bellyAlpine newt could have a detrimental effect on local ecosystems

**Load-Date:** March 27, 2022

**End of Document**



[***Costa Rica's golden toad, a victim of global warming according to climatologists***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:656X-8P61-JCG7-84VW-00000-00&context=1516831)

CE Noticias Financieras English

April 12, 2022 Tuesday

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**Length:** 460 words

**Body**

The golden toad of Monteverde, in the Costa Rican jungle, disappeared more than three decades ago, a phenomenon that is now cited in UN reports as an example of the consequences of climate change.

Until 1989, generations of nature lovers and scientists marveled at the annual spectacle of these tiny, shiny-skinned batrachians emerging from underground to mate after the dry season.

It was a spectacle that lasted only a few hours. "The ground was very dark and the golden toads were silhouetted like figurines," recalls Alan Pounds, an ecologist at the Monteverde Biological Reserve in Costa Rica.

The golden toad (Bufo periglenes), classified as an anuran amphibian, lived only in the Monteverde jungle.

A "cousin", the Panamanian golden frog (Atelopus zeteki), is critically endangered due to a fungus.

The latest report of the UN panel of climate experts (IPCC) specifically cites the Costa Rican toad as one of the victims of climate change.

"Approximately 99% of its population was lost in one year," Alan Pounds, whose studies are cited in the IPCC report, explained to AFP.

In the case of the Panama batrachian, experts point to the deadly effect of ***Chytrid*** Fungus, a "superfungus" that was initially detected on the Korean peninsula.

Alan Pounds insists that it is climate change, which exacerbated the El Niño phenomenon that periodically affects Latin America, that caused the disappearance of the Costa Rican toad, which other experts attribute to the same deadly fungus.

"The disease is the bullet that kills the frogs, but climate change is the one that pulls the trigger," Pounds said when he presented his studies.

Another animal endemic to the Monteverde reserve, the Harlequin frog, has also practically disappeared, although some scientists claim to have seen some specimens.

According to the International Union for Conservation of Nature (IUCN), climate change is a threat to about 12,000 species, of which 6,000 are at risk of extinction.

The international community opened formal negotiations to protect the planet's biodiversity this year. The main objective is to protect at least 30% of land and oceans by 2030.

But according to experts, the threat is more profound for sites like Monteverde.

Rainfall has increased over the last 50 years in the region, but rain falls irregularly.

In the 1970s, the Costa Rican jungle suffered 25 days of drought a year. In the last decade those days have increased to an average of 115.

The humidity that kept the jungle soggy and facilitated the survival of the batrachians has been reduced by 70%.

Pounds explains that sometimes tourists ask him in Monteverde where the famous "rainforest" is.

"I tell them, 'they're already inside.' It often looks more like a dust cloud than a rainforest," he laments.

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**Load-Date:** April 13, 2022

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[***Biodiversity takes a hit with more species added to threatened list***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6516-KS81-F0J6-J556-00000-00&context=1516831)

Canberra Times (Australia)

March 18, 2022 Friday

Print Edition

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**Section:** NEWS; Pg. 6

**Length:** 581 words

**Byline:** Alex Crowe

**Body**

Australia's biodiversity is facing continued decline, with another 34 species listed as threatened over the past 12 months.

Eight birds, four frogs and a mammal were among the newly-listed threatened species, which included two fish, a snail and 18 plants.

Habitat loss from bushfires resulted in 10 species being upgraded to a higher risk of extinction in the last 12 months, according to a report by the Australian National University.

Only two species received improved conservation status in 2021, the golden sun moth and the giant barred frog, both now listed as vulnerable.

The change to a total of 1943 threatened species in Australia represents a 2.3 per cent increase from the previous year and a 39 per cent increase since 2000.

Australia's Environment 2021 report co-author Shoshana Rapley said habitat loss and degradation, as well as invasive species, presented the greatest threat to Australia's biodiversity.

Ms Rapley identified predators like foxes and cats as a major threat, as well as pathogens like myrtle rust and ***chytrid*** which was affecting amphibians.

Prior to a 2021 Threatened Species Strategy review, feral cats had been the only threat targeted, this will now include foxes, gamba grass and myrtle rust, according to the report.

Ms Rapley said it was really important to have the national inventory.

"And keep it fresh in our mind that Australia is the world leader in mammal extinction," she said.

"A quarter of the world's losses in the last 200 years have been in Australia."

Another 12 species were listed as extinct in 2021, 10 of which were historical and two, the Christmas Island pipistrelle last seen in 2009 and the Christmas Island forest skink last seen in 2010, were recent.

Ms Rapley said Australia had known about the threats facing native species for a long time but the decline had continued on unabated.

"The current systems not working. We're adding species to the list, we're accounting for them, but there's no change being made," she said.

Ms Rapley said the report should be a wake-up call that threatened species conservation needed to be taken more seriously.

With the CSIRO snubbed from pandemic support to supplement $459 million additional funding over four years announced in last year's budget, Ms Rapley said biodiversity investment was falling short.

READ ALSO:

CSIRO's 'Pyrotron' bushfire simulator to help fight extreme weather events Underground river provides backyard oasis for Coombs family "There has been research going on to say that we should be spending at least 1 per cent of our GDP on protecting biodiversity," she said.

"When you look at the ecosystem services that it provides, the net return we get on that investment is anywhere between 10 to 100 times.

"We rely on trillions of dollars from the environment for things like our fisheries, our clean air, or clean water to drink and we need to take that into account when we're making these decisions.

"Otherwise, the future is not going to inherit the world that has those trillions of dollars worth of services, let alone the beautiful biodiversity that we cherish and contributes so much to the tourism sector, which is a really important staple of the Australian economy."

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[***Biodiversity takes a hit with more species added to threatened list***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6516-KS91-F0J6-J01N-00000-00&context=1516831)

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[***A study confirms that the Pyrenean newt is in good health***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64C7-NY11-DY1R-B27N-00000-00&context=1516831)

CE Noticias Financieras English

December 22, 2021 Wednesday

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**Length:** 392 words

**Body**

A study carried out by researchers from the Universitat Autònoma de Barcelona in collaboration with the Fundació Zoo de Barcelona and with a sample of 642 specimens, rules out the presence of ***chytrid*** fungi in the Pyrenean newt in Catalonia. This study has also revealed 495 specimens of other five species of amphibians that cohabit with them, such as the webbed newt, the salamander, the Pyrenean frog, the common toad and the common midwife toad.

The study was carried out in 15 areas of the natural parks of Cadí-Moixeró, Capçaleres del Ter i del Freser and Alt Pirineu and confirms the good health of the Pyrenean newt in Catalonia. However, the detection of some fungi in a point of the Pyrenees emphasizes the importance of continuing to monitor these populations, according to Maria Puig Ribas, one of the researchers of the project.

"We have not detected any positive newt in any of the analyzed samples of the two ***chytrid*** fungi and we can say that the Pyrenean newt populations in Catalonia are free of pathogens", explained Óscar Cabezón, researcher of the Department of Animal Medicine and Surgery. "We have only detected B. dedrobatidis in the easternmost point of the Pyrenees, in the limit of distribution of the newt and in another species of toad", added Cabezón.

The aim of the research project, carried out by researchers of the Wildlife Conservation Medicine (WildCoM) research group of the Autonomous University of Barcelona, was to know if the pathogenic fungi species, Batrachochytrium dedrobatidis and Batrchochytrium salamandrivorans, could be present in the newt populations of the Catalan Pyrenees.

These two fungi could cause chytridiomycosis in amphibians, a global disease caused by species trade and human mobility, which has caused the extinction of numerous amphibian species worldwide. In the Iberian Peninsula the fungi have been located mainly at higher altitudes.

The study carried out by the Universitat Autònoma de Barcelona has made it possible to create a bank of samples that will be used for future studies. According to some researchers, this will be "essential to be able to detect the appearance of new pathogens".

The next step will be to define new objectives for the conservation of the species. In addition, researchers are also carrying out population studies, both of the Pyrenean newt and amphibian species.

**Load-Date:** December 23, 2021

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[***New frog species found in Panama Why is it called Greta Thunberg?***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HR-3611-DY1R-B3F2-00000-00&context=1516831)

CE Noticias Financieras English

January 12, 2022 Wednesday

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**Length:** 352 words

**Body**

A new species of frog was found in Panama, which, according to expert biologists from that country and Switzerland, belongs to the group of rain amphibians of the genus Pristimantis, Family Strabomantidae, informed the director of the Asociación Adopta Bosque, Guido Berguido.

The specimen was named after Swedish activist Greta Thunberg for her work and efforts in the face of the climate crisis. The determination to assign the 19-year-old activist's name occurred in 2018 when Rainforest Trust, a non-profit organization in the US, organized an auction where they offered the rights to name some species new to science.

? Leonardo DiCaprio Joins New Initiative to Restore Galapagos Islands

At this event it was proposed to name the new frog discovered in Panama after Greta Thunberg to recognize and honor her efforts in the face of the climate crisis, said the Ministry of Environment.

Her work on climate change before the Swedish parliament has inspired students around the world to hold similar strikes called Fridays for the Future. She is inspiring world leaders and her work is attracting others to climate action.

Meanwhile, the Panamanian Ministry of Environment and Asociación Adopta Bosque stress that the plight of Greta Thunberg the frog is closely linked to climate change.

Ecology

This is due to rising temperatures and will destroy its small mountain habitat, since the region around Cerro Chucanti has already lost more than 30% of its forest cover in recent years".

Another drawback for the frog is the deadly ***chytrid*** fungus, which affects the skin of more than 700 of the species and has caused the decline of populations worldwide, as well as the extinction of almost 200 species.

The amphibian's characteristics are that it has black eyes, a trait unique among Central American rain frogs, and its closest relatives inhabit northwestern Colombia.

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The new endemic frog species inhabits the high mountains of Darien and Central Panama. For this reason it has a very restricted habitat and is therefore vulnerable to extinction, informed biologist Berguido.

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[***New frog species discovered in Panama: named Greta Thunberg***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HH-3M91-DY1R-B39H-00000-00&context=1516831)

CE Noticias Financieras English

January 11, 2022 Tuesday

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**Length:** 408 words

**Body**

An international team led by biologists from Panama and Switzerland discovered a new species of frog in a Panamanian cloud forest and has been named "Greta Thunberg", in honor of the young Swedish activist and her efforts in the face of the climate crisis.Photo: Agencia EFEA

team of five researchers led by Konrad Meber describe a new species of frog of the genus Pristimantis from the cloud forest of Cerro Chucantí, Maje Mountains, Darién Province, as well as from several other mountain ranges in eastern and central Panama, in the scientific journal ZooKeys, published by Pensoft

.

The researchers named the new species "Greta Thunberg" (Pristimantis gretathunbergae sp. nov.) in allusion to the Swedish activist fighting to control climate change. Pristimantis gretathunbergae sp. nov. is a sister species of the allopatric group P. erythropleura-penelopus from northern Colombia. Currently, according to the study, 13 species of Pristimantis frogs are known in Panama.

Although

this number is relatively low compared to the richness of Pristimantis in the much larger Chocó bioregion in western Colombia and Ecuador, "its variation in Panama still represents a major challenge for taxonomic work," the researchers note. The frog Pristimantis gretathunbergae sp. nov. is endemic to Panama, that is, it is only reported there and inhabits the high mountains of the Darien and the center of the country.

The Panamanian Ministry of Environment and the ADOPTA Bosque Association stressed that "the grim situation of the Greta Thunberg's frog is closely related to climate change".

See: WHO: "Coronavirus vaccines work against all variants

""Rising temperatures would destroy its small mountain habitat," since "the region around Cerro Chucanti has already lost more than 30% of its forest cover in recent years," they added in separate statements.The amphibian has black eyes, a trait unique among Central American rain frogs and their Colombian relatives

.

Another threat to the new frog species is the deadly ***chytrid*** fungus, which affects the amphibians' skin, the two agencies said. Batrachochytrium dendrobatidis is the name of the fungus that causes the skin disease that already affects more than 700 species of amphibians and has caused the decline of populations worldwide, as well as the extinction of nearly 200 species.

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**Load-Date:** January 12, 2022

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[***Demand for This Toad's Psychedelic Venom Is Booming. Some Warn That's Bad for the Toad.***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6522-PYD1-JC85-N00M-00000-00&context=1516831)

The New York Times - International Edition

March 22, 2022 Tuesday

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**Section:** US

**Length:** 1656 words

**Byline:** Simon Romero

**Body**

**ABSTRACT**

In a sign of unintended consequences of the psychedelic resurgence, scientists say that the Sonoran desert toad is at risk of population collapse.

**FULL TEXT**

TUCSON, Ariz. - After multiple combat tours as a Navy SEAL, Marcus Capone tried talk therapy. Brain-injury clinics. Prescription drugs. Nothing worked to ease his crippling depression and anxiety.

Then he smoked the venom of the Sonoran desert toad.

"I saw why they call this the 'God molecule' after I got a full central nervous system reset," said Mr. Capone, 45, who now runs a nonprofit with his wife helping hundreds of other Special Operations veterans access toad medicine.

Riding the wave of greater mainstream acceptance of psychedelics for treating mental disorders and addiction, a fast-growing retreat industry is touting the potential of the toad's secretions. People pay anywhere from $250 for a ceremony in the East Texas woods to $8,500 for a more gilded beachfront setting in Tulum, Mexico, to consume the venom.

But in a sign of the unintended consequences of the psychedelic resurgence, scientists are warning that the scramble by users to obtain the toads - involving poaching, over-harvesting and illegal trafficking in arid expanses straddling the border with Mexico - could trigger a collapse in Sonoran desert toad populations.

Toad medicine apostles are now increasingly split between those like Mr. Capone, who support using synthetic versions that are easy to produce, and purists who say they will never stop using venom collected from the toads themselves. As retreat operators tailor experiences for therapeutic, recreational or spiritual purposes, the discussions over threats to the toad are growing more contentious.

"We're a church, and this is sacred medicine," said Brooke Tarrer, 42, a former Texas schoolteacher who in 2015 founded the Universal Shamans of the New Tomorrow, which makes consumption of the toad venom a central feature of its practices.

Ms. Tarrer, whose church in Huntsville, Texas, charges $250 for a venom ceremony, positioned herself against what she called "Green movement people" aiming to protect the toad. "We would never go with synthetic," she added.

The toad itself, found primarily in the Sonoran desert, which straddles parts of the southwestern United States and northwestern Mexico, is already thought to have been extirpated in California, where it hasn't been found in the wild in decades. Authorities in New Mexico list it as threatened, citing excessive collection among factors.

The Sonoran desert toad can still be found in parts of Arizona and Sonora in northwest Mexico. One of the largest toads native to North America and remarkably long-lived with a life span reaching 20 years, it hibernates underground for most of the year, resurfacing to breed around the summer monsoon rains.

Herpetologists say the toad seems to have adapted to human-modified landscapes like irrigation ditches, suburban yards and water tanks on cattle ranches.

But risks abound. Motorists already kill many of the toads, and predators such as raccoons also target them.

When the toad is threatened, it excretes toxins strong enough to kill full-grown dogs. A substance found in these toxins, 5-MeO-DMT, can be dried into crystals and smoked in a pipe, producing an intense experience generally lasting 15 to 30 minutes, in contrast to other psychedelic substances that can involve hours of hallucinating and vomiting.

Five-MeO-DMT remains effectively illegal in the United States, where it is classified as a Schedule 1 substance. But while many users opt to attend retreats in Mexico, where it is legal, ceremonies are also taking place in the United States, where law enforcement agencies are largely tolerating its growing popularity.

Celebrities from Chelsea Handler to Joe Rogan have smoked the venom, commonly called Five or Bufo (after the toad's former scientific name, Bufo alvarius; it's been renamed Incilius alvarius). As researchers start looking into the safety of 5-MeO-DMT, reports of adverse experiences are also occasionally emerging.

For instance, a photographer died in one episode in Spain in 2020 after smoking the venom. At some retreats, operators have paramedics on standby to help people who might have negative reactions.

Still, interest in Bufo is climbing, with users often calling it the "God molecule," likening its use to a religious experience.

Bernice Anderson, 50, who goes by the Mayan name Ixca and charges $1,100 for retreats in Utah, said that smoking Bufo allows some people to feel like they are dying before returning to life.

"They will foam at the mouth, and their eyes will roll to the back of their head," said Ms. Anderson, who does not use synthetic 5-MeO-DMT. "It's at that point where the shamanic experience comes in. This is something that has to be carried out very carefully."

Still, the surging demand for the Sonoran desert toad's venom is raising alarm. Robert Villa, president of the Tucson Herpetological Society, compared the threats with those faced by Asian river turtles, which are facing extinction risks because of habitat loss and a belief that they cure ailments like cancer.

"There's a perception of abundance, but when you begin to remove large numbers of a species, their numbers are going to collapse like a house of cards at some point," Mr. Villa said.

Some warn that collecting the venom also places stress on the toad, a process often described as "milking," in which a person strokes the amphibian under its chin to initiate a defensive response. The toad then releases a milky substance that can be scraped, dried and smoked.

Seeking to meet demand, some proponents have started breeding farms with hundreds or even thousands of toads. But Mr. Villa also warned that such sites could become vectors for outbreaks of ***chytrid*** fungus, a pathogen that can devastate amphibians. Predators could also target such locations, he said, as coyotes and Gila monsters have done in California in places where desert tortoises are raised. Reports of poaching are also worrying toad advocates.

In the meantime, a growing number of herpetologists and researchers of psychedelic drugs are citing studies that show the synthetic form, which is relatively easy to produce, has helped ease symptoms of depression, anxiety and stress.

Unlike other psychedelics such as peyote or ayahuasca, which are grounded in centuries of traditions involving Indigenous peoples, Bufo's usage is thought to be more recent.

Pharmacologists had known the Sonoran desert toad could make 5-MeO-DMT, but it wasn't until 1983 that Ken Nelson, a reclusive artist who lived in a decommissioned missile base in North Texas, drove to the Sonoran desert, milked a toad, dried the venom on his van's windshield and smoked it.

A pamphlet he wrote under the pseudonym Albert Most then circulated in the underground scene of psychedelic enthusiasts.

"That might actually be the origin story," said Alan Davis, director of Ohio State University's Center for Psychedelic Drug Research and Education.

Still, some of the most influential figures in the Bufo scene have promoted Indigenous connections. Dr. Octavio Rettig, a physician from Guadalajara, Mexico, said he introduced the venom to the Seri people in northwestern Mexico in 2011 in a bid to combat crystal meth addiction.

"After they got the medicine, they started to put the puzzle together," said Dr. Rettig, 43, citing what he believes was a rescue of the Seri's "lost traditions." "They recognized the benefits of the toad medicine."

Bufo retreats are now available in the Seri community at which the actual venom of the toad is consumed. At the same time, others pushing for protections for the toad have argued that the promotion of Indigenous connections could have disastrous effects by further depleting toad populations.

"People hunger for the narrative that the toad was used ancestrally by the Indigenous people of Sonora," said Ana Maria Ortiz, a doctoral student who is carrying out a population study of the toad at the University of Wisconsin's School of Human Ecology. "There's an appeal to that narrative, and even I believed it at the onset."

Ms. Ortiz, who has used Bufo to help people overcome addictions, said she was aware that some users skeptical of the synthetic form describe an "entourage effect" involving other compounds in the toad's natural secretions.

"A lot of the other compounds in the toxins are actually cardiac glycosides that can kill you," Ms. Ortiz said. "Synthetic 5-MeO-DMT is just as good. People need to leave the toads alone."

Dr. Gerardo Sandoval, another Mexican physician involved in introducing Bufo to new practitioners, likened the synthetic version to "watching a black-and-white movie."

"Toad medicine is watching the movie in 3-D," added Dr. Sandoval, who owns a ranch in Sonora, where he raises the toads and charges $500 for a venom ceremony.

Still, Dr. Sandoval said that relying on the toad involved risks. In one incident last summer, he said, intruders stole hundreds of adult toads from his ranch.

Quarreling around 5-MeO-DMT may just be starting as Bufo pioneers also face claims of abuse. Participants in a Facebook group have highlighted claims of psychological manipulation and rape against Dr. Sandoval; he has disputed them. Dr. Rettig has come under criticism over the deaths of people who have taken part in Bufo ceremonies.

Dr. Rettig acknowledged that deaths had occurred but pointed to other pre-existing health problems, like heart conditions.

"I am a physician," said Dr. Rettig, who estimated that he had worked with thousands of people taking Bufo. "Only a madman can expect that no one will suffer any sideways consequence."

**Load-Date:** March 21, 2022

**End of Document**



[***Biologists discover new frog species in Panama and name it Greta Thunberg***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HR-34C1-DY1R-B0PX-00000-00&context=1516831)

CE Noticias Financieras English

January 11, 2022 Tuesday

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**Length:** 506 words

**Body**

An international team of biologists has discovered a new species of frog in a cloud forest in Panama and named it "Greta Thunberg," in honor of the young Swedish activist and her efforts to combat the climate crisis, it was announced today.

The frog Greta Thunberg (Pristimantis gretathunbergae sp. nov., in the scientific name) to the group of the rain frog of the genus Pristimantis, family Strabomantidae, said today EFE news agency the biologist and director of the association Adopta Bosque Panama (ADOPTA), Guido Berguido.

The article in which the new species is officially described and named was published today in the scientific journal ZooKeys published by Pensoft.

The specimen was discovered by an international team of biologists led by scientists Abel Batista from Panama and Conrad Mebert from Switzerland at the Centro Chucantí, a private reserve located in the province of Darién and managed by ADOPTA.

The new frog species "is endemic to Panama, is only reported in the Republic of Panama, and lives only in the high mountains of Darién and central Panama. That is, in a very restricted habitat and is therefore vulnerable to extinction," Berguido explained.

The amphibian has black eyes, a unique feature of Central American rain frogs, and its closest relatives live in northwestern Colombia, Panama's Ministry of Environment and ADOPTA indicated.

The two entities stressed that "the bleak situation of the Greta Thunberg frog is strictly related to climate change."

"Rising temperatures would destroy its small mountain habitat," since "the region around Cerro Chucanti has already lost more than 30 percent of its forest cover in recent years," they add in two different press releases.

Another threat to the new frog species is the deadly ***chytrid*** fungus, which affects the skin of amphibians.

Batrachochytrium dendrobatidis (scientific name) is the name of the fungus that causes the skin disease that has affected more than 700 species of amphibians, and has caused the decline of populations worldwide, as well as the extinction of nearly 200 species.

In 2018, the non-profit organization Rainforest Trust celebrated its 30th anniversary by organizing an auction where it offered the naming rights to name some species new to science.

The winner of this auction proposed to name the new frog discovered in Darién to honor Greta Thunberg and her efforts to combat the climate crisis, according to Panama's Ministry of Environment.

"Her 'School Strike for Climate Action' inspired students around the world to hold similar strikes called Fridays for the Future. [Greta] has impressed world leaders and her work is attracting others to climate action," the official said.

Guido Berguido told EFE that the new species was discovered as part of Abel Batista's doctoral work in Germany, which "consisted of doing an analysis of the amphibians in Darién.

Getting to the cloud forest where the frog was found involves long hours of horseback travel through muddy trails, climbing steep slopes and camping at an altitude of 1,000 meters.

**Load-Date:** January 13, 2022

**End of Document**



[***Psychedelic Toad Venom Is in Demand. That's Bad for the Toad.***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:651T-HYH1-JBG3-6039-00000-00&context=1516831)

The New York Times

March 20, 2022 Sunday

Late Edition - Final

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**Section:** Section A; Column 0; National Desk; Pg. 18

**Length:** 1643 words

**Byline:** By Simon Romero

**Body**

TUCSON, Ariz. -- After multiple combat tours as a Navy SEAL, Marcus Capone tried talk therapy. Brain-injury clinics. Prescription drugs. Nothing worked to ease his crippling depression and anxiety.

Then he smoked the secretions of the Sonoran desert toad.

''I saw why they call this the 'God molecule' after I got a full central nervous system reset,'' said Mr. Capone, 45, who now runs a nonprofit with his wife helping hundreds of other Special Operations veterans access toad medicine.

Riding the wave of greater mainstream acceptance of psychedelics for treating mental disorders and addiction, a fast-growing retreat industry is touting the potential of the toad's secretions. People pay anywhere from $250 for a ceremony in the East Texas woods to $8,500 for a more gilded beachfront setting in Tulum, Mexico, to consume the toxin.

But in a sign of the unintended consequences of the psychedelic resurgence, scientists are warning that the scramble by users to obtain the toads -- involving poaching, over-harvesting and illegal trafficking in arid expanses straddling the border with Mexico -- could trigger a collapse in Sonoran desert toad populations.

Toad medicine apostles are now increasingly split between those like Mr. Capone, who support using synthetic versions that are easy to produce, and purists who say they will never stop using secretions collected from the toads themselves. As retreat operators tailor experiences for therapeutic, recreational or spiritual purposes, the discussions over threats to the toad are growing more contentious.

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Ms. Tarrer, whose church in Huntsville, Texas, charges $250 for a toad ceremony, positioned herself against what she called ''Green movement people'' aiming to protect the toad. ''We would never go with synthetic,'' she added.

Though commonly referred to as toad venom, herpetologists point out that the secretions are technically a poison, because they are ingested, rather than injected by the toad through a bite or a sting.

The toad itself, found primarily in the Sonoran desert, which straddles parts of the southwestern United States and northwestern Mexico, is already thought to have been extirpated in California, where it hasn't been found in the wild in decades. Authorities in New Mexico list it as threatened, citing excessive collection among factors.

The Sonoran desert toad can still be found in parts of Arizona and Sonora in northwest Mexico. One of the largest toads native to North America and remarkably long-lived with a life span reaching 20 years, it hibernates underground for most of the year, resurfacing to breed around the summer monsoon rains.

Herpetologists say the toad seems to have adapted to human-modified landscapes like irrigation ditches, suburban yards and water tanks on cattle ranches.

But risks abound. Motorists already kill many of the toads, and predators such as raccoons also target them.

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Celebrities from Chelsea Handler to Joe Rogan have smoked the substance, commonly called Five or Bufo (after the toad's former scientific name, Bufo alvarius; it's been renamed Incilius alvarius). As researchers start looking into the safety of 5-MeO-DMT, reports of adverse experiences are also occasionally emerging.

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''I am a physician,'' said Dr. Rettig, who estimated that he had worked with thousands of people taking Bufo. ''Only a madman can expect that no one will suffer any sideways consequence.''

**Graphic**

PHOTOS: Exhaling smoke after taking dried venom of the Sonoran desert toad through a pipe during a ceremony in the East Texas woods.

''We're a church, and this is sacred medicine,'' said Brooke Tar- rer, center, whose church charges $250 for a venom ceremony.

A participant after inhaling toad venom. A substance in the toad toxins produces an intense experience lasting 15 to 30 minutes.

A ceremony participant after using the venom, often called the ''God molecule'' and likened to a religious experience. (PHOTOGRAPHS BY GO NAKAMURA FOR THE NEW YORK TIMES)

Robert Villa, of the Tucson Herpetological Society, said demand for the toad could threaten its population.

A substance in the toad venom, 5-MeO-DMT, commonly called Five or Bufo, remains effectively illegal in the U.S. (PHOTOGRAPH BY ADAM RIDING FOR THE NEW YORK TIMES)

**Load-Date:** March 23, 2022

**End of Document**



[***Endangered boreal toad getting help from the Denver Zoo and CPW***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:648X-G4V1-DXVP-V0WR-00000-00&context=1516831)

FOX - 31 KDVR (Denver)

December 10, 2021 Friday

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**Section:** NEWS

**Length:** 309 words

**Byline:** Keely Sugden

**Body**

DENVER (KDVR) Colorado Parks and Wildlife is teaming up with the Denver Zoo to boost the population of the endangered boreal toad and release 20,000 tadpoles into the Colorado wilderness next summer.

"Boreal toads are in a lot of trouble, but their numbers are still relatively strong even though their population is in decline," Stefan Ekernas, Rocky Mountain/Great Plains Program Director at Denver Zoo said. "Colorado Parks and Wildlife has done a tremendous amount of work on the conservation of boreal toads for almost 30 years, and we're excited to join in the effort to help the species make a meaningful recovery while there's still time."

The Native Aquatic Species Restoration Facility, operated by CPW, provided 95 boreal toads to add to the breeding population for their species.

Boreal toads were once common in montane habitats between 7,000-12,000 feet in the Southern Rocky Mountains. A dramatic decline in the amphibians may be due to habitat loss and ***chytrid*** fungus infections, according to CPW.

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\* A submerged boread toad at South Fork Lake Creek (Credit: CPW)

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"We have had success in the past producing boreal toad eggs and tadpoles at NASRF, but it is challenging, and with the increasing need for more animals, we need to step up breeding and reintroduction efforts," Harry Crockett, Native Species Aquatic Species Coordinator for CPW said.

The NASRF is a state-of-the-art facility dedicated to protecting and restoring threatened and endangered aquatics species native to Colorado, according to CPW.

CPW and Denver Zoo officials expect this to be a multi-year program and estimate that it will take many years to bring the species back to a secure level in the Southern Rocky Mountains.

The Denver Zoo's wild release program will be a community science project with volunteers monitoring the survival of released toadlets.

**Load-Date:** December 12, 2021

**End of Document**



[***New frog species discovered in Panama; named Greta Thunberg***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HH-3K91-JBJN-M1Y1-00000-00&context=1516831)

CE Noticias Financieras English

January 11, 2022 Tuesday

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**Length:** 553 words

**Body**

An article published this Monday in the scientific journal ZooKeys announced the discovery of a new species of frog, which was named Greta Thunberg in honor of the young Swedish activist and her efforts in the face of the climate crisis.

The frog (Pristimantis gretathunbergae), discovered by an international team led by biologists from Panama and Switzerland, belongs to the group of rain frogs (rainfrogs) of the genus Pristimantis, Family Strabomantidae, said biologist and director of Asociación ADOPTA Bosque, Guido Berguido.

The specimen was discovered by an international team of biologists led by Dr. Abel Batista, from Panama, and Dr. Konrad Mebert (Switzerland) in Cerro Chucantí, a private reserve located in the province of Darién (Panama) and managed by ADOPTA Bosque.

The new frog species "is endemic to Panama, it is only reported in the Republic of Panama and only inhabits the high mountains of Darien and Central Panama. In other words, it has a very restricted habitat and is therefore vulnerable to extinction," explained Berguido.

The amphibian has black eyes, a unique trait among Central American rain frogs, and its closest relatives inhabit northwestern Colombia, said Panama's Ministry of Environment and the ADOPTA Bosque Association.

**Frog under threatThe**

Panamanian Ministry of Environment and the ADOPTA Bosque Association highlighted that "the grim situation of Greta Thunberg's frog is closely related to climate change."

"Rising temperatures would destroy its small mountain habitat," since "the region around Cerro Chucanti has already lost more than 30 percent of its forest cover in recent years," they added in separate statements.

Another threat to the new frog species is the deadly ***chytrid*** fungus, which affects the amphibians' skin, the two agencies said.

Batrachochytrium dendrobatidis is the name of the fungus that causes the skin disease that already affects more than 700 amphibian species and has led to the decline of populations worldwide, as well as the extinction of nearly 200 species.

**An iconic nameIn**

2018, Rainforest Trust, a U.S. nonprofit organization, celebrated its 30th anniversary by hosting an auction where they offered the rights to name some species new to science

.

The winner of this auction proposed naming the new frog discovered in Darien to honor Greta Thunberg and her efforts in the face of the climate crisis, said the Panamanian Ministry of Environment.

"Her School Strike for Climate Action in front of the Swedish parliament has inspired students around the world to hold similar strikes called Fridays for the Future. She has impressed world leaders and her work is attracting others to climate action," the official information stated.**The importance of the reservesBerguido**

said that the new species was discovered as part of Batista's doctoral work in Germany, which "consisted of analyzing the amphibians in Darién

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Reaching the cloud forest where the frog was found involves riding long hours on horseback through muddy trails, hiking steep slopes, passing two helicopters that crashed decades ago, and camping above 1,000 meters in altitude".

The fact that this discovery was made in a private reserve "is of great importance (...) it is a wake-up call that we have much to discover, study and conserve in our country," said the director of Adopta Bosque.

**Load-Date:** January 12, 2022

**End of Document**



[***New species of frog discovered in Panama and named Greta Thunberg***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HH-3N31-JBJN-M562-00000-00&context=1516831)

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**Length:** 587 words

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**ANOTHER THREATENED FROG SPECIES**

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**BAPTISED AS THUNBERG FROG**

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**THE IMPORTANCE OF RESERVES**

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**Load-Date:** January 12, 2022

**End of Document**



[***Another frog species discovered in Panama and named "Greta Thunberg".***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HH-3N31-JBJN-M44J-00000-00&context=1516831)

CE Noticias Financieras English

January 10, 2022 Monday

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**Length:** 580 words

**Body**

An international team led by biologists from Panama and Switzerland discovered a new species of frog in a Panamanian cloud forest that was named "Greta Thunberg", in honor of the young Swedish activist and her efforts in the face of the climate crisis.

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The new frog species "is endemic to Panama, it is only reported in the Republic of Panama and only inhabits the high mountains of Darien and Central Panama. In other words, it has a very restricted habitat and is therefore vulnerable to extinction," explained Berguido.

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ANOTHER ENDANGERED FROG SPECIES

The Panamanian Ministry of Environment and the ADOPTA Bosque Association stressed that "the grim situation of the Greta Thunberg's frog is closely related to climate change."

"Rising temperatures would destroy its small mountain habitat," since "the region around Cerro Chucanti has already lost more than 30 % of its forest cover in recent years," they added in separate statements.

Another threat to the new frog species is the deadly ***chytrid*** fungus, which affects the amphibians' skin, the two agencies said.

Batrachochytrium dendrobatidis is the name of the fungus that causes the skin disease that already affects more than 700 species of amphibians and has led to the decline of populations worldwide, as well as the extinction of nearly 200 species.

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**Load-Date:** January 12, 2022

**End of Document**



[***Demand for This Toad’s Psychedelic Toxin Is Booming. Some Warn That’s Bad for the Toad.***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:651T-GFC1-JBG3-6506-00000-00&context=1516831)

The New York Times

March 20, 2022 Sunday 14:10 EST

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**Section:** US

**Length:** 1790 words

**Byline:** Simon Romero

**Highlight:** In a sign of unintended consequences of the psychedelic resurgence, scientists say that the Sonoran desert toad is at risk of population collapse.

**Body**

To hear more audio stories from publications like The New York Times, [*download Audm for iPhone or Android*](https://www.audm.com/?utm_source=nyt&amp;utm_medium=embed&amp;utm_campaign=toads_demand_psychedelic_venom).

TUCSON, Ariz. — After multiple combat tours as a Navy SEAL, Marcus Capone tried talk therapy. Brain-injury clinics. Prescription drugs. Nothing worked to ease his crippling depression and anxiety.

Then he smoked the secretions of the Sonoran desert toad.

“I saw why they call this the ‘God molecule’ after I got a full central nervous system reset,” said Mr. Capone, 45, who now runs a nonprofit with his wife helping hundreds of other Special Operations veterans access toad medicine.

Riding the wave of greater [*mainstream acceptance*](https://www.nytimes.com/2021/05/09/health/psychedelics-mdma-psilocybin-molly-mental-health.html) of psychedelics for treating mental disorders and addiction, a fast-growing retreat industry is touting the potential of the toad’s secretions. People pay anywhere from $250 for a ceremony in the East Texas woods to $8,500 for a more gilded beachfront setting in Tulum, Mexico, to consume the toxin.

But in a sign of the unintended consequences of the psychedelic resurgence, scientists are warning that the scramble by users to obtain the toads — involving poaching, over-harvesting and illegal trafficking in arid expanses straddling the border with Mexico — could trigger a collapse in Sonoran desert toad populations.

Toad medicine apostles are now increasingly split between those like Mr. Capone, who support using synthetic versions that are easy to produce, and purists who say they will never stop using secretions collected from the toads themselves. As retreat operators tailor experiences for therapeutic, recreational or spiritual purposes, the discussions over threats to the toad are growing more contentious.

“We’re a church, and this is sacred medicine,” said Brooke Tarrer, 42, a former Texas schoolteacher who in 2015 founded the Universal Shamans of the New Tomorrow, which makes consumption of the toad secretions a central feature of its practices.

Ms. Tarrer, whose church in Huntsville, Texas, charges $250 for a toad ceremony, positioned herself against what she called “Green movement people” aiming to protect the toad. “We would never go with synthetic,” she added.

Though commonly referred to as toad venom, herpetologists point out that the secretions are technically a poison, because they are ingested, rather than injected by the toad through a bite or a sting.

The toad itself, found primarily in the Sonoran desert, which straddles parts of the southwestern United States and northwestern Mexico, is already thought to have been extirpated in California, where it hasn’t been found in the wild in decades. Authorities in New Mexico list it as threatened, citing excessive collection among factors.

The Sonoran desert toad can still be found in parts of Arizona and Sonora in northwest Mexico. One of the largest toads native to North America and remarkably long-lived with a life span reaching 20 years, it hibernates underground for most of the year, resurfacing to breed around the summer monsoon rains.

Herpetologists say the toad seems to have adapted to human-modified landscapes like irrigation ditches, suburban yards and water tanks on cattle ranches.

But risks abound. Motorists already kill many of the toads, and predators such as raccoons also target them.

When the toad is threatened, it excretes toxins strong enough to kill full-grown dogs. A substance found in these toxins, 5-MeO-DMT, can be dried into crystals and smoked in a pipe, producing an intense experience generally lasting 15 to 30 minutes, in contrast to other psychedelic substances that can involve hours of hallucinating and vomiting.

Five-MeO-DMT remains effectively [*illegal*](https://www.deadiversion.usdoj.gov/fed_regs/rules/2010/fr1220.htm) in the United States, where it is classified as a Schedule 1 substance. But while many users opt to attend retreats in Mexico, where it is legal, ceremonies are also taking place in the United States, where law enforcement agencies are largely tolerating its growing popularity.

[*Celebrities*](https://www.hollywoodreporter.com/news/general-news/chelsea-talks-cannabis-brand-smoking-toad-venom-marijuana-facials-more-at-upscale-vape-pen-launch-1184740/) from Chelsea Handler to Joe Rogan have smoked the substance, commonly called Five or Bufo (after the toad’s former scientific name, Bufo alvarius; it’s been renamed Incilius alvarius). As researchers start looking into the [*safety*](https://www.frontiersin.org/articles/10.3389/fphar.2021.760671/full) of 5-MeO-DMT, reports of adverse experiences are also occasionally emerging.

For instance, a photographer [*died*](https://www.bbc.com/news/world-europe-52920291) in one episode in Spain in 2020 after smoking the poison. At some retreats, operators have paramedics on standby to help people who might have negative reactions.

Still, interest in Bufo is climbing, with users often calling it the “God molecule,” likening its use to a religious experience.

Bernice Anderson, 50, who goes by the Mayan name Ixca and charges $1,100 for retreats in Utah, said that smoking Bufo allows some people to feel like they are dying before returning to life.

“They will foam at the mouth, and their eyes will roll to the back of their head,” said Ms. Anderson, who does not use synthetic 5-MeO-DMT. “It’s at that point where the shamanic experience comes in. This is something that has to be carried out very carefully.”

Still, the surging demand for the Sonoran desert toad’s secretions is raising alarm. Robert Villa, president of the Tucson Herpetological Society, compared the threats with those faced by Asian river turtles, which are facing [*extinction risks*](https://www.nytimes.com/2020/09/03/science/burmese-roofed-turtle-myanmar-extinction.html) because of habitat loss and a belief that they cure ailments like cancer.

“There’s a perception of abundance, but when you begin to remove large numbers of a species, their numbers are going to collapse like a house of cards at some point,” Mr. Villa said.

Some warn that collecting the poison also places stress on the toad, a process often described as “milking,” in which a person strokes the amphibian under its chin to initiate a defensive response. The toad then releases a milky substance that can be scraped, dried and smoked.

Seeking to meet demand, some proponents have started breeding farms with hundreds or even thousands of toads. But Mr. Villa also warned that such sites could become vectors for outbreaks of [***chytrid*** *fungus*](https://cisr.ucr.edu/invasive-species/chytrid-fungus), a pathogen that can devastate amphibians. Predators could also target such locations, he said, as coyotes and Gila monsters have done in California in places where desert tortoises are raised. [*Reports*](https://www.abc15.com/news/region-northeast-valley/carefree/sonoran-desert-toads-taken-from-spur-cross-conservation-area) of poaching are also worrying toad advocates.

In the meantime, a growing number of herpetologists and researchers of psychedelic drugs are citing [*studies*](https://pubmed.ncbi.nlm.nih.gov/31822925/) that show the synthetic form, which is [*relatively easy to produce*](https://video.vice.com/en_us/video/synthetic-toad-venom-machine/5fd3a82ce9ee6249e7195abd), has helped ease symptoms of depression, anxiety and stress.

Unlike other psychedelics such as peyote or ayahuasca, which are grounded in centuries of traditions involving Indigenous peoples, Bufo’s usage is thought to be more recent.

Pharmacologists had known the Sonoran desert toad could make 5-MeO-DMT, but it wasn’t until 1983 that Ken Nelson, a reclusive artist who lived in a decommissioned missile base in North Texas, drove to the Sonoran desert, milked a toad, dried the poison on his van’s windshield and smoked it.

A pamphlet he wrote under the pseudonym [*Albert Most*](https://www.dallasobserver.com/arts/a-vice-show-led-to-identifying-the-denton-creators-of-a-guide-to-hallucinogenic-toad-venom-12005921) then circulated in the underground scene of psychedelic enthusiasts.

“That might actually be the origin story,” said Alan Davis, director of Ohio State University’s Center for Psychedelic Drug Research and Education.

Still, some of the most influential figures in the Bufo scene have promoted Indigenous connections. Dr. Octavio Rettig, a physician from Guadalajara, Mexico, said he introduced the substance to the Seri people in northwestern Mexico in 2011 in a bid to combat crystal meth addiction.

“After they got the medicine, they started to put the puzzle together,” said Dr. Rettig, 43, citing what he believes was a rescue of the Seri’s “lost traditions.” “They recognized the benefits of the toad medicine.”

Bufo retreats are now available in the Seri community at which the actual secretion of the toad is consumed. At the same time, others pushing for protections for the toad have argued that the promotion of Indigenous connections could have disastrous effects by further depleting toad populations.

“People hunger for the narrative that the toad was used ancestrally by the Indigenous people of Sonora,” said Ana Maria Ortiz, a doctoral student who is carrying out a population study of the toad at the University of Wisconsin’s School of Human Ecology. “There’s an appeal to that narrative, and even I believed it at the onset.”

Ms. Ortiz, who has used Bufo to help people overcome addictions, said she was aware that some users skeptical of the synthetic form describe an “entourage effect” involving other compounds in the toad’s natural secretions.

“A lot of the other compounds in the toxins are actually cardiac glycosides that can kill you,” Ms. Ortiz said. “Synthetic 5-MeO-DMT is just as good. People need to leave the toads alone.”

Dr. Gerardo Sandoval, another Mexican physician involved in introducing Bufo to new practitioners, likened the synthetic version to “watching a black-and-white movie.”

“Toad medicine is watching the movie in 3-D,” added Dr. Sandoval, who owns a ranch in Sonora, where he raises the toads and charges $500 for a venom ceremony.

Still, Dr. Sandoval said that relying on the toad involved risks. In one incident last summer, he said, intruders stole hundreds of adult toads from his ranch.

Quarreling around 5-MeO-DMT may just be starting as Bufo pioneers also face claims of abuse. Participants in a [*Facebook group*](https://www.facebook.com/groups/174086912776801/) have highlighted claims of psychological manipulation and rape against Dr. Sandoval; he has disputed them. Dr. Rettig has come under criticism over the deaths of people who have taken part in Bufo ceremonies.

Dr. Rettig acknowledged that deaths had occurred but pointed to other pre-existing health problems, like heart conditions.

“I am a physician,” said Dr. Rettig, who estimated that he had worked with thousands of people taking Bufo. “Only a madman can expect that no one will suffer any sideways consequence.”

Audio produced by Jack D’Isidoro.

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PHOTOS: Exhaling smoke after taking dried venom of the Sonoran desert toad through a pipe during a ceremony in the East Texas woods.; “We’re a church, and this is sacred medicine,” said Brooke Tar- rer, center, whose church charges $250 for a venom ceremony.; A participant after inhaling toad venom. A substance in the toad toxins produces an intense experience lasting 15 to 30 minutes.; A ceremony participant after using the venom, often called the “God molecule” and likened to a religious experience. (PHOTOGRAPHS BY GO NAKAMURA FOR THE NEW YORK TIMES); Robert Villa, of the Tucson Herpetological Society, said demand for the toad could threaten its population.; A substance in the toad venom, 5-MeO-DMT, commonly called Five or Bufo, remains effectively illegal in the U.S. (PHOTOGRAPH BY ADAM RIDING FOR THE NEW YORK TIMES)

**Load-Date:** April 6, 2022

**End of Document**



[***New species of frog discovered in Panama and named Greta Thunberg***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HH-3M91-DY1R-B21X-00000-00&context=1516831)

CE Noticias Financieras English

January 11, 2022 Tuesday

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**Length:** 581 words

**Body**

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Another threat to the new frog species is the deadly ***chytrid*** fungus, which affects the amphibians' skin, the two agencies said.

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**Load-Date:** January 12, 2022

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CE Noticias Financieras English

January 10, 2022 Monday

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**Length:** 594 words

**Body**

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**End of Document**



[***NSF Funds $12.5 Million for Research on Species' Resilience to Infectious Disease***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63PX-H221-JBCN-407N-00000-00&context=1516831)

Noozhawk (Santa Barbara, CA)

September 27, 2021 Monday

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**Section:** UCSB

**Length:** 1050 words

**Byline:** Shelly Leachman for UCSB

**Body**

Can frogs' ability to survive certain infections help enhance understanding of how to help humans do the same? A new research endeavor involving multiple institutions, including UC Santa Barbara, will explore that possibility.

Funded by the National Science Foundation (NSF), the partnership will examine resilience demonstrated by amphibians and other groups of species to emergence and spread of new infectious diseases, along with other human-caused changes to the global ecosystem.

The team will investigate what has allowed amphibians to bounce back after disease outbreaks, using this group of species as a model for understanding how resilience comes about in other living systems.

Such is the focus of RIBBiTR, the Resilience Institute Bridging Biological Training and Research, a new center based at the University of Pittsburgh and funded by a five-year, $12.5 million grant from the NSF.

Working from UCSB and from UCSB's Sierra Nevada Aquatic Research Laboratory in Mammoth Lakes, co-principal investigators Cherie Briggs, Roland Knapp and Thomas Smith will focus their efforts on understanding factors driving amphibian resilience in California's Sierra Nevada mountains, one of four ecosystems the institute will study.

"Globally, more than 500 amphibian species have declined due to the amphibian ***chytrid*** fungus, and few have shown evidence of recovery. As such, understanding the factors underlying resilience in the few amphibian species for which recovery has been documented has broad implications for the recovery of many other impacted species," the UCSB researchers stated.

"Results will also have implications for the resilience of other species and ecosystems affected by a wide variety of global stressors, including climate change."

In the Sierra Nevada, the amphibian species of primary interest is the mountain yellow-legged frog. Once the most abundant amphibian in the Sierra Nevada, it is now extirpated from more than 90% of its historical range due in part to the spread of the amphibian ***chytrid*** fungus during the past 50 years.

Remarkably, recent research indicates the mountain yellow-legged frog is evolving increased resistance against the amphibian ***chytrid*** fungus, allowing it to recover in several portions of its range.

Briggs, a professor in UCSB's Department of Ecology, Evolution and Marine Biology, will use data from all four of the institute's target study systems (Panama, Brazil, the Eastern U.S., as well as the Sierra Nevada) and a range of study species to develop mathematical models to explore processes common to the many species and ecosystems represented in the BII network.

Briggs also plays a leadership role on the new institute's executive team.

Knapp, a research biologist with UCSB's Earth Research Institute (ERI) and Smith, an ERI assistant research biologist, also have deep expertise working with wildlife management agencies such as National Park Service, U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.

Public agencies are essential partners and supporters of wildlife resilience research and implementation throughout the U.S. and abroad; Knapp and Smith will share their experiences with other RIBBiTR researchers and beyond.

Pitt's Corinne Richards-Zawacki, professor in ecology and evolutionary biology in the Kenneth P. Dietrich School of Arts and Sciences, will lead the work as principal investigator. The collaborating scientists have for years been conducting a range of research, most recently publishing in a Royal Society journal the paper,

"Divergent regional evolutionary histories of a devastating global amphibian pathogen," Richards-Zawacki said.

"Because we have lots of data over time from around the world on amphibians who are doing better now than they were after the initial disease outbreaks, they are perfect for studying resilience," Richards-Zawacki said. "We can ask many questions:

"What mechanisms make them able to live with their pathogens? Are the pathogens changing? What is the impact of different environments? If we understand how the relationship has changed between the species and the threat, we can consider how resilience can be applied to other biological systems."

The undertaking also involves researchers at the University of Alabama; UC Berkeley; University of Massachusetts, Boston; University of Mississippi; University of Nevada, Reno; Temple University; Texas Tech University; University of Tennessee; and Vanderbilt University Medical Center.

The institute is part of the NSF's strategy to create large research teams across disciplines and regions to investigate "rules of life" principles — fundamental life processes ranging from biomes to the Earth.

This initiative aims to focus on resilience as one such "rule", applying what they learn about the amphibians' recovery from a newly emerged fungal to understand how other living systems can bounce back from global change stressors.

"More locally, the RIBBiTR work will support our 20-plus year efforts to document, understand, and support the resilience (recovery) of endangered frogs in California's iconic mountain range," noted UCSB's Briggs, Knapp and Smith. "Our work is significant because it simultaneously contributes to academic knowledge about a range of diseases and their hosts, and it directly enhances the conservation of California's mountain yellow-legged frogs."

The researchers further hope to gain a better understanding of the factors underlying the resilience shown by the mountain yellow-legged frog. This includes describing the targets of natural selection that have led to increased resistance against the amphibian ***chytrid*** fungus, and how these changes in frog susceptibility have increased frog survival in the face of ongoing infection.

The collective RIBBiTR team also is charged with developing curriculum and programs that will train the next generation of biologists to employ an integrative approach to their science.

Why should we care about frogs and the like?

"Amphibians' skins and secretions can have medicinal properties," added Pitts' Richards-Zawacki. "They are also canaries in the coal mine for environmental impacts, partly because they have thin skin and are exposed to contaminants both in water and on land, so they share threats with other organisms."

**Graphic**

Rana Sierra adult frog. (Roland Knapp)

**Load-Date:** September 28, 2021

**End of Document**



[***'Like nothing in my lifetime': researchers race to unravel the mystery of Australia's dying frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63MV-F3B1-JBNF-W4HR-00000-00&context=1516831)

The Guardian (London)

September 18, 2021 Saturday 9:00 PM GMT

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**Section:** ENVIRONMENT; Version:2

**Length:** 1304 words

**Byline:** Lisa Cox

**Highlight:** After asking for public help with their investigations, scientists have received thousands of reports and specimens of dead, shrivelled frogs

**Body**

In the middle of Sydney's lockdown, scientist Jodi Rowley has been retrieving frozen dead frogs from her doorstep.

Occasionally one will arrive dried and shrivelled up in the post.

She'll pack them in ice in an esky to be taken to her lab at the Australian Museum, where even more samples - green tree frogs, striped marsh frogs and the invasive cane toad among them - are waiting in a freezer for genetic testing.

Rowley and her team, along with scientists at the Australian Registry of Wildlife Health at Taronga zoo and a forensic unit in the NSW department of planning, industry and environment, are trying to solve the mystery of what is killing Australia's frogs.

Since late July, they've collected 1,200 records of dead or dying frogs, about 70% of them in New South Wales and 22% in Queensland.

"I know we're dealing with our own pandemic but frogs are also dealing with a pandemic and whatever is going on right now is awful," Rowley said.

"It's like nothing in my lifetime that I'm aware of."

'It's really broken our hearts'

Rowley, a conservation biologist specialising in amphibians, is the lead scientist at the Australian Museum's FrogID, a citizen science project that for the past four years has focused largely on recording the calls of Australia's many frog species.

But its work shifted after Rowley did an ABC radio interview in late July to talk about dead [*green tree frogs*](https://www.abc.net.au/news/2021-07-21/green-tree-frogs-turning-brown-concerns-researchers/100304548#:~:text=Scotts%20Head%20resident%20Fiona%20Waddy,was%20just%20very%20sick%20looking.) that were being found around Scotts Head on the NSW mid north coast.

After that, Rowley started receiving emails about frogs in similar condition being found in other parts of the country.

A week later she and Karrie Rose, the head of Australian Registry of Wildlife Health, wrote a piece for [*the Conversation*](https://theconversation.com/dead-shrivelled-frogs-are-unexpectedly-turning-up-across-eastern-australia-we-need-your-help-to-find-out-why-165176) that asked people who spotted sick or dying amphibians to make a report through the FrogID email.

They received 160 emails in 24 hours. That's grown to more than 2,000 since.

"It's been quite devastating to be at the receiving end of some of these emails. I can only imagine how hard it is for the people out there who are seeing these frogs."

One of those reports came from Yvonne Hulbert, who runs a bed and breakfast on an acreage on Macleay Island near Brisbane, where there is a thriving frog population.

Over the past few months they've found browning and dead frogs along their properties.

"They go a fawny beige colour then turn brown. They seem to get dry and they become emaciated and then shrivel and become skeletons," Hulbert said.

"We recognise the same frogs and they just decline in health and size and eventually their eyes dull and they just die. It's really sad."

Gail Wilson-Lutter and her husband have lived in Meerschaum Vale in the NSW northern rivers for 36 years. Every night frogs would come into the kitchen via a gap in the roof.

"We keep what we call the frog-cuzzi, a little pool for them to swim in, and we love having them here because they kill spiders and pests."

But in recent months, Wilson-Lutter noticed frogs were leaving loose skin in their little pool and others were changing colour or turning up dead.

"It's really broken our hearts, because we love our frogs," Wilson-Lutter says.

Too early to draw conclusions

Over the past two-and-a-half months, the scientists have collected reports of 31 different species affected in almost every state and territory.

Of those, 30 species are native - including endangered frogs such as green and golden bell frogs, southern bell frogs and the giant barred frog. The one invasive species is the cane toad.

Sixty per cent of the frogs found are green tree frogs, something likely explained by the fact they are a common species found in and around people's homes.

The frogs that are found alive are often lethargic and emaciated, with red bellies and coloured patches on their skin.

When frogs die, they shrivel up quickly, so many have been found dark brown and withered.

"It's exquisitely difficult to work with frogs because they decompose so quickly and are a cryptic species - meaning they're difficult to find," says Jane Hall, who works with Rose at the Australian Registry of Wildlife Health at Taronga zoo.

The two scientists have been conducting necropsies on frog carcasses at a pathology facility at Taronga zoo that acts as a morgue and a lab.

They dissect the frogs, looking for any indicators of disease, and take samples from their liver, kidneys, blood and stomach content if they have any.

Over at the Australian Museum, Rowley and her team are looking at the animals on a molecular level.

Much like a Covid-19 test, they swab the frogs - usually on their belly and legs - and also take a small skin sample. They then run DNA tests looking for pathogens that might indicate a virus or a fungus.

At present, the number one candidate for what has caused the mass mortality event is ***chytrid*** fungus, which has been responsible for declines of more than 500 amphibian species globally.

It is more likely to take hold during winter months, when frogs' immune systems slow down.

Some of the tests have returned a positive result, but Rowley and Hall both say it is too early to draw conclusions.

Covid-19 lockdowns have also hampered the ability to do investigations in the field.

The researchers are working with a network of vets around Australia, some of whom are storing frozen frogs until they can be delivered after the lockdowns.

Others will conduct a basic necropsy and keep the rest of the carcass in a fixative to be examined microscopically later on.

Friends and family members are also storing frozen frogs that have been dropped in mailboxes by people from their communities.

Separately, a forensic team is running toxicology tests looking for things like pesticides, heavy metals or other environmental toxins.

There has been widespread pesticide use as a result of the recent mouse plague. Hall says it is unlikely to be the cause, but it needs to be ruled out.

When the lockdowns end, the scientists will have more access to more samples and locations to expand their work, do targeted surveys, and build a larger syndromic picture to work out what the common threads are.

If it is ***chytrid*** fungus, Rowley says it would be the largest such mortality event in Australia in more than a decade.

"The question then becomes why would it be impacting so much more now?" she says.

"Whether it's to do with climate, the very cold winter, or it's interacting with another stressor such as not enough food or pollution. It could be a new strain or something from overseas."

Hall says there is no better example of how a pathogen can change than the current pandemic.

"Pathogens are always looking for ways they can improve how they work and move in animals," she says.

"***Chytrid*** can change, so we want to see if it's the ***chytrid*** our frogs are used to being exposed to or if it's a different kind of ***chytrid***."

She says another important and still to be answered question is whether the animals are dying of or with the disease - that is, if it is just a contributing factor and other environmental stressors of recent years such as droughts, fires and climate change have played a role. Alternatively, the cause could be something else entirely, like a novel pathogen.

"Once we get more of an understanding of these things we can go to the next level and see how far it's spread and what long-term effect it might have on vulnerable amphibian populations across Australia," she says.

"They're probably the best indicator of environmental health. It's important we don't ignore them.

"They absorb the environment through their skin so if something is off ... the frogs will let us know."

Anyone who spots an unwell or dead frog is encouraged to contact the FrogID project email on [*calls@frogid.net.au*](mailto:calls@frogid.net.au) with the location and photos if possible.

**Load-Date:** September 18, 2021

**End of Document**



[***Animal Doctor: Climate change and the demise of reptiles and amphibians***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64HB-R971-DXVP-V516-00000-00&context=1516831)

Tulsa World (Oklahoma)

January 11, 2022 Tuesday

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**Section:** LIFESTYLES

**Length:** 841 words

**Byline:** Dr. Michael Fox

**Body**

Dear Readers: Reptiles and amphibians are cold-blooded poikilotherms, which means they have little ability to cope with sudden changes in temperature and humidity. We humans and other warm-blooded homeothermic animals can cope better with these changes. Now, due to changes in climate and environment, stressed poikilotherms are being decimated by fungal infections that are indicative of their impaired immune systems.

Matthew Allender, a veterinarian and wildlife epidemiologist at the University of Illinois and Chicago Zoological Society, and his colleagues have identified the fungus, O. ophiodiicola, in 25 snake species across 19 U.S. states and Canadian territories.

From National Geographic's article, "A fatal fungal disease is spreading among North America's snakes":

"The sometimes-fatal affliction now has a common name: snake fungal disease. (The fungus poses no threat to humans.)

"'I think it's everywhere,' says Allender, who has detected the snake fungus in locales as far-ranging as the western U.S. and Puerto Rico. Though the fungus may not infect every snake species, 'we're finding it in remote places.'"

Pseudogymnoascus destructans, the European fungus likely behind the devastating white-nose syndrome in bats, is yet another indicator of the impact of climate change and the overuse of insecticides. These chemicals poison exposed insects, decimating insect populations so the bats starve all factors that impair bats' immune systems and resistance to fungal and other diseases.

The Denver Zoo is breeding endangered boreal toads for a population restoration project with the Colorado Parks and Wildlife department. A combination of habitat loss and ***chytrid*** fungal infections threaten the native species' survival, and project leaders hope to release approximately 20,000 tadpoles in the state next year.

When we lose species, ecosystems become dysfunctional and noxious, and invasive species take hold. From cane toads in Florida to disease-transmitting mosquitoes everywhere, invasive species pose a threat to public health, and many become pests that threaten agriculture and food security. Taking steps to prevent further biodiversity loss and stem this extinction of species calls for international government collaboration and science-based responsible planetary stewardship.

Dear Dr. Fox: Regarding the planetary crises that too few are speaking about and reacting to, I feel like the overwhelming majority of people who do speak out are missing the real problem. It's pretty obvious to me that the biggest issue to be faced is that the planet is being overwhelmed by too many ignorant people. This includes me.

I don't know how we can rectify the current situation: a constantly increasing population of energy-using, food-eating, tree-clearing, methane-producing humans all just looking for the easiest, most convenient way to get through the day and improve their lifestyle. I'm right there with them! But we desperately need to face the fact that we have outlived our usefulness to the planet.

This is not new. We have been reducing forest area to grow crops and meat-producing herds, eliminating other animal species, burning trees and emitting methane gases for a long time. We are just now becoming aware of the damage we have been doing damage that will make life much more difficult for our offspring in the decades to come. Perhaps related to all this, my 47-year-old daughter has elected not to have children. I wish I had the answers. E.B., Tulsa, Oklahoma

Dear E.B.: Your daughter is not alone in deciding not to reproduce. This will have economic consequences in some countries, as China now fears with its declining birth rate. But this is the best decision for the planet, though it is generally opposed for various political, religious and economic reasons. A Pew Research Center survey finds that more people in the U.S. are not having children. Considering the millions of displaced and able-bodied refugees seeking sanctuary in the U.S. and Europe, there should be no significant labor shortages in the future.

You are not alone in feeling despair facing the clear evidence of climate change and a planet whose metabolism we have accelerated with destructive consequences. Many find some comfort in "going green" politically and becoming vegan or vegetarian to reduce their carbon footprint. There is much we can do as consumers and voting citizens to ameliorate, but not reverse, the ecological damage our species has caused worldwide.

LEPTOSPIROSIS WARNING FOR DOG OWNERS

Leptospirosis outbreaks in the Los Angeles and New York City areas have veterinarians suggesting dog owners consider getting their pups vaccinated against the illness, especially if they are likely to be in contact with other dogs at dog parks, indoor play areas or boarding facilities. Veterinarian Nahvid Etedali says the outbreak in New York is likely due to two factors: higher rainfall and growing rat populations. This disease can be fatal to humans as well as to dogs. (Full story: The Hollywood Reporter, 12/14)

**Load-Date:** January 11, 2022

**End of Document**



[***Leap into action for frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6451-KW91-F0J6-J0DS-00000-00&context=1516831)

Redland City Bulletin

November 24, 2021 Wednesday

Print Edition

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**Section:** NEWS; Pg. 24

**Length:** 418 words

**Byline:** Damon Cronshaw

**Body**

The death of large numbers of frogs over winter has prompted a call for people to monitor frog calls to help scientists understand the extent of the problem across the country.

To help save the frogs, citizens are urged to take part in FrogID Week.

The Australian Museum project - which runs until November 21 - involves people monitoring frogs with the free FrogID app.

Recorded sounds of frog calls will enable the museum's research team to assess the population.

Dr Jodi Rowley, FrogID lead scientist, said people were needed to help understand how frogs were doing and whether they had disappeared.

Frogs face threats like climate change, bushfires, flood, drought, habitat loss and disease.

"It's a call to action to record frogs at least once a day," said Dr Rowley, of the Australian Museum and University of NSW.

"We are missing even basic information on frogs. There are areas in Australia that have no scientific records of frogs, even though they are there."

Dr Rowley said Australia had about 240 known species of frogs, with more than 30 at threat of extinction.

"They're really sensitive indicators of environmental health," she said.

Older people often tell Dr Rowley of the days when frogs would cover windows there were so many. The decline in numbers is largely due to a pandemic caused by the amphibian ***chytrid*** fungus disease.

"It hit our frogs and frogs around the world a lot. That's probably the biggest reason for quieter times for frogs unfortunately," she said.

"That caused the extinction of at least four species of Australian frogs."

She said frogs were important to the food web. "When frogs decline or disappear, there are far-reaching consequences. All the animals that rely on them start to disappear as well," she said.

"...We don't even know how many species of frog we have. There were two new species discovered in Australia in the last month or so," she said.

Australian Museum director and chief executive Kim McKay said FrogID Week was a great way to get involved.

This year, FrogID Week is focused on gathering the calls of 15 priority species, the green tree frog, giant burrowing frog, New England tree frog, Davies' tree frog, southern barred frog, giant barred frog, Fleay's barred frog, eastern banjo frog, northern banjo frog, green and golden bell frog, southern bell frog, motorbike frog, Roth's tree frog, Peron's tree frog and magnificent brood frog.

Researchers also want to track the tusked frog, which was rediscovered on the Northern Tablelands of NSW after a 40-year absence.

**Load-Date:** November 23, 2021

**End of Document**



[***Half a million frog records a big leap***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:64CX-WDG1-JD34-V3B5-00000-00&context=1516831)

Newcastle Herald (Australia)

December 27, 2021 Monday

Print Edition

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**Section:** OPINION; Pg. 25

**Length:** 734 words

**Body**

Maryland's Jane Evans has been credited with making the 500,000th verified frog recording for the Australian Museum's national FrogID project.

Mrs Evans reached the milestone at her Maryland home, which is a hotspot for frogs as it's near Shortland wetlands.

Citizen scientists like Mrs Evans have helped double the number of scientific frog records available in Australia.

Scientists consider this to be crucial for frog conservation.

"Recently we'd noticed frogs with a high-pitched screaming sound. It can be deafening at night, they're so loud," Mrs Evans said.

"I stood outside one night and recorded the sounds."

The project team identified it as a new species, named the screaming tree frog. It was one of two new species found in eastern Australia, the other being the slender bleating tree frog.

They were once thought to be one species - the bleating tree frog.

The finds were revealed last month, after citizens were urged to record frogs daily on the free FrogID app during FrogID week.

Dr Jodi Rowley, FrogID lead scientist, said more than 20,000 recordings had been submitted during this year's campaign.

"So far we're at about 36,000 frogs being identified from 11 species," Dr Rowley said.

"That was more than twice the year before, which is amazing."

The two new frogs boosted the number of native frog species known in Australia to 246, including the recently recognised Gurrumul's toadlet and the Wollumbin pouched frog.

Frog ID Week focuses on a time when frogs are abundant, but Dr Rowley said recordings can be made through the app all year.

"We want recordings every day. We're still getting high rates of submission at the moment - about 1000 across Australia every day."

A team of frog experts, along with students, listen to the calls to help identify them.

"I love sitting down with a cup of tea and listening to some calls," Dr Rowley said.

She said it was a relaxing activity, as long as the frog calls weren't overly difficult to pinpoint.

"It's one of these few instances in life where I concentrate on one thing at a time.

"It's listening to 20 to 60 seconds of what is usually a beautiful chorus of frogs to identify the species."

She sometimes listens to the frog calls late at night if she can't sleep.

"It calms the mind - it's meditation."

Some recordings contain up to a dozen or more species.

"They're not so relaxing. They're a little tricky," she said.

Frogs in the Spa Jane Evans recalled having a tricky time identifying a frog on her Maryland property many years before the FrogID project was born.

Frogs were attracted to her spa.

"We opened the lid and there were all these frogs in there," she said.

"They weren't green, they were pale brown and grey."

She feared chlorine had bleached the frogs, or some kind of mutation had occurred.

"I felt so bad," she said.

When a tradesman came to fix the spa, he identified them as Peron's tree frogs.

"They come in different colours," she said.

Dying Frogs Australia has about 240 known species of native frogs, with more than 30 under threat from extinction.

Scientists are particularly concerned about frogs dying in large numbers in winter this year, including in Newcastle.

The museum received about 1600 reports of dead and dying frogs across Australia.

"Some were just one dead frog, others reported dozens. It's not normal at all," Dr Rowley said.

"Frogs have been hit by so many things. They're so sensitive to environmental change. It's pretty awful."

The museum is working with wildlife, biosecurity and environment agencies to understand the deaths.

"We're working to get to the bottom of this," she said.

"Forty species so far were reported dead and dying over winter."

The deaths have now mostly stopped.

Frog scientists hope it doesn't happen again next winter.

The historic decline in frog numbers is largely due to a frog pandemic caused by the amphibian ***chytrid*** fungus disease.

But this time, Dr Rowley believes the fungus is "not the whole story".

"Not all the frogs we've been finding dead have the fungus. A lot have it at quite low levels that wouldn't be responsible for the deaths.

"Something else is going on. Certainly the fungus is involved and it is killing frogs, but we're very worried there's something else at play.

"That's where the detective work on these dead frogs comes into play."

The museum was able to analyse many dead frogs because citizens stored them in zip-lock bags in the freezer during lockdown, ready for collection.

**Load-Date:** December 26, 2021

**End of Document**



[***What you Need to Know about the Lacey Act Amendments and How it Will Affect Your Pet; Q&A compled by the United States Association of Reptile Keepers makes it clear that this anonymous amendment to a good law will harm many pet owners and their animals***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:651C-H431-JBCN-410N-00000-00&context=1516831)

Santa Monica Observer (CA)

March 17, 2022

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**Section:** NEWS

**Length:** 4319 words

**Byline:** USARK

**Body**

Please note that the Lacey At amendments found in the America COMPETES Act have not passed! Many of our answers address "what if" they pass.

Q: How do we know about this issue?

USARK found and exposed the Lacey Act amendments buried in the nearly 3,000-page HR4521 on January 28. As awareness spread, many other groups began releasing alerts, too. USARK thanks every person and group who has worked to oppose this action!

Q: What bill(s) are we against?

USARK does not oppose HR4521 (America COMPETES Act), S1260 (U.S. Innovation and Competition Act), or the reconciled bill (merger of HR4521 and S1260) that is expected to eventually emerge from a conference committee. We are opposed specifically to the Lacey Act amendments found within HR4521, in Section 71102 (which was added behind closed doors absent from any public process). Our goal is to keep the Lacey Act amendments from being added to the merged bill, or any other bill.

USARK does oppose Senate Bill 626 (S626) sponsored by Senator Rubio which was introduced in 2021 and carried over into 2022 (second year of the two-year session).

Q: What animals are affected?

This could impact almost any species of animal. Species of fish, reptile, amphibian, bird, and invertebrates could be listed/affected. The only species that would be safe from these Lacey Act amendments are common, domesticated animals such as dogs, cats, and traditional livestock.

Q: May I share your Alert?

Yes! Please share our alert. The links are below.

Website: [*https://USARK.org/2022Lacey*](https://USARK.org/2022Lacey)/

Facebook: [*https://www.facebook.com/UnitedStatesAssociationOfReptileKeepers/photos/a.4688220141259902/4775694432512472/*](https://www.facebook.com/UnitedStatesAssociationOfReptileKeepers/photos/a.4688220141259902/4775694432512472/)

Q: Do you have flyers or Infographics?

Yes! Please print and share.

Flyer 1 (infographic): [*https://USARK.org/wp-content/uploads/2022/03/2022-Lacey-SD.pdf*](https://USARK.org/wp-content/uploads/2022/03/2022-Lacey-SD.pdf)

Flyer 2 (more informative): [*https://USARK.org/wp-content/uploads/2022/03/2022-Lacey-flyer.pdf*](https://USARK.org/wp-content/uploads/2022/03/2022-Lacey-flyer.pdf)

Q: What does it do?

Briefly:

A ban on interstate transportation and importation of every species currently listed as "injurious" would be enacted, even for species that could not survive in most of the U.S. (Note: importation is currently banned.)

A new "emergency designation" would be granted that would allow species to be classified as "injurious" without due process, justification, or prior notice.

Only a limited number of species named to a "white list" (not yet written) would be approved to enter the U.S.

Q: What is the white list?

A white list is the opposite of a black list, or ban list. Typically, bills include black/ban lists of species that state what species are not allowed. A white list includes the species that are allowed. If a species is not on the white list, then it is not allowed. In this case, the white list will determine what species can be imported into the U.S.

Q: What species are on the white list?

There is no compiled white list at this time. That will happen only if the amendments pass. No one knows what species will make the white list. All we know is that a species had to be imported or transported interstate in "greater than minimal quantities" in the one year prior to the enactment date to even be potentially included on the white list.

Q: How will FWS create the white list? (FWS = U.S. Fish and Wildlife Service)

Only species that were imported or transported interstate in "minimal quantities" during the one-year period prior to enactment will be potential candidates for the white list. FWS must define minimal quantities within one year after enactment.

Q: What data will FWS use to create the white list?

We do not know. This is a huge problem. For example, FWS does not have accurate or sufficient data on many of the species imported into the U.S., nor those transported interstate. CITES and/or ESA data is sometimes all that is collected. If species are not listed under CITES or ESA they may just be imported as a generic animal (i.e. tropical fish). CITES = Convention on International Trade in Endangered Species and ESA = Endangered Species Act

Q: What is the new emergency designation?

The new emergency designation allows FWS to list species as injurious without due process. The listing would take effect immediately upon publication in the Federal Register. There may be a delayed effective date of up to 60 days, but only if FWS allows such. After an emergency listing, FWS may take up to three years to justify the listing. They may also decide not to permanently add the species to the injurious list.

Q. Did the bill change names?

HR4521 is still the America COMPETES Act but it will be merged with S1260. The reconciled bill has had several bill changes already. Currently, it is titled the Bipartisan Innovation Act.

Q: Where are we in the process? (updated 3/15/22)

HR4521 that contained the Lacey Act amendments of concern passed the House with a split vote on February 4. HR4521 will not be voted on by the Senate. Instead, HR4521 will be reconciled (or merged) with S1260. There have been delays due to a Senate recess, priority on budget, and other reasons. A conference committee should be formed to merge the two bills.

It is anticipated that a formal conference committee will be formed by early/mid-April. Once created, this committee will review HR4521 and S1260. The bills will be reconciled with one final version emerging from the committee. The primary goal of S1260/HR4521 to improve America's economic strength in the technology fields is a priority so this will be a high priority for Congress. As stated, our goal is not to stop the reconciled bill but to stop the Lacey Act amendments from being included.

Q: Do I need to get rid of my animals if this passes?

No. The federal law would not ban possession. Only if individual states took action might you need to rehome/surrender your animals.

Q: What is S1260?

As USARK reported on January 28, S1260 is the Senate version of HR4521 and is titled the U.S. Innovation and Competition Act (USICA). S1260 does not contain these Lacey Act amendments.

Q: How is USARK so sure they have the right interpretation?

We are very plainly stating what the legislation would do, how the Lacey Act will be amended, and what new authority FWS would have. We understand the legislative language can be confusing. USARK's analysis of the Lacey Act amendments in Section 71102 of the America COMPETES Act (HR4521) has been vetted by numerous attorneys, legislative experts, and other authorities.

Q: Does the white list apply to every state?

This is a federal law and the white list applies to importation into the U.S. Individual states can write their own laws that are more restrictive, but not less restrictive than the federal law. This means states cannot opt to allow for interstate movement of species listed as injurious. It is possible that states may write laws that reflect the federal law regarding the white list and could ban species not on the white list (or even species that are on the white list) as they see fit.

Q: Are injurious species banned from possession/ownership?

No. If a species is listed as injurious it is not banned from possession. However, individual states may choose to ban the possession of injurious species (or other species), as we have seen previously.

Q: Can I breed and sell injurious species?

Yes. As long as a species is not banned by state law, you can breed and sell that species within the same state (intrastate), even if it is listed as injurious by FWS. If these amendments pass, it would become illegal to transport them across state lines. However, state or local laws may place further restrictions on species.

Q: Does a species need to be invasive in most of the U.S. to be listed as injurious?

No. A species may be listed as injurious even if it is not invasive in the U.S. If there is even an interpreted possibility it might become invasive, it could be listed, as we have already seen. Also, while that invasive threat can be limited to an isolated area, like southern Florida, the species could still be federally listed as injurious and banned from movement between any of the states. Even if the potentially affected state has already banned or regulated the species, FWS can still list it as injurious.

Q: What does injurious mean?

Per FWS, a species may be listed if it could be, "injurious to human beings, to the interests of agriculture, horticulture, forestry, or to wildlife or the wildlife resources of the United States." In some cases, injurious is the same as "invasive." If a species could potentially be invasive and cause any type of harm anywhere in the U.S. then it could be listed as injurious. Listings can also occur because a species might carry/transport a disease. We saw this when FWS used an emergency rule to list 201 species of salamanders as injurious due to the concern that an animal might have Bsal (Batrachochytrium salamandrivorans) ***chytrid*** fungus. Other reasons could generate listings such as possible threats to human health or agriculture.

Q: Does this only apply to commerce/sales across state lines?

No. If passed, all interstate movement, for any reason, would be banned. It would even be illegal to take an animal across state lines for veterinary care, or job/family relocation.

Q: Are military members exempt?

No. This would hit military service men and women especially hard as they are relocated often. Not even active-duty service members would be allowed to take pets listed as injurious with them across state lines.

Q. Are there any articles about this?

Yes. There are several articles, podcasts, videos, and interviews on this topic now. Below are two articles:

article by USARK: [*https://usark.org/2022lacey1*](https://usark.org/2022lacey1)/

article by Art Perola and posted by NAIA: [*https://usark.org/federal-legislation-threatens-pets-zoos-and-aquariums-and-biomedical-research*](https://usark.org/federal-legislation-threatens-pets-zoos-and-aquariums-and-biomedical-research)/

Veterinarians voice concerns about proposed Lacey Act amendment by Jennifer Fiala via URL: [*https://usark.org/lacey1a*](https://usark.org/lacey1a)/

Q: Do we know when Congress will vote?

There is not a set timeline and a formal reconciliation of HR4521 and S1260 has not yet started. Any bill would need to pass before the end of session in December. 2022 is the second year of the two-year session (117th session of Congress).

Q. Should I contact the local offices?

Yes. Call the local House and Senate offices and speak directly to staff. Politely explain who you are, what you do, and why you are opposed. Local offices have a direct line to the D.C. offices. If you have a business or facility, you can invite staff to visit. Representatives and Senators will have offices in both D.C. and in their states of representation.

Q. Should I meet with my legislators?

Yes! You should definitely request meetings with legislators. Be prepared (read our alert and Talking Points at [*https://usark.org/2022lacey/*](https://usark.org/2022lacey/)) and be professional. Never feel intimidated. Your taxes pay their salaries and they are there to listen. Also, if you meet with staff, that is fine. They will pass along your message to the legislators.

Q: Can I just get a license to take my animal with me to a new state?

No. There are some very limited exemptions that allow for such a license but almost no one would be eligible.

Q: I am against illegal wildlife trafficking and this sounds like a good thing!

While another section of the Lacey Act is used to address wildlife trafficking, that is not what these amendments are about. This has nothing to do with wildlife trafficking.

Q. Will this help shut down illegal wildlife trafficking?

No. Illegal wildlife trafficking is already illegal, obviously. Misapplied laws like this only encourage and increase criminal activities because it drives the prices up for black market animals. This action is actually counterproductive to halting illegal trafficking.

Q: My Senator responded and said that the Lacey Act amendments were removed from the Senate COMPETES Act, so the coast is clear, right?

There is no Senate COMPETES Act. The America COMPETES is a House bill. The Senate version of the America COMPETES Act is S1260 and that bill never contained the Lacey Act amendments (so it would be impossible to remove them since they were never there to begin with). Also know that most responses are pre-written and not written exclusively in response to your emails/letters.

Q: My Senator responded and said that the Lacey Act amendments don't do what you said they do.

Federal legislators and staff are working on many issues. There may be miscommunication or a mistake as to the issue being discussed. The legislator or staff may also not have a good understanding of these Lacey Act amendments. Additionally, remember that legislators do not enforce laws! Once a bill becomes a law, the enforcement agency (in this case it is FWS) must write its regulation that reflects the legislation. The regulation will be much more complex than the legislative statute.

Q: How does the transportation ban work?

If passed, it will become illegal to transport any species listed as injurious under the Lacey Act across state lines. It is already illegal to import an injurious species into the U.S.

Q: What happens with species not included on the white list?

Species not on the white list cannot be imported into the U.S. These species would not be banned from interstate transport unless also listed as injurious. Note that this is how the statute would read, but this could change during either the legislative or FWS rulemaking process.

Q: How can I help stop this?

Contact your legislator with your opposition! We have instructions and more in our alert at [*https://USARK.org/2022Lacey/*](https://usark.org/2022lacey/).

Q: I read that amendment 599 removed this section about the Lacey Act.

That is wrong. Amendment 599 to HR4521 was proposed by Arkansas Representative Crawford but it was not added to the bill. Amendment 599 would have removed Section 71102 from HR4521 if it had received enough votes. People who were unfamiliar with the legislative process were misreading what was posted by the House Committee on Rules.

Q: I want more information! Can you send me a PM?

All available details are included in our alert and related posts.

Q: Does it never end?

It really does not end. No one court case or legislative discussion will stop issues like these from coming up. Proposed legislation/regulation can happen at any time at any level of government (federal, state, county, or city). This is why USARK tirelessly watches for such issues and creates alerts that make it easy for you to learn and take action. We must always be vigilant.

Q: What politician was responsible?

We do not know which politician is responsible for Section 71102 of the America COMPETES Act (HR4521). We only know that HR4521 was originally introduced on 7/19/21 as the Bioeconomy Research and Development Act of 2021 (did not initially contain the Lacey Act amendments), sat without a hearing, and then reemerged as the America COMPETES Act on 1/28/22 (the same day that USARK found and reported the problem) with Section 71102.

Q: Does this include invertebrates?

Yes. We know that aquatic invertebrates are included. While the legislation does not mention terrestrial invertebrates, FWS can regulate terrestrial invertebrates (i.e., Endangered Species Act), and terrestrial invertebrates are included in the FWS definition of wildlife:

"Wildlife is any living or dead wild animal, its parts, and products made from it. Wildlife not only includes mammals, birds, reptiles, amphibians, and fish, but also invertebrates such as insects, crustaceans, arthropods, molluscs and coelenterates." – FWS

Also, within the Lacey Act the term "fish or wildlife" means: any wild animal, whether alive or dead, including without limitation any wild mammal, bird, reptile, amphibian, fish, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, whether or not bred, hatched, or born in captivity, and includes any part, product, egg, or offspring thereof.

Q: This only includes wild animals so the animals I breed are okay to sell and move across the U.S., right?

Wrong. Animals will be listed by species. It does not matter if the animals are wild-caught or bred under human care. It also does not matter if the animals have wild-type coloration or a "morph" pattern/coloration. Some people are confused because the language reads, "...wild mammals, wild birds, fish (including mollusks and crustacea), amphibians, or reptiles, or the offspring or eggs of any such species..." What matters is the species of the animal.

Q: What is the effective date?

The effective date is one year after the date of enactment (date it is signed into law).

Q: USARK is the only group I see talking about this. If this was so bad, other groups would have alerts.

Many other groups do have alerts and are opposing these amendments. Just because you have not seen it does not mean it is not happening. Groups/businesses/keepers in aquaculture, aviculture, and mammals are all opposing this, along with herpetoculturists and USARK.

Q: Where can I read the Lacey Act amendments?

You can read Section 71102 of HR4521 at [*https://USARK.org/wp-content/uploads/2022/01/2022-HR4521-excerpt.pdf*](https://USARK.org/wp-content/uploads/2022/01/2022-HR4521-excerpt.pdf). This language is the same as found in S626. You can read S626 at [*https://USARK.org/wp-content/uploads/2021/03/2021-S626-Lacey-Act.pdf*](https://USARK.org/wp-content/uploads/2021/03/2021-S626-Lacey-Act.pdf).

Q: I heard HR4521 changed before it was sent to the Senate. Are these Lacey Act amendments still there?

Yes. The final HR4521 text that was sent to the Senate after additional House floor amendments were added is 3,610 pages. The Lacey Act amendments found in Section 71102 now begin on page 2,060. You can read the full bill at [*https://USARK.org/wp-content/uploads/2022/02/2022-HR4521-COMPETES-final.pdf*](https://USARK.org/wp-content/uploads/2022/02/2022-HR4521-COMPETES-final.pdf).

Q: I saw an animal group supporting this. Why do they support it?

Animal rights groups (groups trying to ban and remove all animals from our lives) are supporting this effort. They typically provide misinformation about what these amendments will do in order to gain further support. We have even seen them lie and say this will not affect common pet species. This is simply not true! No one knows what species will be listed and we have already seen common pet species listed as injurious. These animal rights groups have no problem with misleading the public and spending lots of money to create and distribute their agenda pushing propaganda (rather than actually helping animals or conservation as they claim to do).

Q: Why does USARK not know about S1260?

We do! We posted this bill by its name, the U.S. Innovation and Competition Act (USICA), on January 28 with our original alert. We have been talking about USICA/S1260 since day one.

Q: Why does USARK not know about the conference committee?

We do know about it! We have been discussing HR4521 and S1260 being reconciled (which is what happens with two similar bills in a conference committee) for many weeks and before anyone else reported this (that we are aware of).

Q: Can individual states overturn/oppose the Lacey Act amendments if they pass?

No. States cannot allow federally listed injurious species to be transported across state lines.

Q: Why aren't you telling people that this is only being supported along party lines?

While the legislative issues we post about may sometimes appear to be tied up in partisan politics, the activists pushing for these initiatives are not limited to working with only one party or another. HR4521 did pass along party lines (Democratic support) and we reported the 222 to 210 vote the day it passed the House. However, S626 is sponsored by a Republican.

Q: I read that the Lacey Act amendments were only proposed as an amendment to HR4521 but did not get added to the bill.

This is wrong. There was another amendment to the Lacey Act introduced as HR4521 Amendment 252 by Illinois Representative Quigley. This was an amendment version of the Big Cat Public Safety Act regarding large cats (lions, tigers, etc.). This is a very different Lacey Act amendment. Persons not well-versed with the Congressional amendment process misread what was posted by the House Committee on Rules. Amendment 252 was withdrawn.

Q: Why was this added as a last-minute amendment to HR4521?

These Lacey Act amendments were not a formal amendment to HR4521. They comprise a section of HR4521 (Section 71102). Since this section was included within the text of the America COMPETES Act, it is not actually a formal amendment to the America COMPETES Act.

Q: I spoke to a legislator's office and they said that the species I work with will be okay because it is common in trade.

This is wrong. First, legislators and their staff do not enforce laws. Law enforcement officers for FWS will be enforcing this law and they must enforce what the law says, not what a legislative staff person told you. Second, just because a species is common in trade does not mean it will not be listed as injurious. Some species already listed were common in trade but they were still listed as injurious. Being common in trade also does not mean it will be automatically added onto the white list.

Q: This will not impact animal species already being imported, traded, or transported. There is an exemption clause.

This is wrong. Only species imported in "minimal quantities" would qualify for the new importation white list. Qualifying does not mean they will be included on the white list. Not only must they have been imported and/or transported interstate within the one year before enactment (not two or more years ago), but they must also have been imported in "greater than minimal quantities." FWS gets to define minimal quantity later. Additionally, even if a species has been heavily represented in trade, it can still be listed as injurious and we have witnessed this. There is no exemption that makes any species automatically safe. As mentioned previously, there is also insufficient data for importation on many species and possibly no good data for interstate transportation.

Q: Can species be included on the white list even if they are not imported in greater than minimal quantities?

Yes, but it is an exhaustive process that must be paid for by the appropriate industry/businesses. Only the Secretary of the Department of Interior (FWS falls under the Department of the Interior) can add a species not meeting the "imported in greater than quantities" qualifier to the white list, if it "does not pose a significant risk of invasiveness to the United States." This means it cannot be invasive anywhere in the United States. Research findings (paid for by the relevant industry) would need to prove this. If those against us (they are very well funded) did their own science that disagreed, then FWS could choose either finding for the basis of their ruling.

Q: I read that this applies only to high-risk invasive species.

This is incorrect. We have already witnessed listings for species that may be able to become invasive and also listings for reasons other than invasive potential.

Q. USARK is the only organization that I know of that interprets the Lacey Act Amendments to mean that if a species is not on either white or black (deemed injurious) list, then this species can be transported across state lines. Everyone else says "not on white list" = "automatically on black list."

We have properly conveyed what is stated in the bill. This portion of the Lacey Act amendments is titled "PRESUMPTIVE PROHIBITION ON IMPORTATION." Additionally, the text clearly states, "IMPORTATION into the United States of any species of wild mammals, wild birds, fish (including mollusks and crustacea), amphibians, or reptiles, or the offspring or eggs of any such species,..." Again, it clearly states the white list only applies to importation.

However, we could see states banning species that do not appear on the FWS white list. Additionally, FWS could list every species that does not appear on the white list as injurious utilizing its new emergency designation. For instance, FWS could make a ruling that it is a risk to transport species not on the white list interstate until they can determine if a species cannot be invasive. Species not appearing on the white list would be in a constant limbo of being listed as injurious at any time.

The short answer is that the bill would not ban interstate transport of species not on the white list, but that interstate ban is still a possibility for species not on the white list (even if they are not formally listed as injurious). There is no way to be certain that species not on the white list could still be transported interstate after this is final (if it passes) and goes through FWS rulemaking.

Q: I got a response from my legislator saying he/she supports this! What can I do now?

Southwestern Herpetologists Society

Please read the reply carefully. Many legislators have automatic reply emails. You may get a canned response supporting animal welfare, for example, and not these Lacey Act amendments specifically. Even if a legislator states he/she may support these Lacey Act amendments, that does not mean you cannot continue to educate. Remember that legislators and their staff are working on many issues and may not have a good grasp on the consequences. It is okay to be a squeaky wheel and send multiple messages. It is also very unlikely that a legislator had time to read your email and reply exclusively to you. Canned emails are written and then just sent as replies to people on a certain topic that may be as broad as "animal."

Q: I heard this only applies to minks and mink farming.

There is an amendment to HR4521 that bans "import, export, transport, sale, receipt, acquirement, or purchase in interstate or foreign commerce of mink [dead or alive]." That is separate from the Lacey Act amendments we are directly concerned with, but the mink ban also amends the Lacey Act. Our alert regards section 71102 of HR4521 as it was introduced when retitled the America COMPETES Act. The mink issue was an amendment to HR4521 added on the House floor.

**Graphic**

Bearded dragons, the most common pet reptile, could be banned in your state if the anonymous amendments to the COMPETES Act are passed by the US Senate Children admire box turtles at the Chumash Indian Museum; all exotic pets, including fish, would be in peril if the Lacey Act amendments pass

**Load-Date:** March 18, 2022

**End of Document**



[***Frogs in freefall for reasons unknown***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63JG-B661-F0J6-J0H7-00000-00&context=1516831)

Blue Mountains Gazette

September 8, 2021 Wednesday

Print & Internet Editions

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**Section:** NEWS; Pg. 24

**Length:** 219 words

**Byline:** Jordann Crawford-Ash, FrogID Validator, Australian Museum

**Body**

Dead frogs have been found in large numbers across eastern Australia, particularly south eastern Queensland and NSW including the Blue Mountains, with 26 native species identified so far. The most commonly reported is the Green Tree Frog (Litoria caerulea).

Peron's Tree Frog (Litoria peronii), the Striped Marsh Frog (Limnodynastes peronii) and the Eastern Banjo Frog (Limnodynastes dumerilii) are the next most reported, all common and beloved species throughout the Mountains.

Frogs are a vital part of our ecosystem. They control invertebrate populations and play an important role in the food web for many birds, mammals and reptiles. This mass mortality event is therefore very concerning, and experts aren't yet sure why it's happening.

Amphibians are susceptible to a range of pathogens; in fact, they have been fighting a pandemic of their own for years, caused by the amphibian ***chytrid*** fungus. This disease attacks the frog's skin, affecting the way they breath, drink and function within their bodies. This fungus thrives in cold, damp environments. It may be taking a greater hold of our frogs due to colder weather, it may be a novel pathogen, or something else altogether.

If you have seen dead or dying frogs, please send photos or reports to the citizen science project FrogID, or email [*calls@frogid.net.au*](mailto:calls@frogid.net.au)

**Load-Date:** September 7, 2021

**End of Document**



[***Frogs need people to leap into action***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642J-5GP1-JD34-V0JW-00000-00&context=1516831)

Canberra Times (Australia)

November 13, 2021 Saturday

Print Edition

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**Section:** NATIONAL; Pg. 27

**Length:** 618 words

**Byline:** Damon Cronshaw

**Body**

The death of large numbers of frogs over winter has prompted a call for people to monitor frog calls to help scientists understand the extent of the problem across the country.

To help save the frogs, citizens are urged to participate in FrogID Week.

The Australian Museum project - which runs until November 21 - involves people monitoring frogs with the free FrogID app.

Recorded sounds of frog calls will enable the museum's research team to assess the population.

Dr Jodi Rowley, FrogID lead scientist, said "we need people's help to understand how our frogs are doing and whether they have disappeared". Frogs face various threats such as climate change, bushfires, flood, drought, habitat loss and disease.

"It's a call to action to record frogs at least once a day," said Dr Rowley, of the Australian Museum and University of NSW.

She urged people to record frogs in backyards, bush, paddocks, dams, remote outback areas, rainforests, mountain slopes and farms. "We are missing even basic information on frogs. There are areas in Australia that have no scientific records of frogs, even though they are there."

Dr Rowley said Australia had about 240 known species of native frogs, with more than 30 under threat from extinction.

"They're threatened by so many things. They're really sensitive indicators of environmental health," she said, adding they were dying in large numbers this year.

Older people often tell Dr Rowley that they remember the days when frogs would cover windows and give off a chorus of croaks.

The historic decline in frog numbers is largely due to a frog pandemic caused by the amphibian ***chytrid*** fungus disease.

"It hit our frogs and frogs around the world a lot. That's probably the biggest reason for quieter times for frogs unfortunately," she said. "That caused the extinction of at least four species of Australian frogs."

She said frogs were important to the food web.

"When frogs decline or disappear, there are far-reaching consequences. All the animals that rely on them start to disappear as well," she said. But she added that "it's not all doom and gloom". The four-year old Frog ID program had already made progress, with participants discovering new populations of threatened species.

"We don't even know how many species of frog we have. There were two new species discovered in Australia in the last month or so," she said. "You can discover a new species by recording frog calls."

Australian Museum director and chief executive Kim McKay said FrogID Week was a great way "to be directly involved in helping save our frogs and a fun way for curious minds of all ages to learn about and help conserve biodiversity".

This year, FrogID Week is focused on gathering the calls of 15 priority species: the green tree frog, giant burrowing frog, New England tree frog, Davies' tree frog, southern barred frog, giant barred frog, Fleay's barred frog, eastern banjo frog, northern banjo frog, green and golden bell frog, southern bell frog, motorbike frog, Roth's tree frog, Peron's tree frog and magnificent brood frog.

Researchers are also seeking audio of the call of a newly discovered species, Gurrumul's toadlet, from the Wessel Islands of northern Australia. This species is new to science and there are no existing calls on record.

They also want to track the tusked frog, which was rediscovered on the Northern Tablelands of NSW after a 40-year absence. Its distinctive "chirrup" call was also recorded with the Australian Museum's FrogID app. For now, this site represents the only known location of the endangered species.

The project has already enabled more than 460,000 records of 205 different frog species to be verified thanks to the participation of thousands of Australians.

**Load-Date:** November 12, 2021

**End of Document**



[***Why you need to track frogs on Friday - and how the national census could 'save' Australia's amphibians***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:643J-CCT1-JBNF-W4BG-00000-00&context=1516831)

MailOnline

November 17, 2021 Wednesday 12:22 AM GMT

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**Section:** NEWS; Version:1

**Length:** 573 words

**Byline:** Tracey Ferrier In Brisbane For Australian Associated Press

**Body**

* Fourth 'frog census' will be on held on Friday

1. Citizens are asked to use a special app to record frogs
2. The annual census has already doubled the data on different species
3. Scientists are particularly interested in finding Gurrumul's Toadlet

In a remote cluster of islands, off the tip of East Arnhem Land, Gurrumul's Toadlet is presumed to be croaking away with its unique 'squelching' call. The problem is no one's ever recorded it.

But that could change sometime this week when armies of citizen scientists get to work on a census like no other.

Friday marks the start of the fourth annual FrogID Week when nature lovers are encouraged to creep around their yards, local parks, and other green spaces listening for and recording the dulcet tones of Aussie frogs on a special app.

The initiative has been an extraordinary success in its short life, producing a 'game changing' data set used by scientists across the nation, says Jodi Rowley, the curator of amphibian and reptile conservation biology at the Australian Museum.

'In four years, we've almost doubled the number of frog records previously in Australia, that were collected over more than 200 years,' Dr Rowley says.

'FrogID has helped document range extensions in threatened species, it's helped discover populations of frogs that haven't been seen or heard of, or we didn't know were still around in certain places.

'And because frogs are such great indicators of environmental health, because they are so sensitive ... we're also getting an indication of the health of environments across Australia.'

The FrogID project makes the most of fact that different frog species have unique calls.

By collating audio recordings captured with the app they can work out what's living where, and how that's changing over time, without having to bother the frogs.

That's particularly important right now, as Dr Rowley and others try to work out what's behind a mass mortality event that's so far affected 35 frog species across the country.

It's not clear yet what is going on but there's certainly a big problem. On a single day earlier this year, Dr Rowley received 280 emails from concerned people documenting the death of frogs in their areas.

People have dutifully stored them in zip-lock bags in their freezers and Dr Rowley's team are now gathering them for testing.

Early results indicate the amphibian ***chytrid*** fungus, which attacks the skin of frogs, is involved, but other factors, such as a new disease, or toxicity from things like fire retardants and mouse might also be involved.

As researchers try to get to the bottom of the mystery Dr Rowley says the die-off event makes this year's push to capture as many frog songs as possible even more important.

'It's like a joke, drought, bushfires, this, the frogs are coping it.'

Who knows someone might even bag the very first recording of the long, squelchy call of Gurrumul's Toadlet - a newly discovered frog species named after the late musician Geoffrey Gurrumul Yunupingu.

It lives in the remote Wessel Islands archipelago, an hour and 20 minutes east of Darwin, by air. It's only been spotted by a scientist once.

'Scientists, at least, don't know what it sounds like. We suspect it has a call similar to some related species,' Dr Rowley says.

'But there are people there that might be able to make a significant scientific discovery and help us better understand this poorly known frog.'

For more information go to frogid.net.au/frog-id-week.

**Load-Date:** November 17, 2021

**End of Document**



[***Alliance for the Survival of Harlequin Frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63K8-HB41-JBJN-M0V8-00000-00&context=1516831)

CE Noticias Financieras English

September 10, 2021 Friday

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**Length:** 295 words

**Body**

Panama is part of the Atelopus Survival Initiative (ASI), an alliance of more than 40 organizations in 13 countries, which aims to protect the harlequin frogs of Central and South America, one of the amphibians most affected by the deadly ***chytrid*** fungus Batrachochytrium dendrobatidis.

ASI seeks to combine the resources, decades of experience and knowledge needed to prevent the extinction of the entire harlequin frog genus in the region where these species still survive, as over the past several decades, many harlequin frog species have suffered severe population declines and extinctions throughout their range.

"The establishment of collaborative initiatives at the international and regional levels is essential to coordinate efforts and obtain tangible results that have a real and effective impact on the conservation of an endangered species. The Atelopus Survival Initiative is a concrete example, which aims not only to conserve a species, but an entire genus, perhaps the most threatened by the global amphibian extinction crisis," said Gina Della Togna, Director of Research and Innovation at the Interamerican University of Panama, a research associate at the Smithsonian Tropical Research Institute.

Della Togna, also co-coordinator of the Biobanking Working Group of the Amphibian Specialist Group of the International Union for Conservation of Nature (IUCN), explained that 83% of the 94 species of harlequin frogs evaluated by the organization are currently in danger of extinction.

Meanwhile, an estimated 40% of Atelopus species have disappeared from their known homes and have not been seen since the early 2020s, despite great efforts to find them, as is the case of the Golden Frog (Atelopus zeteki) which has not been observed in the wild since 2009.

**Load-Date:** September 11, 2021

**End of Document**



[***Frogs in freefall for reasons unknown***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63HM-FG71-F0J6-J17T-00000-00&context=1516831)

Blue Mountains Gazette

September 4, 2021 Saturday

Print & Internet Editions

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**Length:** 219 words

**Byline:** Jordann Crawford-Ash, FrogID Validator, Australian Museum

**Body**

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Peron's Tree Frog (Litoria peronii), the Striped Marsh Frog (Limnodynastes peronii) and the Eastern Banjo Frog (Limnodynastes dumerilii) are the next most reported, all common and beloved species throughout the Mountains.

Frogs are a vital part of our ecosystem. They control invertebrate populations and play an important role in the food web for many birds, mammals and reptiles. This mass mortality event is therefore very concerning, and experts aren't yet sure why it's happening.

Amphibians are susceptible to a range of pathogens; in fact, they have been fighting a pandemic of their own for years, caused by the amphibian ***chytrid*** fungus. This disease attacks the frog's skin, affecting the way they breath, drink and function within their bodies. This fungus thrives in cold, damp environments. It may be taking a greater hold of our frogs due to colder weather, it may be a novel pathogen, or something else altogether.

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**Load-Date:** September 3, 2021

**End of Document**



[***Nature; Aquarium lends rare frogs a hand***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KX-JH11-JBCN-432Y-00000-00&context=1516831)

The Daily News of Los Angeles

September 14, 2021 Tuesday

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**Section:** NEWS; Pg. 3

**Length:** 302 words

**Byline:** Hunter Lee

**Body**

The Aquarium of the Pacific has welcomed tadpoles, which will grow into endangered yellow-legged frogs, that were rescued from local wildfire-scorched mountains, officials at the Long Beach aquarium announced this week.

Yellow-legged frogs are critically endangered. Fires last year in the San Gabriel, San Bernardino and San Jacinto mountains — where the amphibians are a native species — made matters even worse.

So federal and state wildlife agencies asked local institutions to take in the rescued tadpoles.

The Aquarium of the Pacific not only obliged but built a lab to house the amphibians as part of a conservation effort to increase their numbers in the wild. The tadpoles will be raised there and eventually released into the wild.

“We built this facility at our Aquarium specifically for these mountain yellow-legged frogs to do our part to help their populations recover,” Brett Long, the aquarium’s curator, said in a statement.

The frogs make their home in cool streams, about 45 to 55 degrees, which is

one of the specifications of the aquarium’s lab so these amphibians can have the best care possible.

The United States Geological Survey, California Department of Fish and Wildlife, the Los Angeles Zoo, San Diego Zoo Wildlife Alliance, Santa Ana Zoo and UCLA were among the other institutions that took in the tadpoles.

The extreme weather conditions that lead to wildfires and drought have threatened yellow-legged frogs. The ***chytrid*** fungus, which causes life-threatening disease in amphibians worldwide, also has hurt the species’ numbers.

“Supporting this conservation effort, respecting signs announcing areas off limits to the public when visiting these local mountains, and reducing your carbon footprint,” Long said, “are all things anyone who is interested in helping can do.”

[*hlee@scng.com*](mailto:hlee@scng.com)

**Load-Date:** September 14, 2021

**End of Document**



[***Frogs need people to leap into action***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642J-5GP1-JD34-V0S9-00000-00&context=1516831)

Canberra Times (Australia)

November 13, 2021 Saturday

Print Edition

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**Section:** NATIONAL; Pg. 27

**Length:** 618 words

**Byline:** Damon Cronshaw

**Body**

The death of large numbers of frogs over winter has prompted a call for people to monitor frog calls to help scientists understand the extent of the problem across the country.

To help save the frogs, citizens are urged to participate in FrogID Week.

The Australian Museum project - which runs until November 21 - involves people monitoring frogs with the free FrogID app.

Recorded sounds of frog calls will enable the museum's research team to assess the population.

Dr Jodi Rowley, FrogID lead scientist, said "we need people's help to understand how our frogs are doing and whether they have disappeared". Frogs face various threats such as climate change, bushfires, flood, drought, habitat loss and disease.

"It's a call to action to record frogs at least once a day," said Dr Rowley, of the Australian Museum and University of NSW.

She urged people to record frogs in backyards, bush, paddocks, dams, remote outback areas, rainforests, mountain slopes and farms. "We are missing even basic information on frogs. There are areas in Australia that have no scientific records of frogs, even though they are there."

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The historic decline in frog numbers is largely due to a frog pandemic caused by the amphibian ***chytrid*** fungus disease.

"It hit our frogs and frogs around the world a lot. That's probably the biggest reason for quieter times for frogs unfortunately," she said. "That caused the extinction of at least four species of Australian frogs."

She said frogs were important to the food web.

"When frogs decline or disappear, there are far-reaching consequences. All the animals that rely on them start to disappear as well," she said. But she added that "it's not all doom and gloom". The four-year old Frog ID program had already made progress, with participants discovering new populations of threatened species.

"We don't even know how many species of frog we have. There were two new species discovered in Australia in the last month or so," she said. "You can discover a new species by recording frog calls."

Australian Museum director and chief executive Kim McKay said FrogID Week was a great way "to be directly involved in helping save our frogs and a fun way for curious minds of all ages to learn about and help conserve biodiversity".

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They also want to track the tusked frog, which was rediscovered on the Northern Tablelands of NSW after a 40-year absence. Its distinctive "chirrup" call was also recorded with the Australian Museum's FrogID app. For now, this site represents the only known location of the endangered species.

The project has already enabled more than 460,000 records of 205 different frog species to be verified thanks to the participation of thousands of Australians.

**Load-Date:** November 12, 2021

**End of Document**



[***AQUARIUM OF THE PACIFIC; Rescue effort focuses on rare frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KR-DJC1-DXVP-V3MY-00000-00&context=1516831)

Whittier Daily News (California)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 3

**Length:** 305 words

**Byline:** Hunter Lee

**Body**

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The frogs make their home in cool streams, at about 45 to 55 degrees Fahrenheit, which is one of the specifications of the aquarium’s lab so these amphibians can have the best care possible.

The United States Geological Survey, California Department of Fish and Wildlife, the Los Angeles Zoo, San Diego Zoo Wildlife Alliance, Santa Ana Zoo and

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[*hlee@scng.com*](mailto:hlee@scng.com)

**Load-Date:** September 13, 2021

**End of Document**



[***long beach; Aquarium of the Pacific is raising endangered tadpoles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KP-R941-DXVP-V4WS-00000-00&context=1516831)

The Press Enterprise (Riverside, CA)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 8

**Length:** 306 words

**Byline:** Hunter Lee

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**Load-Date:** September 13, 2021

**End of Document**



[***Ribbit ribbit: frogs need you to leap into action***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642J-5GP1-JD34-V194-00000-00&context=1516831)

Newcastle Herald (Australia)

November 13, 2021 Saturday

Print Edition

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**Section:** NEWS; Pg. 29

**Length:** 617 words

**Byline:** Damon Cronshaw

**Body**

The death of large numbers of frogs over winter has prompted a call for people to monitor frog calls to help scientists understand the extent of the problem across the country.

To help save the frogs, citizens are urged to participate in FrogID Week.

The Australian Museum project - which runs until November 21 - involves people monitoring frogs with the free FrogID app.

Recorded sounds of frog calls will enable the museum's research team to assess the population.

Dr Jodi Rowley, FrogID lead scientist, said "we need people's help to understand how our frogs are doing and whether they have disappeared".

Frogs face various threats such as climate change, bushfires, flood, drought, habitat loss and disease.

"It's a call to action to record frogs at least once a day," said Dr Rowley, of the Australian Museum and University of NSW.

She urged people to record frogs in backyards, bush, paddocks, dams, remote outback areas, rainforests, mountain slopes and farms.

"We are missing even basic information on frogs. There are areas in Australia that have no scientific records of frogs, even though they are there."

Dr Rowley said Australia had about 240 known species of native frogs, with more than 30 under threat from extinction.

"They're threatened by so many things. They're really sensitive indicators of environmental health," she said, adding they were dying in large numbers this year.

Older people often tell Dr Rowley that they remember the days when frogs would cover windows and give off a chorus of croaks.

The historic decline in frog numbers is largely due to a frog pandemic caused by the amphibian ***chytrid*** fungus disease.

"It hit our frogs and frogs around the world a lot. That's probably the biggest reason for quieter times for frogs unfortunately," she said.

"That caused the extinction of at least four species of Australian frogs."

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**Load-Date:** November 12, 2021

**End of Document**



[***AQUARIUM OF THE PACIFIC; Rescue effort focuses on rare frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KP-R941-DXVP-V4V4-00000-00&context=1516831)

Pasadena Star-News (California)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 3

**Length:** 305 words

**Byline:** Hunter Lee

**Body**

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**Load-Date:** September 13, 2021

**End of Document**



[***AQUARIUM OF THE PACIFIC; Rescue effort focuses on frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63K9-FYG1-DXVP-V22X-00000-00&context=1516831)

Long Beach Press-Telegram

September 11, 2021 Saturday

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**Section:** NEWS; Pg. 3

**Length:** 306 words

**Byline:** Hunter Lee

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**Load-Date:** September 13, 2021

**End of Document**



[***Toad release marks zoo milestone; Western boreal toads sent offinto the wild***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63XT-PB31-DXVP-V3H2-00000-00&context=1516831)

Omaha World-Herald (Nebraska)

October 16, 2021 Saturday

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**Section:** NEWS; Pg. B3

**Length:** 424 words

**Byline:** JESSICA WADE, WORLD-HERALD STAFFWRITER

**Body**

The Omaha zoo's amphibian conservation team recently reached a milestone with the first-ever repatriation effort for western boreal toads and the release of its 100, 000th amphibian into the wild.

The Henry Doorly Zoo & Aquarium sent off3, 847 western boreal toads - in various life stages - to the Utah Division of Wildlife Resources for release in the Paunsaugunt Plateau area near Bryce Canyon National Park on Aug. 18 and Sept. 9. It was the first time the zoo participated in a reintroduction effort for the Western Boreal Toad Recovery Program since signing on with the project in 1995, zoo of-ficials said in a press release.

The contribution was also the largest number of amphibians produced for the program to date.

Amphibian conservation efforts at the Omaha zoo began long before the newly released toads uttered their first ribbit. They started in 1992, when the Wyoming Game and Fish Department provided the zoo with its first shipment of Wyoming toads.

In 1991, the species was declared extinct in the wild, and Omaha's zoo was among those accredited by the Association of Zoos and Aquariums to begin population assurance colonies, or in-house breeding populations, at their facilities. This effort contributed to the first successful Wyoming toad reintroductions in 1995, with the release of 38 toads at Mortenson Lake National Wildlife Refuge. That same year, Colorado Game and Wildlife recruited the zoo's team to bolster the western boreal toad population, which was declining because of ***chytrid*** fungus and habitat destruction.

The zoo's success with western boreal toads began in August 2020, when amphibian conservation staffspawned their first 30 toads.

With the help of Dr. Ruth Marcec-Greaves, the executive director of the zoo-initiated Honduras Amphibian Research and Conservation Center, a new hormone protocol was implemented to increase fertilization and improve egg deposition among the zoo's population.

The western boreal project is one of at least six major amphibian recovery efforts currently supported by the Omaha zoo's amphibian conservation program.

The amphibian conservation area was built in 2006 in the Elevator Building, just north of the Desert Dome. It isn't open to the public and is mostly used for breeding and releasing back into the wild critically endangered species, including the gopher frog, the near-threatened eastern hellbender and the extinct-in-the-wild Wyoming toad.

The amphibian conservation program has supported the release of 109, 964 amphibians to date.

[*jwade@owh.com*](mailto:jwade@owh.com), 402-444-1067

**Graphic**

HENRY DOORLY ZOO & AQUARIUM The Omaha zoo released 3, 847 western boreal toads in Utah as part of the Western Boreal Toad Recovery Program. The zoo's amphibian conservation program has supported the release of 109, 964 amphibians.

**Load-Date:** October 25, 2021

**End of Document**



[***long beach; Aquarium of the Pacific is raising endangered tadpoles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KR-DJC1-DXVP-V3BR-00000-00&context=1516831)

Inland Valley Daily Bulletin (Ontario, California)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 8

**Length:** 306 words

**Byline:** Hunter Lee

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**Load-Date:** September 13, 2021

**End of Document**



[***Golden frog celebrates its "critically endangered" day***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63CH-T591-JBJN-M4FK-00000-00&context=1516831)

CE Noticias Financieras English

August 14, 2021 Saturday

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**Length:** 226 words

**Body**

Every August 14, Panama celebrates the Day of the Golden Frog (Atelopus zeteki), a species that is extinct in the wild within the country.

"The only place where he can be observed, in a state of captivity, is in the Amphibian Conservation Center of the Anton Valley, and in the Amphibian Rescue and Conservation Center, of the Smithsonian Tropical Research Institute (STRI) in Gamboa," says a statement from the Ministry of Environment.

To raise awareness about the efforts being made for the implementation of breeding programs for this species, the document continues, every August 14, activities focused on the conservation of this attractive amphibian are carried out.

The regional directorate of Coclé, together with the EVACC foundation, gave this year a training in topics such as: Studies for the natural recovery of the species, management of watersheds, types of protected areas and pest management.

Community-Based Organizations (CBOs), Rural Aqueduct Management Boards (JAAR) and environmental volunteers from the Anton Valley participated in the induction.

The populations of the golden frog are kept in captivity, while the solutions for the ***chytrid*** fungus that affects these amphibians are investigated, so that in the future they can safely reintroduce these frogs into the wild, said Erick Núñez, head of the Biodiversity Department of MiAmbiente.

**Load-Date:** August 15, 2021

**End of Document**



[***Rebecca's work to protect beloved frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62JW-93B1-F0JP-W1H4-00000-00&context=1516831)

Townsville Bulletin (Australia)

May 1, 2021 Saturday

Townsville Edition

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**Section:** NEWS; Pg. 37

**Length:** 296 words

**Body**

PhD student Rebecca Webb has always loved frogs, and now she wants to save them from extinction.

Ms Webb is researching the amphibian ***chytrid*** fungus, which is a disease killing frogs in Australia and around the world.

"There are several frog species in Australia that are likely to go extinct due to ***chytrid*** if we don't intervene," she said.

"I think 2020 has shown us we need to take infectious diseases seriously." Ms Webb is investigating ways to better understand the disease and therefore find ways to combat it.

"I am collecting fungal isolates from frogs around Australia to understand how the pathogen was introduced and spread, and if it harbours any viral hitchhikers," she said.

"Naturally occurring viral pathogens have been used in other fungal diseases to increase host survival.

"So, if there are viruses present in the ***chytrid*** fungus, it might present a novel opportunity to fight the disease." Ms Webb was the runner-up in the 2020 and 2019 JCU three-minute thesis competition, which asks students to present their PhD thesis in plain language in only three minutes.

She said the experience helped her understand ways of communicating complicated research to a general audience.

"The public will only care and act on a problem if they know about it," she said.

"I've given talks at universities, schools and government organisations, and I hope that I've managed to raise concern about the plight of Australian frogs." When she finishes her PhD, Ms Webb hopes to continue working in wildlife health and conservation.

"The best thing about research is that you are constantly learning and I hope to be able to continue learning for the rest of my career," she said. "I am very proud when my friends tell me that their children want to be scientists 'just like Aunty Bec'."

**Load-Date:** April 30, 2021

**End of Document**



[***long beach; Aquarium of the Pacific is raising endangered tadpoles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KR-DK91-JBCN-43SD-00000-00&context=1516831)

San Bernardino Sun (California)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 8

**Length:** 306 words

**Byline:** Hunter Lee

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**Load-Date:** September 13, 2021

**End of Document**



[***Alarm as unknown killer claims Oz frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63F6-01D1-F0JP-W543-00000-00&context=1516831)

The Courier Mail (Australia)

August 23, 2021 Monday

CourierMail Edition

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**Section:** NEWS; Pg. 13

**Length:** 230 words

**Byline:** JENNA THOMPSON

**Body**

WHILE all eyes are focused on how the nation will -contain the latest spread of Covid-19, another epidemic is quietly sweeping through Australia.

For several months, wildlife and conservation groups have been anxiously monitoring a significant increase in the number of reports of sick or dead frogs.

"On posting to our Facebook page in early August an article reporting of a significant outbreak causing frogs to become sick and die across the east coast of Australia, it wasn't long before community members across the Clarence were reporting unusual cases of sick or dying frogs," a spokesman from -Clarence Landcare, on the NSW north coast, said.

The spokesman said reports came from all across the region, including Grafton, -Ulmarra, Nymboida, Ashby, Maclean and Yamba.

Jodi Rowley, lead scientist of national frog identification and research project FrogID has already spent several weeks collating hundreds of reports from across Australia to try to understand the -extent of this mass frog -mortality event.

"While we suspect disease is responsible, I'm working with the Australian Registry of Wildlife Health, gov-ernment biosecurity and -environmental agencies to understand the scale, cause and impact of this upsetting event," Ms Rowley said in a statement. The outbreak is initially suspected to be the ***Chytrid*** fungus, however, the case could instead be an unknown pathogen.

**Load-Date:** August 22, 2021

**End of Document**



[***AQUARIUM OF THE PACIFIC; Rescue effort focuses on rare frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KP-R941-DXVP-V4YK-00000-00&context=1516831)

San Gabriel Valley Tribune (California)

September 13, 2021 Monday

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**Section:** NEWS; Pg. 3

**Length:** 305 words

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**Load-Date:** September 13, 2021

**End of Document**



[***Frogs in freefall***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63GS-GDT1-F0J6-J27V-00000-00&context=1516831)

Blue Mountains Gazette

August 31, 2021 Tuesday

Internet Edition

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**Length:** 291 words

**Byline:** Jordann Crawford-Ash

**Body**

Concerned frog-lovers across the country are reporting large numbers of dead and dying frogs to the FrogID team at the Australian Museum. We need your help to understand why!

Dead frogs have been found in large numbers across eastern Australia, particularly south eastern Queensland and New South Wales including the Blue Mountains, with 26 native species identified so far. The most commonly reported is the Green Tree Frog (Litoria caerulea), an iconic species that has already suffered declines across the Sydney Region (Read more here). Peron's Tree Frog (Litoria peronii), the Striped Marsh Frog (Limnodynastes peronii) and the Eastern Banjo Frog (Limnodynastes dumerilii) are the next most reported, all common and beloved species throughout the Blue Mountains.

Frogs are a vital part of our ecosystem. They control invertebrate populations and play an important role in the food web for many birds, mammals and reptiles. This mass mortality event is therefore very concerning, and we aren't yet sure why it's happening.

Amphibians are susceptible to a range of pathogens; in fact, they have been fighting a pandemic of their own for years, caused by the amphibian ***chytrid*** fungus. This disease attacks the frog's skin, affecting the way they breath, drink and function within their bodies. This fungus thrives in cold, damp environments. It may be taking a greater hold of our frogs due to colder weather, it may be a novel pathogen, or something else altogether.

If you have seen dead or dying frogs in your local area, please send any photos or reports to the national citizen science project FrogID, or email [*calls@frogid.net.au*](mailto:calls@frogid.net.au) You can learn more about our urgent appeal here.

- Jordann Crawford-Ash, FrogID Validator, Australian Museum, Sydney

**Load-Date:** August 30, 2021

**End of Document**



[***AQUARIUM OF THE PACIFIC; Rescue effort focuses on yellow-legged frog tadpoles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63KH-F541-JBCN-42CY-00000-00&context=1516831)

Orange County Register (California)

September 12, 2021 Sunday

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**Section:** NEWS; Pg. 9

**Length:** 303 words

**Byline:** Hunter Lee; hlee@scng.com

**Body**

The Aquarium of the Pacific has welcomed tadpoles — which will grow into endangered yellow-legged frogs — that were rescued from local wildfire-scorched mountains, officials for the Long Beach aquarium announced this week.

Yellow-legged frogs are critically endangered. Fires last year in the San Gabriel, San Bernardino and San Jacinto mountains — where the amphibians are a native species — made matters even worse.

So federal and state wildlife agencies asked local institutions to take in the rescued tadpoles.

The Aquarium of the Pacific not only obliged but also built a lab to house the amphibians as part of a conservation effort to increase their numbers in the wild. The tadpoles will be raised there and eventually released into the wild.

“We built this facility at our Aquarium specifically for these mountain yellow-legged frogs to do our part to help their populations recover,” Brett Long, the aquarium’s curator, said in a statement.

The frogs make their home in cool streams, at about 45 to 55 degrees Fahrenheit, which is one of the specifications of the aquarium’s lab so these amphibians can have the best care possible.

The United States Geological Survey, California Department of Fish and Wildlife, the Los Angeles Zoo, San Diego Zoo Wildlife Alliance, Santa Ana Zoo and UCLA were among the other institutions that took in the tadpoles.

The extreme weather conditions that lead to wildfires and drought have threatened yellow-legged frogs. The ***chytrid*** fungus, which causes life-threatening disease in amphibians worldwide, also has hurt the species’ numbers.

“Supporting this conservation effort, respecting signs announcing areas off limits to the public when visiting these local mountains, and reducing your carbon footprint,” Long said, “are all things anyone who is interested in helping can do.”

**Load-Date:** September 13, 2021

**End of Document**



[***Experts preserve Harlequin toad found in Bolivia after 17 years***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63T1-RJ21-DY1R-B2FS-00000-00&context=1516831)

CE Noticias Financieras English

October 7, 2021 Thursday

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**Length:** 487 words

**Body**

La Paz, Oct 7 (EFE) - Several organizations joined in a project to protect the Tricolored Harlequin Toad or Atelopus tricolor that was thought to be extinct in Bolivia, but after 17 years they found two individuals of this species.

This small toad that is characteristic for its striking colors was photographed in 2020 in the Yungas region of La Paz among the astonishment of the experts, since there was no new record of this species since 2003, told Efe the president of Bolivian Amphibian Initiative, Patricia Mendoza.

After 17 years of believing that this species was extinct in the country, presumably due to the ***chytrid*** fungus that "attacks" amphibian populations, several experts and organizations joined forces in a project to conserve and evaluate the population status of the Atelopus tricolor.

Bolivian Amphibian Initiative, Re:wild, Diversidad entre Pendientes, the National Museum of Natural History, the Vesty Pakos Municipal Biopark, Durrell Wildlife Conservation Trust of the United Kingdom, Atelopus Survival Initiative, Amphibian Specialist Group Bolivia, among others, joined forces to conserve this species.

The first phase consisted of going to the place where the two male specimens were photographed to confirm if it is this species and then evaluate its distribution and identify the factors that threaten it.

To do this they made a series of trips in which they found more specimens of this type of toads characterized by the yellow, black and red colors of its body that measures between 23 to 34 millimeters depending on whether it is male or female, explained the herpetologist Mendoza.

The Tricolored Harlequin Toad lives in the eastern Andes of Bolivia and Peru and are "closely associated with bodies of water", currently there are no records of the species in Peru, so Bolivia would be hosting the only population of this species.

The conservation of this toad is of great importance because it is the only representative of this genus of amphibians for Bolivia and plays the role of pest controller, such as mosquitoes, which contributes to having a "balance in the food chain," Mendoza emphasized.

Among the main threats identified so far is water pollution with plastic bottles, cans or the use of detergents in these water sources that affect these populations of amphibians.

In the same way, the loss of their habitat due to the fragmentation of forests is one of the main concerns, as there are several plots of crops in the area to produce coffee, coca and some fruits, for example.

"There are patches of forest in the middle of cultivated areas, and if these spaces are used, this population would probably disappear," Mendoza said.

In December will begin the second phase of the project that is focused on working with nearby populations to collaborate with the conservation of this species and are open to other organizations to join to conserve the Harlequin toad in Bolivia.

**Load-Date:** October 8, 2021

**End of Document**



[***Mass frog deaths on the Mid North Coast***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63MD-2VN1-F0J6-J0FR-00000-00&context=1516831)

Manning River Times

September 17, 2021 Friday

Print & Internet Editions

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**Section:** OPINION; Pg. 12

**Length:** 390 words

**Byline:** Sam Payne

**Body**

FROGS are having a pandemic of their own on the Mid North Coast, with scientists worried about a mass mortality event that is occurring.

Dr David Newell is a biologist based at Southern Cross University, and has spent 25 years studying amphibian diversity, ecology and conservation.

"Reports are coming in of multiple frogs being found shrivelled and turning brown on people's lawns," Dr Newell said.

"It's unusual to see dead frogs because most frogs are secretive in nature and decompose rapidly out of sight when they die, so when there are multiple reports like this happening, we get very worried.

"Just like we have seen with COVID-19, It is possible that a new strain of the ***chytrid*** fungus has emerged and we need to investigate this."

The fungus is a deadly pathogen that attaches itself to a frog's back when they swim, and over time, it kills the frog. The fungus then spreads by releasing its spores into the surrounding environment.

Scientists lay blame on rise of killer pathogen

Sick frogs quite often shed lots of skin, have discolouration or red patches on their body, and when they are placed on their back, can't right themselves easily.

"We are asking people to report any sightings of sick or dying frogs, to [*calls@frogid.net.au*](mailto:calls@frogid.net.au), and also if they find dead any bodies, freeze them and get in contact with the us," Dr Newell said.

FrogID is a national citizen science program run by the Australian Museum, and it is seeking to collate reports from members of the community. If you spot a sick frogs in your area, take it immediately to a wildlife veterinarian and ask them to contact the Registry of Wildlife Health for the treatment protocols.

Dr Newell advised against taking frogs away from their habitats. "I know it's nice to have frogs in your garden, but please don't move frogs big distances, just create habitats and they will turn up by themselves. Moving them could potentially spread the pathogen to areas where it isn't at," he said.

- Story by Sam Payne; photo: A healthy green tree frog, by Jodi Rowley FOOTNOTE: "Frogs are amongst the most-threatened groups of animals on the planet. In Australia, we've lost at least four of our 240 known frog species to extinction and dozens more are threatened," says Dr Jodi Rowley is curator of Amphibian and Reptile Conservation Biology at the Australian Museum and UNSW Sydney.

**Load-Date:** September 16, 2021

**End of Document**



[***Aquatic fungus that has already extinguished several amphibian species now threatens terrestrial frogs, study says***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63MJ-BF61-JBJN-M1XM-00000-00&context=1516831)

CE Noticias Financieras English

September 16, 2021 Thursday

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**Length:** 1016 words

**Body**

An aquatic fungus that has already driven to extinction several species of amphibians that have part or all of their life cycle in water also threatens terrestrial frogs. A group of researchers supported by Fapesp found an unprecedented mortality of little frogs that develop away from the aquatic environment in the Atlantic Forest. The amphibians were infected with high loads of the ***chytrid*** fungus (Batrachochytrium dendrobatidis), which causes chytridiomycosis.

The study, published in the journal Biological Conservation, lights up a warning about the threat of the pathogen also on amphibians of terrestrial habits, which have important ecological functions, such as the control of insects that transmit diseases like dengue, yellow fever and zika.

A group of researchers supported by Fapesp found in the Atlantic Forest an unprecedented mortality of little frogs that develop away from the aquatic environment - Renato Martins/Unicamp/Fapesp "

This is a fungus that installs itself on the skin of amphibians, which is where they perform gas exchange with the environment. When infection occurs, there is a physiological imbalance and the animal ends up dying of heart attack," explains Diego Moura-Campos, first author of the study, conducted during his master's degree at the Institute of Biology, University of Campinas (IB-Unicamp), with a scholarship from the Coordination for the Improvement of Higher Education Personnel (Capes).

The research was conducted under the project "The ***chytrid*** fungus in Brazil: from its origin to its consequences", linked to the BIOTA-FAPESP Program and coordinated by Luís Felipe Toledo, professor of IB-Unicamp, who also signs the study.

"We study the fungus under several aspects, but we rarely have this unfortunate opportunity to see animals dying in nature from the infection. This is the first study showing this in Brazil. If an amphibian dies and is contaminated, it doesn't mean that it died because of the fungus. It could be living well with the pathogen and not develop the disease. In this case, we were sure of the cause of death because the animals were showing symptoms of the disease: rickets, with loose skin and very high infection loads", says Toledo, who coordinates another project focused on understanding how the fungus spreads in nature.

The researchers believe that the species that develop directly, meaning they spend their entire life cycle on land, without passing through the tadpole stage, are even less adapted to the fungus. Because they have had longer contact with the pathogen, species that live in water may have built up some resistance to infection.

The mortality was observed by Moura-Campos during research in the Serra do Japi Municipal Biological Reserve, in Jundiaí (SP), between May 2018 and May 2019. Interestingly, the dead or dying individuals of the species Brachycephalus rotenbergae (sapinho-pingo-de-ouro) were found after a period of atypical drought in the state of São Paulo.

"These animals are very small and difficult to find. When they die they soon decompose. Finding nine of them dead or sick in a short interval of time, as happened, indicates that many others probably died", says Guilherme Becker, professor at the University of Alabama, in the United States, another participant in the research.

According to the researcher, who is also a visiting professor at the Graduate Program in Ecology at Unicamp, the study shows that the acceleration of global climate change in the coming decades should increase the occurrence of this type of disease, whose causers may evolve into more virulent strains, including due to the emergence of hybrids, as shown in a previous work of the group.

"Due to the lack of humidity in the forest floor where they live, these animals may have gone to hydrate in streams and became more contaminated by the fungus than usual," he says.

Another hypothesis raised by the researchers is that periods of drought can compromise the immune system of the frogs and make them more vulnerable to the fungus.

**Cosmopolitan pathogen**

With origin in Asia, the fungus probably spread around the world because of the frog meat trade. Species such as the bullfrog (Aquarana catesbeiana), used for this purpose, are resistant to the fungus and can carry it without being infected.

A paper published in Science magazine in 2018, of which Toledo is one of the authors, points out that the fungus left the Korean peninsula and spread to other parts of the globe in the early 20th century (read more at: revistapesquisa.fapespa.br/researchers-identify-origin-of-fungo-assassin-of-amphibians/).

Another study in which the Brazilian participated also estimated that the fungus led to the decline of populations of 501 species of amphibians worldwide. In Brazil alone, at least 50 species or populations were affected, with 12 becoming extinct and 38 suffering decline (read more at: agencia.fapesp.br/30128/).

"Amphibians are very important for the functioning of ecosystems. Their biomass is huge in forests. They serve as food for a diversity of other animals, eat arthropods in nature, control invertebrate communities. When it comes to aquatic animals, most are herbivorous in the tadpole stage and consume phytoplankton, which could take over aquatic environments if it weren't for the tadpoles. These animals cross aquatic and terrestrial ecosystems, so when chytridiomycosis outbreaks occur, the impact is great," says Becker.

As an example, the researcher recalls a recent study in which U.S. and Panamanian researchers showed a relationship between the collapse of amphibians in Costa Rica due to infection with B. dendrobatidis and the increase in malaria outbreaks in the 1990s and 2000s in Costa Rica.

The group stresses that further observations over the years are needed in order to more accurately assess the real impact of chytridiomycosis on amphibian populations in this and other locations.

The article Fungal disease cluster in tropical terrestrial frogs predicted by low rainfall can be read at: [*www.sciencedirect.com/science/article/abs/pii/S0006320721002986*](http://www.sciencedirect.com/science/article/abs/pii/S0006320721002986).

**Load-Date:** September 17, 2021

**End of Document**



[***Push to record mass deaths still going undetected***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63DJ-4451-JBR4-F3YJ-00000-00&context=1516831)

Grafton Daily Examiner Online

August 19, 2021 Thursday 2:00 PM AEDT

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**Length:** 324 words

**Byline:** Jenna Thompson

**Body**

While all eyes are focused on how the nation will contain the latest spread of Covid-19, another epidemic is quietly sweeping through Australia.

For several months, wildlife and conservation groups have been anxiously monitoring a significant increase in the number of reports of sick or dead frogs.

"This is highly alarming and suggests we have a reason to be very worried about the frog species here," a spokesperson from Clarence Landcare said.

"On posting to our Facebook page in early August an article reporting of a significant outbreak causing frogs to become sick and die across the east coast of Australia, it wasn't long before community members across the Clarence were reporting unusual cases of sick or dying frogs."

The spokesperson said reports came from all across the region, including Grafton, Ulmarra, Nymboida, Ashby, Maclean and Yamba.

Jodi Rowley, lead scientist of national frog identification and research project FrogID has already spent several weeks collating hundreds of reports from across Australia to try and understand the extent of this mass frog mortality event.

"While we suspect disease is responsible, I'm working with the Australian Registry of Wildlife Health, government biosecurity and environmental agencies to understand the scale, cause and impact of this upsetting event," she said in a statement.

The outbreak is initially suspected to be the ***Chytrid*** fungus, however the case could instead be an unknown pathogen.

But with the scale of impacted frog populations still unclear with potentially thousands of animals dying undetected, wildlife and conservation groups are appealing to the wider community to help report any frog activity they come across.

In the meantime, Clarence Landcare and Glen Innes Natural Resources Advisory Committee are [*hosting a free FrogID webinar on Saturday*](https://us02web.zoom.us/webinar/register/WN_hCyncQ5aSWSR-iKIYjgEcw), August 21 from 10.30am to 11.30am which will explore how citizen science can impact frogs and assist in their recovery.

**Notes**

Document links may not lead to an active page. Page maintenance is at the discretion of the publisher.

**Load-Date:** August 19, 2021

**End of Document**



[***Science: Only one frog among 7,000 living species has complete dentition.***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642G-WJ61-DY1R-B0FJ-00000-00&context=1516831)

CE Noticias Financieras English

November 11, 2021 Thursday

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**Length:** 841 words

**Body**

MADRID, 11 (EUROPA PRESS)

Biologists have settled a centuries-old debate by confirming that a single species of frog, of the more than 7,000 that live today, has real teeth in the lower jaw.

The protagonist, a large marsupial frog called Gastrotheca guentheri, has baffled scientists since its discovery in 1882 by possessing what appeared to be a complete set of dagger-sharp teeth in the upper and lower mouth.

Since then, scientists have doubted the exact nature of these structures. True teeth are composed of specific tissues, including dentin and enamel, which are notoriously difficult to observe in frog teeth because of their diminutive size.

"They are incredibly small, each about the size of a grain of sand," lead author Daniel Paluh, a doctoral candidate in the University of Florida's biology department, said in a statement. "There is no way to confirm the presence of dentin and enamel in frog teeth without using high-resolution techniques."

Frogs have been missing teeth in the lower jaw since they first appeared in the fossil record more than 200 million years ago. Therefore, a single living species with a complete dentition seemed unlikely at best and contradicted an ancient biological theory, called Dollo's Law, which states that once a complex trait is lost in an organism, it never returns.

But frogs have been known to flout the rules when it comes to teeth. Although their basic body shape and anatomy have remained virtually unchanged since the Jurassic period, Paluh and his colleagues recently determined that frogs have lost teeth on more than 20 separate occasions and may have regained them six more times over the course of their evolutionary history.

Some species, such as those that feed on ants and termites, lack teeth altogether and rely instead on their sticky, projectile tongues to gather food. Frogs that go after larger morsels are often equipped with a row of teeth in the upper jaw and a serrated, jagged palate at the top of the mouth, which helps prevent moving prey from escaping.

In rare cases, some species have evolved large bony tusks that protrude from their lower jaw and superficially resemble teeth, but lack the apron tissues of dentin and enamel. And instead of the conveyor belt system of tooth replacement in other frogs, the tusks grow only once and cannot be replaced.

For decades, no one was sure whether the lower jaw structures of G. guentheri were bones disguised as teeth or the genuine article. Finding a specimen to settle the question wasn't easy either. Native to the cloud forests of Colombia and Ecuador, the last recorded sighting of G. guentheri was in 1996, raising fears that the species has since succumbed to extinction.

A handful of G. guentheri are preserved as museum specimens, but given their rarity, biologists are hesitant to subject them to the kind of destructive analyses that would be necessary to study their teeth. But Paluh was able to take advantage of a peculiar feature of Gastrotheca biology to use a preserved embryo as a specimen instead of a full-size adult.

Instead of laying eggs in ponds or streams, female marsupial frogs carry them in a pouch on their backs. "In the case of G. guentheri, these eggs skip the tadpole stage and hatch directly into miniature versions of the adult called froglets," Paluh said.

In their study, published in Evolution, the researchers took CT scans of the embryo's jaws and carefully stained razor-thin sections of individual teeth with dyes that bind to enamel and dentin, with unambiguous results. The teeth of G. guentheri were virtually identical to those of other frog species in their overall shape, development and the tissues of which they were composed.

"This was surprising given the extreme time since they were lost and recovered," Paluh said. "Our expectation was that if they got their teeth back, they would somehow be different, but that's not what we saw at all."

As for how structures that have been absent for millions of years reappeared in an otherwise unassuming frog, Paluh suspects the answer lies in the complex dental developmental pathway retained in most living amphibians. Although the location of teeth may vary from species to species, the same basic genetics likely underlie their development, and producing them in the lower jaw could be as simple as flipping a switch.

Paluh plans to leverage several genetic tools in the near future to map the contours of tooth development and evolution in frogs, but for G. guentheri and a number of other endangered species in the U.S. tropics, the exact answer may no longer be possible. DNA degrades over time in plants and animals stored in museum collections, and the small number of aged specimens of G. guentheri are probably not viable resources for genetic study.

"We've seen many species in this group endangered by climate change, habitat degradation and ***chytrid*** fungus disease," Paluh said. "We won't be able to answer these questions in any other group, because these traits don't exist anywhere else on the tree of life."

**Load-Date:** November 12, 2021

**End of Document**



[***Frog back from the dead helps fight plans for mine in Ecuador***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6465-WB51-DY4H-K3FX-00000-00&context=1516831)

The Guardian (London)

November 23, 2021 Tuesday 11:00 AM GMT

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**Section:** ENVIRONMENT; Version:1

**Length:** 1091 words

**Byline:** Graeme Green

**Highlight:** Campaigners say if copper mine gets go-ahead in cloud forest, the longnose harlequin, once thought to be extinct, will be threatened again

**Body**

Reports of the longnose harlequin frog's death appear to have been greatly exaggerated - or, at least, premature. The Mark Twain of the frog world is listed by the International Union for Conservation of Nature (IUCN) [*as extinct*](https://www.iucnredlist.org/species/54522/11158637) , which may come as a surprise to those alive and well in the cloud forests of Ecuador's tropical Andes.

Known for its pointed snout, the longnose harlequin frog ( Atelopus longirostris ) is about to play a central role in a legal battle to stop a mining project in the Intag valley in Imbabura province, which campaigners say would be a disaster for the highly biodiverse cloud forests.

"Ecuador is wildly diverse with amphibians," says Carlos Zorrilla, executive director of environmental organisation [*Decoin*](https://www.decoin.org/) (Defensa y Conservación Ecológica de Intag). In 2016, [*four longnose harlequin frogs*](https://www.tandfonline.com/doi/full/10.1080/23766808.2017.1327000) - last seen in 1989 - were found in the area. "Elicio Tapia and Gustavo Pazmiño, the biologists from [*Jambatu Centre for Research and Conservation of Amphibians*](http://www.anfibiosecuador.ec/index.php?cj,4) , who found them, also believe there'll be dozens more amphibians endangered by this mining project," says Zorrilla. "Mining would violate the 'rights of nature', which are enshrined in Ecuador's constitution. This is a good argument to halt mining at this site."

In 2008, Ecuador became [*the first country in the world to recognise the rights of nature*](https://www.researchgate.net/publication/333708922_RIGHTS_OF_NATURE_THE_ECUADORIAN_CASE) in its constitution, acknowledging that all nature has the right to exist and to receive state protection. [*Article 73*](https://pdba.georgetown.edu/Constitutions/Ecuador/englishl.html) says: "The state shall apply preventive and restrictive measures on activities that might lead to the extinction of species, the destruction of ecosystems and the permanent alteration of natural cycles."

The concession area for the planned Llurimagua copper opencast mine - a joint project between the state-owned Chilean mining company Codelco, the world's largest copper producer, and Ecuador's state-owned Enami - is primary cloud forest, a fragile ecosystem found in high mountainous tropical regions, usually between 1,000-3,000 metres above sea level, with heavy rainfall and persistent cloud and mist at the canopy level, meaning humid, moist environments where wildlife thrives.

[*Less than 2.5% of the world's tropical forests*](https://portals.iucn.org/library/sites/library/files/documents/2004-003.pdf) are estimated to be cloud forests but they contain a disproportionately large number of the world's species.

Researchers at the Jambatu Centre believe Intag could be functioning as a "frog ark", where the [*fatal fungal disease* ***chytrid***](https://www.theguardian.com/environment/2019/mar/29/deadly-skin-eating-fungal-disease-wipes-out-90-amphibian-species-in-50-years) has not yet wiped out amphibian populations. The critically endangered Lynch glass frog has been reported here, as has a frog originally thought to be the Confusing rocket frog, but now believed to be [*a species that is new to science*](https://issuu.com/centrojambatu/docs/freile_et_al_2020_anfibios_junin_lr).

Frogs are just part of the picture. "We're within the most biodiverse of the world's biodiversity hotspots: the tropical Andes," says Zorrilla, who has lived on his farm in Intag for 43 years, though he is originally from Cuba. "This is one of the biological jewels of the world," he says, adding that the number of endemic species in that part of Ecuador is higher than even the lowland Amazon.

Among the animals that live in the area are the brown-faced spider monkey; the Andean, or spectacled, bear; the black-and-chestnut eagle; the puma; the white-faced, or Panamanian, capuchin monkey; the Choco toucan, and Andean catfish.

"There are also two endangered tree species, and the region is one of the most biodiverse for orchids," Zorrilla adds. "There are 43 sources of rivers and streams within this one single mining concession, which is less than 5,000 hectares [20 sq miles].

"It's extremely steep and mountainous, with heavy rainfall - a nightmare scenario for mining," he says. "Communities would have to be relocated. It's going to devastate a biological jewel, displace people and we'll be left with all the environmental liabilities."

Zorrilla is leading a team of lawyers and members of the local community to present their legal case to block the Llurimagua concession within the next few weeks. While the project has stalled, [*due to a disagreement*](https://www.reuters.com/article/chile-ecuador-copper-idINL1N2M137P) between Codelco and Enami, the campaign to block the proposed mine permanently is continuing.

There are four plaintiffs, including two farmers, a community leader from the Intag valley town of Chalguayaco Alto, and Javier Ramírez, a community leader who was previously [*jailed for an anti-mining protest in Intag*](https://www.rainforest-rescue.org/updates/6411/ecuador-javier-ramirez-is-free).

This is one of the biological jewels of the world

Carlos Zorrilla, environmental activist

Zorrilla says: "We'll present the case at the lower court for Cotacachi county government, then provincial courts. And if we lose there, which I don't think we will, it will go to the constitutional court in Quito, the highest court in the land. I think we'll win."

Since [*coming to power in May*](https://www.theguardian.com/world/2021/apr/12/ecuador-election-result-guillermo-lasso-andres-arauz) , Ecuador's president, Guillermo Lasso, a former banker, has signed [*two presidential decrees*](https://www.commondreams.org/news/2021/10/18/policy-death-amazon-guardians-sue-ecuadors-president-over-oil-mining-decrees) , including Decree 151, which supports the development of mining in the country and was widely [*welcomed by the mining sector*](https://www.mining-journal.com/politics/news/1415432/miners-welcome-president%E2%80%99s-action-plan-in-ecuador).

In October, indigenous communities were among those that took to the streets of the capital, Quito, to protest rising fuel prices and other economic issues. "These decrees are one of the reasons why there's a major national strike in Ecuador," argues Zorrilla. "Indigenous people and campesino groups oppose these decrees because of the expansion of petroleum and mining activity in indigenous land, campesino land and protected areas."

Ecuadorian politician, [*indigenous leader and environmental lawyer Yaku Pérez*](https://www.theguardian.com/world/2021/feb/08/ecuador-presidential-election-runoff-andres-arauz) , who ran for president this year, says: "The mining decree is a declaration of war on the defenders of water and nature. It's harmful to the rights of indigenous and non-indigenous peoples alike.

"Mining leaves indelible traces wherever it goes: environmental pollution, poisoned water, violence, dispossession. And in order to open mines, they must deforest forests and ecosystems, which generates more greenhouse gases and global warming. That's why the cry of the Earth is the cry of the poor who resist in order to live."

Mario Ruiz Jcome, a member of the national assembly for Imbabura province, says: "We oppose Decree 151 because it clearly accelerates the extractivist process in our country."

The longnose harlequin frog versus Llurimagua concession is not the only legal battle of its kind in Ecuador, says Zorrilla. "There are three protected areas declared by the minister of the environment, including ours, which are being given away.

"In Ecuador and the world over, we need to draw red lines and say areas like this, with high biodiversity and indigenous people, should be off limits."

**Load-Date:** November 29, 2021

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[***Zoo gives endangered frog a leg up; 'SCROTUM' SPECIES SAVED FROM EXTINCTION***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63FV-NG91-JCBW-N53N-00000-00&context=1516831)

Manchester Evening News

August 26, 2021 Thursday

Edition 1, National Edition

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**Section:** NEWS; TEASERS; Pg. 11

**Length:** 323 words

**Byline:** SAFFRON OTTER

**Body**

AN endangered frog from South America with a rather 'unfortunate nickname' has gone on display at Chester Zoo for the very first time, it has been announced.

The world's largest aquatic frog is officially known as Lake Titicaca frog - named after the lake where it lives on the border of Bolivia and Peru.

But it's also referred to as 'the scrotum frog,' because it spends most of its life at the bottom of the lake, absorbing oxygen from the water using its saggy folds of excessive skin. Twenty of the rare amphibians are now being cared for at the zoo, where experts are studying their behaviour to try to gather new insights as part of the latest international conservation efforts for the species. Chester Zoo was the first in Europe to give a home to the species and has now established a European population by sending 130 other frogs to 13 other leading, progressive zoos around the continent to help prevent total extinction of the frog.

Dr Gerardo Garcia, the zoo's curator of lower vertebrates and invertebrates, said: "To be responsible for setting up the first-ever conservation breeding programme in Europe for these fascinating frogs is a real honour for us here at Chester Zoo.

"We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit to the zoo.

"What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***."

A combination of pollution, habitat loss and hunting has devastated the frog's wild population. They are listed as endangered by the International Union for the Conservation of Nature (IUCN), with between 50 - 80 per cent estimated as having been lost from Lake Titicaca in the last 20 years alone.

**Graphic**

One of the Lake Titicaca frogs, nicknamed the 'scrotum frog' at Chester Zoo

**Load-Date:** August 26, 2021

**End of Document**



[***An experiment for the genetic rescue of frogs***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:625V-37B1-JBJN-M2SW-00000-00&context=1516831)

CE Noticias Financieras English

March 9, 2021 Tuesday

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**Length:** 561 words

**Body**

In a recent experiment, scientists from the Smithsonian Tropical Research Institute (STRI) in Panama released hundreds of Atelopus varius frogs bred in captivity into the wild, where this species has almost disappeared due to a deadly amphibious disease caused by the ***chytrid*** fungus. None of them survived.

In an effort to identify new ways to improve survival capacity in the nature of this endangered species, a team of researchers examined genetic data from the wild populations that have persisted.

Neotropical harlequin frogs or Atelopus are a genus widely known in Panama. One of them, the Panamanian golden frog (Atelopus zeteki), is considered a national symbol.

Like closely related species A. varius, the natural populations of A. zeteki have been greatly affected by the ***chytrid*** fungus, to the point where it is considered extinct in the wild. However, although very small, some populations of A. varius are still found in their natural habitats.

This allowed scientists to observe how frog genetics has changed over time, by taking samples of these contemporary populations and comparing them to samples obtained more than a decade ago, before the ***chytrid*** fungus arrived in Panama. They found some clues that could improve conservation decisions and guide future research questions.

**Finds**

In the El Copé west region of central Panama, one of the largest populations of A. varius still persists in nature. Genetic testing found that frogs in this area came from three different genetic backgrounds.

That is, A. varius could have migrated from three separate regions to El Copé Oeste, bringing new genes to the population and making it more resistant to disease.

This is important, because contemporary populations of A. varius in nature are less genetically diverse than before the arrival of the ***chytrid*** fungus, which could weaken them and make them more likely to become extinct. This means that the reintroduction of captive-bred frogs into their natural habitats, regardless of their genetic diversity, may not be a successful approach to restoring healthy populations.

Other studies have shown the importance of genetic diversity for disease resistance. Some have also found genes that could be related to the immune system of surviving frogs, as well as to the integrity of their skin, which is the main organ affected by the ***chytrid*** fungus.

More research is needed to understand the relationship of these genes to the long-term survival of Atelopus species and to integrate these findings into future conservation efforts.

Members of the research team are affiliated with STRI, the University of California, Berkeley, the University of Pittsburgh, the University of Nevada Reno and the National Research System, Senacyt (Panama).

The work supporting this review was funded by the Association of Zoos and Aquariums; Graduate Education Division, grant/award number: GRFP; Environmental Biology Division, grant/grant number:1457694, 1551488, 1660311 and 1846403; Disney Worldwide Conservation Fund.

The Smithsonian Tropical Research Institute in Panama City, Panama, is a unit of the Smithsonian Institution.

The institute promotes understanding of tropical nature and its importance to the well-being of humanity, trains students to conduct research in the tropics, and promotes conservation through public awareness of the beauty and importance of tropical ecosystems.

**Load-Date:** March 10, 2021

**End of Document**



[***Mass frog deaths on the Mid North Coast has scientists worried***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63GS-GDT1-F0J6-J1XJ-00000-00&context=1516831)

The Macleay Argus

August 31, 2021 Tuesday

Print & Internet Editions

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**Section:** NEWS; Pg. 1

**Length:** 392 words

**Byline:** Sam Payne

**Body**

FROGS are having a pandemic of their own on the Mid North Coast, with scientists worried about a mass mortality event that is occurring.

Dr David Newell is a biologist based at Southern Cross University, and has spent 25 years studying amphibian diversity, ecology and conservation.

"Reports are coming in of multiple frogs being found shrivelled and turning brown on people's lawns," Dr Newell said.

"It's unusual to see dead frogs because most frogs are secretive in nature and decompose rapidly out of sight when they die, so when there are multiple reports like this happening, we get very worried.

"Just like we have seen with COVID-19, It is possible that a new strain of the ***chytrid*** fungus has emerged and we need to investigate this."

The fungus is a deadly pathogen that attaches itself to a frog's back when they swim, and over time, it kills the frog. The fungus then spreads by releasing its spores into the surrounding environment.

Sick frogs quite often shed lots of skin, have discolouration or red patches on their body, and when they are placed on their back, can't right themselves easily.

"We are asking people to report any sightings of sick or dying frogs, to [*calls@frogid.net.au*](mailto:calls@frogid.net.au), and also if they find dead any bodies, freeze them and get in contact with the us," Dr Newell said.

FrogID is a national citizen science program run by the Australian Museum, and it is seeking to collate reports from members of the community.

If you spot a sick frogs in your area, take it immediately to a wildlife veterinarian and ask them to contact the Registry of Wildlife Health for the treatment protocols.

Dr Newell advised against taking frogs away from their habitats.

"I know it's nice to have frogs in your garden, but please don't move frogs big distances, just create habitats and they will turn up by themselves. Moving them could potentially spread the pathogen to areas where it isn't at," Dr Newell said.

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[***Australian scientist speaks to frogs, fears their silence***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63MH-2WJ1-F091-S37V-00000-00&context=1516831)

The Mercury (South Africa)

June 25, 2021 Friday

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**Section:** METL; Pg. 2

**Length:** 219 words

**Body**

Wading through a moonlit pond on Australia’s east coast talking to frogs makes Michael Mahony feel like a kid again.

The 70-year-old biology professor and conservationist at Australia’s University of Newcastle has mastered imitating and understanding the shrills, croaks and whistles of frogs.

“Sometimes you forget to work because ... you just want to talk to the frogs for a while and it’s sort of good fun,” Mahony told Reuters from a pond in Cooranbong, New South Wales. He is thrilled every time they call back, but fears frogs are increasingly at risk of going silent.

Australia has about 240 frog species, but around 30% of them are threatened by climate change, water pollution, habitat loss and the ***chytrid*** fungus. Mahony said globally, frogs were the most threatened of all vertebrates.

Beyond working to preserve amphibian habitats across Australia, Mahony has helped to develop a cryopreservation method to help bring frogs back from the edge of extinction by “banking” genetic material.

“What we’ve done in the face of the problems of catastrophic loss of species is to establish the first genome bank for Australian frogs,” he said.

Mahony’s passion for conservation has also rubbed off on his students. One of them, Simon Clulow, named a newly discovered frog “Mahony’s toadlet” in his honour in 2016.

**Load-Date:** September 23, 2021

**End of Document**



[***'We can't save everybody': could biobanking offer Australian animals a last hope against extinction?***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:648R-N251-JBNF-W0R2-00000-00&context=1516831)

The Guardian (London)

December 11, 2021 Saturday 7:00 PM GMT

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**Section:** ENVIRONMENT; Version:1

**Length:** 1635 words

**Byline:** Lydia Hales

**Highlight:** As Australia faces an extinction crisis, some conservationists say that, to save some endangered species, we must have a national plan to freeze them

**Body**

On 15 December 2014, inside a repurposed shipping container in the Atlanta Botanical Garden in the USA, Mark Mandica heard an unfamiliar animal call.

It was a reddish-brown frog about the size of a peach, called Toughie. He had lived silently for nine years since arriving from Panama - where the highly infectious ***chytrid*** fungus disease had arrived, leaving swathes of dead frogs in its wake.

He was believed to be the last Rabbs' fringe-limbed tree frog in the world.

"I was always extremely curious what the call sounded like ... it was a loud call that [*sounded like a barking dog*](https://www.youtube.com/watch?v=_yrobDYyOBI) ," Mandica says.

"Then it struck me that this frog was still vital and sounded very strong, and was singing out for a mate that would never come."

When Toughie's heart stopped on 26 September 2016, [*the species died out*](https://www.theguardian.com/environment/radical-conservation/2016/oct/27/rabbs-fringe-limbed-treefrog-frog-amphibians-extinct-extinction-media#:~:text=On%2026%20September%2C%20staff%20with,His%20name%20was%20Toughie.). The next morning, across the country in San Diego, amphibian expert Natalie Calatayud was presented with Toughie's testicles.

This strange gift was part of a plan to use "biobanking" for conservation. The idea of freezing biological material is not new, having been used in medical research and livestock breeding programs for decades. But by using liquid nitrogen to lower animal tissues to -196C, where almost all processes of life within a cell halt, scientists hope to buy more time for assisted reproduction to help a captive colony, to investigate a devastating disease, or preserve DNA for cloning.

Toughie now exists as 16 vials of precious mush, awaiting a time when technology - and potentially an unknown surviving mate - allows for the revival of the lost species.

Unlike the Rabbs' tree frog, most species disappear years before humans realise, along with any chance to preserve their genetic material.

A group of scientists in Australia, in the grip of one of the world's worst extinction crises, is hoping that some of our own endangered species can avoid this fate. They are calling for a national operation to freeze our native wildlife before that chance is lost.

'Australia has lagged behind'

Australia was the first country to attempt a truly national biobank: the Animal Gene Storage and Resource Centre of Australia (now the Australian Frozen Zoo) was created in 1995.

But funding and donations dried up, says its current director, reproductive expert Peter Temple-Smith. It could never fulfil its potential. The "zoo" exists as a two-metre-tall cryotank that's been shuffled around Monash University, reliant on volunteer staff formally employed in other roles.

Meanwhile, co-founder and former director Ian Gunn says biobanking for conservation has been gaining popularity overseas.

"Other countries have moved ahead, and Australia has completely lagged behind."

Alongside the original, and languishing Frozen Zoo, there are now scattered facilities that cryo-preserve animal samples in pockets across the country at some zoos, universities, and museums.

In March, five conservationists met with then threatened species commissioner Sally Box arguing that these must become a coordinated network - with standardised operating procedures for the technical work, dependable funding to ensure the facilities can be maintained, and one database to log every existing sample so they can be fully utilised in research.

Even with their wish to create a national strategy for proactively "banking" priority species, it will be too late for some: the government itself predicts [*280 animals and plants will be extinct by 2039*](https://www.ecolsoc.org.au/?hottopic-entry=australias-species-extinction-crisis-in-numbers-2019).

For these animals, their suspended cells may be the species' last hope.

Reproductive biologist Rebecca Hobbs, of the Taronga CryoDiversity Bank in New South Wales, did not attend the meeting with Box, but says national operating procedures for collecting, storing, and using samples would be crucial.

Biobanking, she stresses, must work with, not replace, habitat protection and captive breeding.

In captive breeding programs, variety is literally the spice of life: as the number of animals dwindles so does the genetic diversity of the group. Eventually, inbreeding leads to fertility and other health issues and the group is doomed - unless new genes are introduced.

This is where advocates say biobanking is useful: in the US, researchers have reversed the black-footed ferret population out of an inbreeding spiral using frozen sperm from the "founding ferrets", and even cloned a ferret from skin frozen in the 1980s.

Banking species in the threatened-to-near-threatened categories may be most cost-effective, Hobbs says. "You may get more bang for your buck if you apply it to species that haven't declined so much that the genetic variability has declined too dramatically for it to work."

Now back in Australia, Calatayud says current conservation strategies aren't working, nor being done at the necessary scale.

"The need for captive populations to maintain threatened species is growing at an alarming rate, disproportionate to the funding available and the logistical availability of space and staff. With biobanking, you could manage a smaller captive population by inserting new genetics whenever you needed to."

She says that biobanking domesticated species has been long accepted. Australia also has a [*national network*](https://www.seedpartnership.org.au/) to bank seeds of native plants.

"Farmers everywhere bank their bull semen ... and no one bats an eyelid. But in the context of wildlife, suddenly people think you're selling some pipe dream."

Big decisions and a leap of faith

Deciding which species get banked will be gruelling. Some won't make it.

"It's a huge judgment call, it's unfair, but it's a case of, 'who do I bank to save this ecosystem'? Who do we save for the greater good, because we can't save everybody," Calatayud says.

Conservation biologist Simon Clulow, of the University of Canberra and Newcastle University, says that amphibians and reptiles are the "most imperiled vertebrate classes on Earth" but have had the least attention when it comes to biobanking.

"It really wasn't until the start of this century that we and one or two other labs around the world started to really look at developing sperm freezing and IVF techniques in frogs ... for reptiles, we're about 20 years behind that."

Despite not knowing how to successfully freeze - or bring back - every species, he's confident the remaining hurdles will be solved given the pace at which the technologies are evolving.

Some years ago Clulow and his father, John, helped produce [*live embryos of the extinct gastric brooding frog*](https://www.theguardian.com/environment/2013/nov/22/extinct-frog-resurrected-with-de-extinction-technology) from tissue samples frozen decades ago.

"We should absolutely be doing it, right now ... You can't go back in time once a species has disappeared."

John Clulow, who attended the Canberra meeting with Box, feels cautiously optimistic that momentum is building toward a national bank.

If we could develop [the method] in the saltwater crocodile, we could apply it to other species.

Steve Johnston

An ecologist with expertise in reproductive technologies, he and colleagues at the University of Newcastle recently received federal funding to collect sperm from frogs in bushfire-affected areas, for use in captive breeding programs at Taronga.

He says some conservationists worry that habitat protection will lag if the species in it have been preserved.

"The other thing is, philosophically, conservationists are often about preserving animals within habitats, whereas this is a technological approach and that's not as culturally embraced."

Reproductive biologist Steve Johnston says it's too late to be hands-off.

"With the koalas in south-east Queensland, we're down to the point where if you just leave them alone, they're just going to die," says Johnston, of the University of Queensland.

"Even with all the funding and publicity that they get, they're still struggling."

Less charismatic species, like reptiles and amphibians, tend to attract less funding and interest. Johnston is a pioneer of the technique for successfully extracting sperm from the largest reptile alive. Lacking funding for specific facilities, he worked with Koorana Crocodile Farm.

"If we could develop [the method] in the saltwater crocodile, we could apply it to other species."

His work involved enticing a 4.5m croc up to a fence with a dead chicken, putting a noose around its snout, sedating it, and hoisting the croc - a predator that has remained unchanged for 65 million years - into the air with a crane.

Once it was laid across the back of two flat-tray utes, Johnston could crawl underneath to extract the penis from the slit at the junction of its legs and tail, and "milk" the sperm. The technique is now being used by different groups.

"It's somewhat invasive ... but works well without causing any trauma to the animal."

Hope and silence

The group has not heard from the commissioner's office since their March meeting. Box [*left the role*](https://www.facebook.com/TSCommissioner/posts/242640917902049) in October and a spokesperson for the Department of Agriculture, Water and the Environment did not answer whether acting commissioner Fiona Fraser was briefed about the proposal.

They say the [*Threatened Species Strategy 2021-31*](https://www.awe.gov.au/environment/biodiversity/threatened/publications/threatened-species-strategy-2021-2031) , which includes one mention of biobanking, "recognises the importance of being prepared."

Mark Mandica is also preparing. He has mixed feelings about reviving extinct species; the need to remove them from the wild for their survival, he says, is "profoundly dark".

But to hear a Rabbs' tree frog call again would fill his heart.

"Sometimes, I think about how maybe there's a remote population of them out there, gliding from tree to tree, that just haven't been found yet."

Lydia Hales received support from the Science Journalists Association of Australia for this story.

**Load-Date:** December 11, 2021

**End of Document**



[***Rare frog making a splash at Chester Zoo***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63HB-8RX1-DYTY-C4SG-00000-00&context=1516831)

Chester Chronicle

September 2, 2021

Edition 1, National Edition

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**Section:** NEWS; Pg. 27

**Length:** 495 words

**Byline:** alex mcintyre

**Body**

A

NUMBER of rare and endangered 'scrotum frogs' from South America have gone on display at Chester Zoo for the first time.

The zoo confirmed that 20 Lake Titicaca frogs, the world's largest aquatic frog, are currently being cared for and studied by conservationists at the site.

They are named after the lake that straddles the border of Bolivia and Peru, at around 12,500 feet above sea level, which is their natural home.

But they've also been given the rather unfortunate nickname of 'scrotum frogs' due to their saggy folds of excessive skin, which they use to absorb oxygen from the water as they spend most of their lives at the bottom of the lake.

The zoo was the first in Europe to give a home to the species and now experts are studying their behaviour in a bid to try and gather insights as part of efforts to save them from extinction.

They are listed as endangered by the International Union for the Conservation of Nature (IUCN) with an estimated 50 per cent to 80pc lost from Lake Titicaca in the last 20 years.

This is as a result of a combination of factors including pollution, habitat loss and hunting. Dr Gerardo Garcia, the zoo's curator of lower vertebrates and invertebrates, said: "To be responsible for setting up the first ever conservation breeding programme in Europe for these fascinating frogs is a real honour for us here at Chester Zoo.

"We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit the zoo.

"What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***.

"We can then harness that valuable information for conservation action in the wild.

"These frogs are also important ambassadors for their species and will help us to raise more awareness of their plight in the wild.

"Lake Titicaca frogs are highly threatened with extinction. "The one, high montane lake that they live in is an extremely fragile environment and they have really suffered at the hands of pollution and introduced fish species.

"It's illegal to harvest these frogs but Peruvian and Bolivian locals are still known to do so - they use them in smoothies, which they believe enhances virility and energy.

"The planet is facing its biggest ever biodiversity extinction, with thousands of amphibian species at risk of being lost forever.

"Human activity is very much part of the problem, but we won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage.

"We want to make sure the Lake Titicaca frog is around for generations to come."

The zoo has managed to help establish a European population of the endangered frogs by sending 130 of them to 13 other zoos around the continent.

**Graphic**

The rare 'scrotum frog' has gone on display at Chester Zoo for the first time

**Load-Date:** September 2, 2021

**End of Document**



[***Mass frog deaths on the Mid North Coast has scientists worried***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63GS-GDT1-F0J6-J1WS-00000-00&context=1516831)

Manning River Times

August 31, 2021 Tuesday

Internet Edition

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**Length:** 461 words

**Byline:** Sam Payne

**Body**

FROGS are having a pandemic of their own on the Mid North Coast, with scientists worried about a mass mortality event that is occurring.

Dr David Newell is a biologist based at Southern Cross University, and has spent 25 years studying amphibian diversity, ecology and conservation.

"Reports are coming in of multiple frogs being found shrivelled and turning brown on people's lawns," Dr Newell said.

"It's unusual to see dead frogs because most frogs are secretive in nature and decompose rapidly out of sight when they die, so when there are multiple reports like this happening, we get very worried.

"Just like we have seen with COVID-19, It is possible that a new strain of the ***chytrid*** fungus has emerged and we need to investigate this."

The fungus is a deadly pathogen that attaches itself to a frog's back when they swim, and over time, it kills the frog. The fungus then spreads by releasing its spores into the surrounding environment.

Sick frogs quite often shed lots of skin, have discolouration or red patches on their

The fungus is a deadly pathogen that attaches itself to a frog's back when they swim, and over time, it kills the frog. The fungus then spreads by releasing its spores into the surrounding environment.

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"We are asking people to report any sightings of sick or dying frogs, to [*calls@frogid.net.au*](mailto:calls@frogid.net.au), and also if they find dead any bodies, freeze them and get in contact with the us," Dr Newell said.

FrogID is a national citizen science program run by the Australian Museum, and it is seeking to collate reports from members of the community.

Worried scientists lay blame on rise of killer pathogen

If you spot a sick frogs in your area, take it immediately to a wildlife veterinarian and ask them to contact the Registry of Wildlife Health for the treatment protocols.

Dr Newell advised against taking frogs away from their habitats.

"I know it's nice to have frogs in your garden, but please don't move frogs big distances, just create habitats and they will turn up by themselves. Moving them could potentially spread the pathogen to areas where it isn't at," Dr Newell said.

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[***World: These endangered 'scrotum' frogs breathe through their saggy skin***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63GJ-GW61-DY0W-44DX-00000-00&context=1516831)

Asia News Monitor

August 30, 2021 Monday

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**Section:** GENERAL NEWS

**Length:** 533 words

**Dateline:** Bangkok

**Body**

**FULL TEXT**

Endangered 'scrotum' frogs have just gone on display at a British conservation zoo for the first time as part of an effort to save the species from extinction.

Lake Titicaca frogs are officially named after the lake on the border between Peru and Bolivia where they can be found. These aquatic frogs spend most of their lives deep underwater using the saggy folds of skin that earn them their unfortunate nickname to absorb oxygen.

This species is unique. It is only found in Lake Titicaca and the surrounding areas where it is adapted to the very adverse conditions there, says Roberto Elias Piperis, coordinator of the wildlife laboratory at the Cayetano Heredia University in Peru.

The lake is at extremely high altitude, nearly four times as high as the summit of Mount Snowdon in Wales and, in addition to its ecological importance, there is also a cultural one because the local inhabitants consider the frogs as a connection between them and the gods.

A combination of pollution, habitat loss and hunting have devastated the frog's wild population. The IUCN lists the species as endangered with an estimated 50 to 80 per cent of its population lost in the last 20 years.

Lake Titicaca frogs are highly threatened with extinction, says Dr Gerardo Garcia, curator of lower vertebrates and invertebrates at Chester Zoo.

The one, high montane lake that they live in is an extremely fragile environment and they have really suffered at the hands of pollution and introduced fish species.

He adds that, though it is illegal, Peruvian and Bolivian locals still harvest these frogs and use them in smoothies that are believed to enhance virility and energy.

An important alliance to save the frogs

Twenty of these rare amphibians are now being cared for at Chester Zoo where experts are studying them to gain conservation insights.

What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***, explains Dr Garcia.

We can then harness that valuable information for conservation action in the wild

They are hoping to establish a European population by sending 130 Lake Titicaca frogs to 13 different leading institutions across the continent.

The Zoo has also formed an alliance with Cayetano Heredia University in Peru and the Natural History Museum's Alcide d'Orbigny in Bolivia. It is the first time the two countries have come together in an attempt to protect the frogs.

Teresa Camacho Badani heads up the herpetology department at the museum in Bolivia and is also in charge of the K'ayra Centre where around 200 of these frogs live as part of a breeding programme.

Work has been ongoing for several years in both Bolivia and Peru to conserve the Titicaca water frog, she says.

This was taking place in each country independently and the two countries joining up their efforts had not been possible until now.

With the new alliance and the ambassador frogs on display at Chester Zoo, Camacho Badani believes there has never been a better moment to save this species from extinction.

Source: Euronews

**Load-Date:** August 29, 2021

**End of Document**



[***Rare 'scrotum frogs' on edge of extinction go on display at Chester Zoo***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63FT-MKW1-DY4H-K4K9-00000-00&context=1516831)

macclesfield-express.co.uk

August 25, 2021 Wednesday 7:14 PM GMT

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**Section:** CHESTER & CHESHIRE NEWS; Version:1

**Length:** 510 words

**Byline:** By, Alex McIntyre

**Highlight:** The Lake Titicaca frog was given its rather unfortunate nickname because of its saggy folds of excessive skin

**Body**

A number of rare and endangered 'scrotum frogs' from South America have gone on display at Chester Zoo for the first time.

The zoo confirmed that 20 Lake Titicaca frogs, the world's largest aquatic frog, are currently being cared for and studied by conservationists at the site.

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But they've also been given the rather unfortunate nickname of 'scrotum frogs' due to their saggy folds of excessive skin, which they use to absorb oxygen from the water as they spend most of their lives at the bottom of the lake.

The zoo was the first in Europe to give a home to the species and now experts are studying their behaviour in a bid to try and gather insights as part of efforts to save them from extinction.

They are listed as endangered by the International Union for the Conservation of Nature IUCN with an estimated 50% to 80% lost from Lake Titicaca in the last 20 years.

This is as a result of a combination of factors including pollution, habitat loss and hunting.

Dr Gerardo Garcia, the zoo's Curator of Lower Vertebrates and Invertebrates, said: "To be responsible for setting up the first ever conservation breeding programme in Europe for these fascinating frogs is a real honour for us here at Chester Zoo.

"We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit the zoo.

"What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***. We can then harness that valuable information for conservation action in the wild.

"These frogs are also important ambassadors for their species and will help us to raise more awareness of their plight in the wild. Lake Titicaca frogs are highly threatened with extinction.

"The one, high montane lake that they live in is an extremely fragile environment and they have really suffered at the hands of pollution and introduced fish species.

"It's illegal to harvest these frogs but Peruvian and Bolivian locals are still known to do so -they use them in smoothies, which they believe enhances virility and energy.

"The planet is facing its biggest ever biodiversity extinction, with thousands of amphibian species at risk of being lost forever.

"Human activity is very much part of the problem, but we won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage.

"We want to make sure the Lake Titicaca frog is around for generations to come."

The zoo has managed to help establish a European population of the endangered frogs by sending 130 of them to 13 other zoos around the continent.

**Load-Date:** August 25, 2021

**End of Document**



[***Endangered frogs with unfortunate nickname go on display at zoo***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63FP-B1S1-JBNF-W2B3-00000-00&context=1516831)

standard.co.uk

August 25, 2021 Wednesday 3:46 PM GMT

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**Section:** NEWS,UK; Version:26

**Length:** 546 words

**Byline:** Eleanor Barlow

**Highlight:** The Lake Titicaca frogs, known as 'scrotum frogs', are at risk of extinction because of pollution, habitat loss and hunting.

**Body**

An endangered amphibian nicknamed the "scrotum frog" has gone on display at a zoo as part of efforts to save the species from extinction.

The Lake Titicaca frog was given the unfortunate nickname because of the saggy folds of excess skin which it uses to absorb oxygen from the water at the bottom of the lake, on the border of [*Bolivia*](https://www.standard.co.uk/topic/bolivia) and [*Peru*](https://www.standard.co.uk/topic/peru)

Twenty of the rare frogs have gone on show to the public for the first time at [*Chester Zoo*](https://www.standard.co.uk/topic/chester-zoo) where conservationists are studying their behaviour in the hope of helping to save them from extinction.

The zoo was the first in [*Europe*](https://www.standard.co.uk/topic/europe) to give a home to the species, listed as endangered by the International Union for the Conservation of Nature (IUCN), and has established a European population by sending 130 frogs to 13 other zoos across the continent.

Between 50% and 80% of the frog population has been lost from Lake Titicaca in the last 20 years due to a combination of pollution, habitat loss and hunting, experts said.

Chester Zoo has teamed up with the Cayetano Heredia University in Peru and the Natural History Museum's Alcide d'Orbigny in Bolivia to form a union to help save the frogs and secure the future of the lake.

Dr Gerardo Garcia, the zoo's curator of lower vertebrates and invertebrates, said: "We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit the zoo.

"What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***.

"We can then harness that valuable information for conservation action in the wild."

We won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage.

Dr Gerardo Garcia

Dr Garcia said people in Peru and Bolivia were known to harvest the frogs, despite it being illegal, and use them in smoothies which they believe enhance virility and energy.

He added: "The planet is facing its biggest ever biodiversity extinction, with thousands of amphibian species at risk of being lost forever.

"Human activity is very much part of the problem, but we won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage."

Roberto Elias Piperis, co-ordinator of the wildlife laboratory at the Cayetano Heredia University in Peru, added: "This species is unique. It is only found in Lake Titicaca and the surrounding areas where it is adapted to the very adverse conditions there.

"The lake is at extremely high altitude, nearly four times as high as the summit of [*Mount Snowdon*](https://www.standard.co.uk/topic/mount-snowdon) in Wales and, in addition to its ecological importance, there is also a cultural one, because the local inhabitants consider the frogs as a connection between them and the gods so they use them in rituals to call rain."

The frogs can grow up to 20 inches long and weigh almost a kilogram.

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**Load-Date:** August 25, 2021

**End of Document**



[***Extinction', the Biomuseo's new travelling exhibition***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63SC-V491-DY1R-B0VD-00000-00&context=1516831)

CE Noticias Financieras English

October 3, 2021 Sunday

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**Length:** 843 words

**Body**

After more than a year of presenting virtual exhibitions due to the pandemic, the Biomuseo presents a new traveling exhibition, thanks to the collaboration of the National Secretariat of Science and Technology, Senacyt.

Extinction is the name of the traveling exhibit that will be presented in the Biomuseo's store until November 15 and then will visit community, cultural and commercial centers in various cities around the country.

The exhibition will also be accompanied by virtual components presented on the Biomuseo's social networks that will give it more presence both locally and internationally.

Defined as the death of all members of a species, extinction has occurred as long as life has existed, but scientists warn that this phenomenon is currently occurring on an unprecedented scale.

"Dedicating our new exhibition to this topic is more relevant today than ever, especially as we approach COP 26 on climate change and COP 15 on biodiversity: moments when we will decide together as humanity what we must do to care for nature and the planet," said Victor Cucalón Imbert, Executive Director of the Biomuseo. "In a world with less and less biodiversity, it is crucial that we all understand that we are in the midst of a mass extinction and that we recognize what our role has been so far. Only then can we find a solution," he continued.

The premiere of Extinction comes after the Biomuseo's participation in the World Congress of the Union for the Conservation of Nature, held in Marseille, France, where it was declared that the loss of biodiversity caused by human actions already constitutes an ecocide.

"Panama is not spared from this great problem," explained Diego Castillo, assistant curator of the Biomuseo and one of the creators of Extinction. "In our country, there are more than 2,000 endangered species. That includes 1,000 plant species and more than 60% of all Panamanian amphibians."

This new exhibit was curated by the Biomuseo, in collaboration with the Panamanian Ministry of Environment and international experts. The exhibit is based on a collection of original illustrations prepared by Panamanian visual artists Meera Sachani and Elizabeth Rodriguez Estrada.

Extinction was produced thanks to the contribution of the National Secretariat of Science, Technology and Innovation, which also sponsored the temporary exhibitions In Your Hands (2018), Picante (2019) and Your New City (2020).

The new installation will open to the public on Saturday, October 2 at the Biomuseo, during the celebration of the seventh anniversary of this exhibition center.

**The exhibition**

A video launched last September 26th on the Biomuseo's social networks reminds us of an event that took place five years ago and that is the spearhead of the promotion of Extinction. It is the story of Toughie, the last rabbit frog, a species recently discovered, just when it was decimated by the ***chytrid*** fungus disease that has spread rapidly without scientists being able to stop it.

Several specimens were transferred to centers to avoid being infected and to try to reproduce the species.

The efforts were in vain and the only thing that remains of Toughie today is a recording of her song, a song that no other frog of her species could respond to.

Like the Rabb's fringe frog, many species are going extinct and a few simple actions could make a difference.

There have been five mass extinctions recorded by scientists who warn that a sixth is now occurring, a mass extinction caused solely by human actions and is called the Holocene mass extinction.

The exhibition has an introduction, which refers precisely to the mass extinctions that the world has suffered since life has existed, and also has a panel that explains why species become extinct and what activities we can do to prevent it.

The loss of exosystems, massive hunting and fishing, as well as the extraction of species or the introduction of others in a different ecosystem. A major cause is also climate change, pollution and exaggerated carbon emissions.

The second part of the exhibition consists of panels showing the so-called ambassadors of extinction, species that have already disappeared such as the Dodo, from the Mauritius Islands, the Franklin Tree, only existing in botanical gardens, the tlacino, a mammal from Tasmania, the Xerces Blue butterfly, from San Francisco, California and our golden frog, only alive in captivity.

Two panels complete the exhibit and are dedicated to endangered animals and plants in Panama.

Panama currently has 847 endangered animal species and 1,092 plant species.

And with species yet to be discovered, the number may be even higher.

The panels show some of the images of these species and when you turn around you can see the degree of danger they are in. On the back, a terrifying complete list that should make us feel more committed to their reduction.

The exhibition was curated by Darién Montañez, Diego Castillo, Edgardo Llerena, Elizabeht Rodríguez, Gabriela Rogers and Luis Miranda. The design and illustrations are by Meera Sachani and Elizabeth Rodríguez.

**Load-Date:** October 5, 2021

**End of Document**



[***Research: Some Wyoming toads can clear themselves of deadly fungus***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:616B-KG41-JCCC-K0J1-00000-00&context=1516831)

The Wyoming Tribune-Eagle (Cheyenne)

November 1, 2020 Sunday

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**Section:** Pg. 10

**Length:** 999 words

**Byline:** By Christine Peterson | WyoFile.com

**Body**

Tucked away in beaver ponds or under willows in northwest Wyoming live toads able to cure themselves of a deadly fungal infection.

In some ways, what the toads do is similar to how we take medicine or rest when we're sick. Except the small population of boreal toads in the northern Wind River and Wyoming ranges hop into the sun to feel better.

The action comes with risks - toads don't actually like sun exposure, and open areas increase possible predation by hungry crows or coyotes - but they seem to have calculated possible death is worth it, according to new research from Gabe Barrile, a University of Wyoming doctoral researcher.

The toads' brethren in the Snowy Range and Sierra Madres, on the other hand, have not adapted so well. ***Chytrid***, a deadly, non-native fungus, typically wipes out boreal toad populations in southern Wyoming, Colorado and northern New Mexico within two to three years.

Why toads in the northwest have been more successful - and how to use this news to help save amphibians - are the next big questions, researchers say.

But first, a look at how a UW doctoral student figured out that a critter as small and elusive as a boreal toad could move to save its life.

Invasive fungus wreaks havoc

For anyone unfamiliar with the fungus Batrachochytrium dendrobatidis, which is actually multiple strains of fungi that those outside of the scientific community often call ***chytrid***, here's a primer.

Researchers believe it likely originated somewhere in Asia, though it was first identified in the late 1990s in Australia, Panama and the National Zoo in Washington, D.C. While its origins are murky, researchers do know that ***chytrid*** has spread across much of the world, said Karen Lips, a biology professor at the University of Maryland and leading expert on frogs and ***chytrid***.

A 2019 study reported ***chytrid*** has contributed to the extinction of up to 90 species of amphibians. A relatively new study called this previous report into question. But regardless of the number of species extirpated because of an invasive fungus, even the newest report acknowledges ***chytrid*** has been devastating, particularly outside of North America.

***Chytrid*** has two main stages, a sperm-like zoospore , then a zoosporangium. What they're called is maybe less important than what they do. The zoospore floats around ponds, creeks or other wa-ter sources until it finds a host and drills into the creature's skin. It then morphs into a zoosporangium, producing more zoospores and shoots them back into the water. Once infected, amphibian's skin can become so saturated in fungus that the damage and reduced gas exchange contributes to organ failure. Some can live with low levels of infection, and the disease, for reasons unclear to scientists, has not been as destructive in North America as other portions of the world. But it has been documented across the country and state.

While ***chytrid*** generally thrives in cool, moist places, it does have an Achilles' heel. It dies if it freezes or becomes too hot.

A tale of two populations

Barrile began his work considering the catastrophic impacts of ***chytrid*** and the oddity that ***chytrid*** was causing boreal toad populations to collapse in southern Wyoming but not the northwestern portion.

While contemplating these situations, he remembered papers about how, in laboratory settings, some boreal toads would choose to move into warmer, drier locations to "clear" themselves of the infection.

But no one had looked to see if, in the wild, toads showed similar behavior.

So from May 2015 until fall of 2016, Barrile and colleagues at Wyoming Game and Fish and UW's Cooperative Fish and Wildlife Unit captured and followed almost 150 boreal toads, affixing impossibly tiny radio-transmitting fanny packs to their robust backs and testing more than 40 of them for ***chytrid***.

The team captured and swabbed them twice a week from their breeding season at beaver ponds in spring through summer foraging and until October when they headed into their overwintering sites.

That's when the scientists found that infected toads going into warm, dry places was likely more a survival measure than an accident. The toads that changed their environments cleared their infections.

"It's a brilliant adaptation to a pathogen," said Wendy Estes-Zumpf, Game and Fish's herpetological coordinator.

Adapting for the future

Why the toads' peers to the south don't seem to be benefitting in the same way is the next question, Barrile and Estes-Zumpf said.

It's possible the boreal toads in Barrile's study area are slightly better adapted to the fungus, making a brief time in the sun a useful prescription. They could have a different skin microbiome or slightly different genetics that makes them more tolerant to ***chytrid***, she said.

It's also possible that temperatures are higher in the lower-elevation study areas in the Wyoming and Wind River ranges versus those in southeastern Wyoming.

Scientists are now working on translating Barrile's conclusions into possible remediation for wild amphibians. Some researchers have contemplated installing, say, heat lamps near breeding areas certain times of the year or modifying an area to create warmer, drier conditions.

Barrile is looking at the impact of wildfire on boreal toads and ***chytrid***. A fire burned through one of his study areas in the Wyoming Range in 2018, giving him the ability to compare and contrast.

Implications of his work could extend into southern Wyoming and northern Colorado after the Mullen and Cameron Peak fires. It's possible that as wildfires open canopies and allow more heat to reach the earth, toads could find more healing. It's also possible the additional heat and dry conditions are as bad for toads as it is for ***chytrid***.

Regardless, Estes-Zumpf and others with Game and Fish will continue Barrile's work in the Wyoming and Wind River ranges for the next few years. Boreal toads can live 25 to 30 years, perhaps longer. More data about their lives, habits and adaptability, researchers said, continues to be critical.

**Load-Date:** December 30, 2020

**End of Document**



[***What is the sound of climate change?; OPINION***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642P-TXR1-F06S-31SW-00000-00&context=1516831)

The Globe and Mail (Canada)

November 13, 2021 Saturday

Ontario Edition

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**Section:** OPINION; Pg. O1,O9

**Length:** 1863 words

**Byline:** Caitlin Stall-Paquet

**Body**

**Lead**

Caitlin Stall-Paquet is a Montreal-based writer and editor whose work has appeared in The Walrus, the CBC, Elle Canada, enRoute, Canadian Geographic, Ch\xE2telaine and Xtra.

On Aug. 14, R. Murray Schafer, the avant-garde composer who got many to use their ears rather than their eyes, passed away at the age of 88, leaving the world a little more silent. The artist, born in Sarnia, Ont., was a pioneer of acoustic ecology (he coined the term soundscape), practising field recording to capture sounds of all kinds, and often using them in musical compositions.

**Texte/Text**

His interests were as vast as the sonic worlds he committed to tape: He pioneered using graphic notation in his scores, was a visual artist, wrote books and created musical theatre such as Apocalypsis, his sprawling 500-person piece from 1980 about the end times, structured in two parts: the world's destruction followed by its reconstruction. In 2015, it was restaged during the Luminato Festival with a cast of more than 1,000 people, making it the largest musical production in Toronto's history.

But even more significantly, along with getting Canadian noise laws altered, Mr. Schafer founded the World Soundscape Project at Simon Fraser University, which involved education about the idea of noise pollution and the sounds we're constantly immersed in, as well as recording and cataloguing them internationally to preserve ones that disappear.

There are many others like Mr. Schafer. The composer influenced curious creatives who hear the wild's distress cries and fill up hard drives with recordings of ecosystems all over the world.

Their aim is to create aural experiences, but also to sound the alarm through actual sounds, or the disappearance thereof.

In a 2009 National Film Board short documentary called Listen by David New, Mr. Schafer says: "In a way, the world is a huge composition, a huge musical composition that's going on all the time without a beginning and presumably without an ending. We are the composers of this huge miraculous composition that's going on around us, and we can improve it or we can destroy it."

Musician Alexandre Bergeron, a friend of mine, often layers field recordings into his songs. I first listened in closely through his equipment two years ago, as October leaves withered on branches.

We walked along the Massawippi River in Lennoxville, Que., until he stopped next to a silent corn field drying out in the cooling air and turned down an empty row.

Once we were surrounded by crisp stalks, he took a recorder out of his backpack, put on the headphones for a second, nodded and smiled before handing them to me. Suddenly, silence turned into an overwhelming swell of leaves rustling, coming from every direction - the loudest emptiness I'd ever heard. I finally understood what Bernie Krause, another pioneer soundscape ecologist, had told me about how spaces open up when you listen through a microphone and recorder.

Though Mr. Krause started recording in the wild for musical purposes rather than preservation, his work has become a massive aural archive filled with many sounds that have otherwise disappeared entirely. He's captured more than 5,000 hours worth of habitats, and half of those no longer exist as they do in his recordings. That his ambitious work turned into an impressive auditory database is rather a result of hindsight.

The opposite is true for Italian electro-acoustic researcher David Monacchi. His field-recording trips have been conducted with the express purpose of preservation, in a race against time. In 2017, he put out the award-winning documentary Dusk Chorus, based on his environmental sound art project Fragments of Extinction. This work combines art and data visualization through spectrograms and audio captured during his expeditions to the Amazon, Borneo and Central Africa, in an attempt to preserve the sonic footprint of incredibly biodiverse places often faced with what he calls ecocide.

His work demonstrates how new sounds, or a lack of them, speak volumes about the health of a habitat. In Ecuador's Yasuni National Park, for example, where there is thought to be the greatest biodiversity in the world, Mr. Monacchi captured the effects of drought (caused by climate change) and an oil plant's operations on the sonic landscape. His recordings revealed a reduction in animal vocalization, and a low swelling whirr emitted by trees in hydric distress that were also affected by xylenes (chemical compounds) from nearby oil refining.

In yet another approach to soundscape ecology, Mr. Bergeron often uses field recording as a kind of personal meditation, going out into the wilderness to be hyper-immersed in nature, and to experience the often-overwhelming feeling of being enveloped in magnified sound. His many recordings have grown into an archive of specific moments and places that live on as time capsules.

For an online music residency during the pandemic, Mr. Bergeron and three collaborators incorporated field recordings into a joint piece called Chirr, creating a soundscape that was bigger than if they'd worked together in person, combining excerpts from southeastern Quebec, Florida, Colorado and New York. The resulting piece is layered with deep rumbling synth, saxophone and the sound of rainfall, climbing to menacing crescendos alongside the voices of American robins, song sparrows and cicadas. The northeastern United States saw the insect in hordes in the spring of 2021, as the huge Brood X surfaced after being underground for 17 years.

As I listen to Chirr, I try to imagine how the soundscapes those cicadas emerged into were different from the previous generation's, altered by our presence. The musical project isn't meant to be a peaceful meditation though: "These sounds are inherently overwhelming; that can be kind of an uncomfortable feeling in some challenging music. I would say that piece is kind of challenging and some people don't want to acknowledge it sometimes.

They want to have a pleasant listening experience, but maybe we need to be confronted a little bit with some of that ecological horror," Mr. Bergeron says.

With small creatures that can be hard to identify visually, one of the best indicators of species strength is the sounds they produce. It's why each spring I participate in an amphibian-population monitoring program run by Montreal's Zoo Ecomuseum; it consists of stopping at designated locations along a pathway to listen for croaks and note their intensity.

For decades, amphibians have undergone the largest death rates from a single disease in all recorded history because of a humanspread fungus called ***chytrid***. Approximately 40 per cent of insects are also in decline worldwide, and a third are endangered.

On Sept. 29, the Fish and Wildlife Service determined that another 23 species - including 11 birds - had gone extinct within the United States, taking their unique voices with them. Along with capturing the sonorous singularity of whole habitats, the work of soundscape ecologists and amateur field recordists alike can be used to establish aural references against which we can measure declines, to track what we are losing.

As world leaders descended recently on Glasgow for the United Nations Climate Change Conference, COP26, I was reminded again about the importance of listening. With the event's net-zero emissions agreements and voluntary pledges to stop deforestation sounding eerily familiar to the 2016 Paris Agreement, skepticism about its usefulness is justified.

But at the very least, COP26 is a moment when the most polluting and wealthy countries are forced to listen to speakers from Tuvalu and Fiji talk about drowning because of the excesses of the Group of 20.

I was more interested in hearing what they and young activists such as Greta Thunberg who protested the event had to say. A sustainable future seems to feel less tenable for each new generation than the last, and these teens and children will hear more humancaused silence than my own, a void then filled with unnatural sounds.

Mr. Bergeron thinks about this as well. Over the summer, he worked with the \xC9cole des Arts Sutton in southeastern Quebec to show a group of kids, aged 7 to 14, the ropes of field recording during something called "Camp de l'ennui" (boredom camp). They were invited to hang out in a natural setting, without a plan or schedule in sight, to do whatever they wanted. Rather than set up a didactic teaching workshop to spark their interest, Mr. Bergeron decided to sit there, surrounded by greenery with his equipment set up and ready to listen.

He let the children who stopped by his station go off and capture whatever sounds they felt like. After, he made a video overlaid with their digital sounds that was projected during a vernissage at the end of the camp's week. The recordings are filled with giggles and excited screams, which reminded Mr. Bergeron of the play aspect to his practice. It is a feeling often forgotten in the world of conservation and preservation, yet it could be a good balance for painful realizations about the impact of our presence.

People such as Mr. Krause and Mr. Schafer opened my ears to the spaces around me - but also to my influence on them by the mere fact of being there. Last April, I walked along a forest path as amphibians were waking up after a winter of hibernation. In the distance, I could hear the croaks of the wood frogs and spring peepers I've loved since childhood.

They fell nearly silent when my hiking boots crushed leaves on the unseasonably dry forest floor as I got closer.

As I think of that surprisingly hot spring day, I can't help but wonder what Mr. Schafer thought in his last months during the hottest summer on record, as historic wildfires burned from British Columbia to Algeria and Siberia, and floods swept through China and Western Europe. I wonder whether it reminded him of the destruction from the first part of Apocalypsis.

We're nowhere close to considering what reconstruction could look like, but there might be some ideas for rebuilding hidden in his legacy, such as the Listening Project, a non-profit that hosts artistic and educational activities to encourage an understanding of the world through listening and field recording (their World Listening Day is held annually on July 18, Mr. Schafer's birthday), or the people who have yet to discover and be changed by his work.

At the end of Listen, Mr. Schafer asks, "What happens if my voice stops, what do you hear then?" before holding up a sign that simply reads, "Listen." Except for the recordings that have preserved it, his voice is gone now, but we still have the message on his sign.

I wonder whether the knowledge of how much he helped preserve the sounds of what might disappear mitigated his sadness of how much has already been lost. I wonder what the kids Mr. Bergeron taught will hear, or won't hear, by the time they're my age. I wonder what the world will sound like to the future cicadas of Brood X that will re-emerge in 17 years. I wonder whether those soundscapes will be eerily close to the cornfield I listened to - empty and loud only with the sound of dried leaves rustling against each other.

**Load-Date:** November 19, 2021

**End of Document**



[***Tadpoles growing in captivity provide hope for Victoria's threatened giant burrowing frog***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63BR-2D41-JBNF-W2NN-00000-00&context=1516831)

The Guardian (London)

August 11, 2021 Wednesday 6:30 PM GMT

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**Section:** AUSTRALIA NEWS; Version:1

**Length:** 594 words

**Byline:** Royce Kurmelovs

**Highlight:** Fifteen tadpoles of 'mysterious' amphibian have grown legs, a critical milestone in the conservation program

**Body**

Fifteen tadpoles belonging to rare species of Victorian frog have grown legs in a milestone for a critical conservation program days after they were officially declared a distinct sub-species.

The "mysterious" giant burrowing frog is a threatened species found in New South Wales and remote parts of Central and East Gippsland.

Little is known about the "rare and cryptic" species and until now they have never been held or bred in captivity.

This means amphibian specialist Adam Lee, who oversees the Zoos Victoria conservation program, has no clear guide for the species.

"I was definitely a helicopter dad for a bit at the start," Lee said. "Checking on them daily. Making sure the water conditions were right, making sure we weren't having issues with water quality and making sure they were feeding well and no signs of disease.

"We got over 100 tadpoles in the initial collection. In the wild, there's a certain level of mortality but so far we've been doing really well and getting all of them through. To have no mortalities so far is good, and you expect it going through the different developmental stages."

Lee said roughly 15 tadpoles have "metamorphosed" so far - the process by which tadpoles grow legs and become adult frogs - and is hopeful more will soon follow.

"Their tadpole stage can last from three to 11 months and within the next three to four months we'd expect them to go through metamorphosis," Lee said.

"The main goal at the moment is to establish captive husbandry and make sure we can rear them through the entire life cycle. Metamorphoses into frogs, and then breeding the frogs to lay eggs."

The species grows to the size of a cricket ball and the young frogs are already larger than other comparable species that have been involved in similar conservation programs such as the critically endangered [*southern corroboree frog*](https://www.theguardian.com/environment/2019/may/12/melbourne-zoo-hatches-plan-to-save-southern-corroboree-frog).

Dr Jodi Rowley, a frog biologist at the Australian Museum, said every success in the program should be welcomed, especially since the southern population of the giant burrowing frog has been recognised as a genetically distinct sub-species.

"It was thought they were a bit distinctive before but now it's official," Rowley said. "The giant burrowing frog has been officially split into two sub-species. That means the southern populations of the species, which are I believe are involved in the program, are now even more significant."

The distinction was confirmed in a paper published in the journal Zootaxia on Monday that found the southern and northern populations were genetically distinct.

The Victoria Zoos program [*began in March*](https://www.theguardian.com/environment/2021/mar/31/melbourne-zoo-establishes-first-captive-conservation-program-for-elusive-giant-burrowing-frog) when field researchers found the tadpoles in a remote area of Gippsland following higher than average rainfall.

The frog's numbers have been affected by logging, land-clearing, predation from feral cats and dogs, and diseases such as ***chytrid*** fungus that attacks their skin.

The species was further threatened during the 2019-2020 Black Summer bushfires , making the individuals held at Melbourne Zoo a critical insurance population for the species.

Dr Scott Clulow, an honorary associate lecturer with the amphibian research group at Newcastle University, said the news was "fantastic" but the next stage of the process - breeding the frogs - may prove "tricky".

"It's a process of experimentation," Clulow said. "We can do things to aid them like we can do with mammals and even humans. But there's a lot of subtle environmental cues that are often involved in breeding frogs and they differ a lot between species, so it does require a lot of work to work out the conditions required."

**Load-Date:** August 11, 2021

**End of Document**



[***The sound of climate change; Acoustic ecology has captured the imagination of musicians for decades, and when the habitats they studied are gone, recordings may be all we can ever experience of them***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:642R-9RK1-F06S-34BD-00000-00&context=1516831)

Breaking News from globeandmail.com

November 15, 2021 Monday 1:10 AM EST

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**Length:** 1897 words

**Byline:** Caitlin Stall-Paquet

**Body**

**Lead**

Caitlin Stall-Paquet is a Montreal-based writer and editor whose work has appeared in The Walrus, the CBC, Elle Canada, enRoute, Canadian Geographic, Ch\xE2telaine and Xtra.

On August 14, R. Murray Schafer, the avant-garde composer who got many to use their ears rather than their eyes, passed away at the age of 88, leaving the world a little more silent. The artist, born in Sarnia, Ont., was a pioneer of acoustic ecology (he coined the term soundscape), practising field recording to capture sounds of all kinds, and often using them in musical compositions.

**Texte/Text**

His interests were as vast as the sonic worlds he committed to tape: He pioneered using graphic notation in his scores, was a visual artist, wrote books and created music theatre such as Apocalypsis, his sprawling 500-person piece from 1980 about the end times, structured in two parts: the world's destruction followed by its reconstruction. In 2015, it was restaged during the Luminato Festival with a cast of more than 1,000 people, making it the largest musical production in Toronto's history.

But even more significantly, along with getting Canadian noise laws altered, Mr. Schafer founded the World Soundscape Project at Simon Fraser University, which involved education about the idea of noise pollution and the sounds we're constantly immersed in, as well as recording and cataloguing them internationally to preserve ones that disappear.

There are many others like Mr. Schafer. The composer influenced curious creatives who hear the wild's distress cries and fill up hard drives with recordings of ecosystems all over the world. Their aim is to create aural experiences, but also to sound the alarm through actual sounds, or the disappearance thereof. In a 2009 National Film Board short documentary called Listen by David New, Mr. Schafer says: "In a way the world is a huge composition, a huge musical composition that's going on all the time without a beginning and presumably without an ending. We are the composers of this huge miraculous composition that's going on around us, and we can improve it or we can destroy it."

Musician Alexandre Bergeron, a friend of mine, often layers field recordings into his songs. I first listened in closely through his equipment two years ago, as October leaves withered on branches. We walked along the Massawippi River in Lennoxville, Que., until he stopped next to a silent corn field drying out in the cooling air and turned down an empty row. Once we were surrounded by crisp stalks, he took a recorder out of his backpack, put on the headphones for a second, nodded and smiled before handing them to me. Suddenly, silence turned into an overwhelming swell of leaves rustling, coming from every direction - the loudest emptiness I'd ever heard.

I finally understood what Bernie Krause, another pioneer soundscape ecologist, had told me about how spaces open up when you listen through a microphone and recorder.

Though Mr. Krause started recording in the wild for musical purposes rather than preservation, his work has become a massive aural archive filled with many sounds that have otherwise disappeared entirely. He's captured more than 5,000 hours worth of habitats, and half of those no longer exist as they do in his recordings. That his ambitious work turned into an impressive auditory database, is rather a result of hindsight.

The opposite is true for Italian electro-acoustic researcher David Monacchi. His field-recording trips have been conducted with the express purpose of preservation, in a race against time. In 2017, he put out the award-winning documentary Dusk Chorus, based on his environmental sound art project Fragments of Extinction. This work combines art and data visualization through spectrograms and audio captured during his expeditions to the Amazon, Borneo and Central Africa, in an attempt to preserve the sonic footprint of incredibly biodiverse places often faced with what he calls ecocide.

His work demonstrates how new sounds, or a lack of them, speak volumes about the health of a habitat. In Ecuador's Yasuni National Park, for example, where there is thought to be the greatest biodiversity in the world, Mr. Monacchi captured the effects of drought (caused by climate change) and an oil plant's operations on the sonic landscape. His recordings revealed a reduction in animal vocalization, and a low swelling whirr emitted by trees in hydric distress that were also affected by xylenes (chemical compounds) from nearby oil refining.

In yet another approach to soundscape ecology, Mr. Bergeron often uses field recording as a kind of personal meditation, going out into the wilderness to be hyper-immersed in nature, and to experience the often-overwhelming feeling of being enveloped in magnified sound. His many recordings have grown into an archive of specific moments and places that live on as time capsules.

For an online music residency during the pandemic, Mr. Bergeron and three collaborators incorporated field recordings into a joint piece called Chirr, creating a soundscape that was bigger than if they'd worked together in person, combining excerpts from southeastern Quebec, Florida, Colorado and New York.

The resulting piece is layered with deep rumbling synth, saxophone and the sound of rainfall, climbing to menacing crescendos alongside the voices of American robins, song sparrows and cicadas. The northeastern United States saw the insect in hoards in the spring of 2021, as the huge Brood X surfaced after being underground for 17 years.

As I listen to Chirr, I try to imagine how the soundscapes those cicadas emerged into were different from the previous generation's, altered by our presence. The musical project isn't meant to be a peaceful meditation though: "These sounds are inherently overwhelming, that can be kind of an uncomfortable feeling in some challenging music. I would say that piece is kind of challenging and some people don't want to acknowledge it sometimes. They want to have a pleasant listening experience, but maybe we need to be confronted a little bit with some of that ecological horror," Mr. Bergeron says.

With small creatures that can be hard to identify visually, one of the best indicators of species strength is the sounds they produce. It's why each spring I participate in an amphibian-population monitoring program run by Montreal's Zoo Ecomuseum; it consists of stopping at designated locations along a pathway to listen for croaks and note their intensity. For decades, amphibians have undergone the largest death rates from a single disease in all recorded history because ofa human-spread fungus called ***chytrid***. Approximately 40 per cent of insects are also in decline worldwide, and a third are endangered. On Sept. 29, the Fish and Wildlife Service determined thatanother 23 species - including 11 birds - had gone extinct within the United States, taking their unique voices with them.

Along with capturing the sonorous singularity of whole habitats, the work of soundscape ecologists and amateur field recordists alike can be used to establish aural references against which we can measure declines, to track what we are losing.

As world leaders descended recently on Glasgow for the United Nations Climate Change Conference, COP26, I was reminded again about the importance of listening. With the event's net-zero emissions agreements and voluntary pledges to stop deforestation sounding eerily familiar to the 2016 Paris Agreement, skepticism about its usefulness is justified. But at the very least, COP26 is a moment when the most polluting and wealthy countries are forced to listen to speakers from Tuvalu and Fiji talk about drowning because of the excesses of the Group of 20.

I was more interested in hearing what they and young activists such as Greta Thunberg who protested the event had to say. A sustainable future seems to feel less tenable for each new generation than the last, and these teens and children will hear more human-caused silence than my own, a void then filled with unnatural sounds. Mr. Bergeron thinks about this as well. Over the summer, he worked with the\xC9cole des Arts Sutton in southeastern Quebec to show a group of kids, aged 7 to 14, the ropes of field recording during something called "Camp de l'ennui" (boredom camp). They were invited to hang out in a natural setting, without a plan or schedule in sight, to do whatever they wanted. Rather than set up a didactic teaching workshop to spark their interest, Mr. Bergeron decided to sit there, surrounded by greenery with his equipment set up and ready to listen.

He let the children who stopped by his station go off and capture whatever sounds they felt like. After, he made a video overlayed with their digital sounds that was projected during a vernissage at the end of the camp's week. The recordings are filled with giggles and excited screams, which reminded Mr. Bergeron of the play aspect to his practice. It is a feeling often forgotten in the world of conservation and preservation, yet it could be a good balance for painful realizations about the impact of our presence.

People such as Mr. Krause and Mr. Schafer opened my ears to the spaces around me - but also to my influence on them by the mere fact of being there. Last April, I walked along a forest path as amphibians were waking up after a winter of hibernation. I could hear the croaks of the wood frogs and spring peepers I've loved since childhood in the distance. They fell nearly silent when my hiking boots crushed leaves on the unseasonably dry forest floor as I got closer.

As I think of that surprisingly hot spring day, I can't help but wonder what Mr. Schafer thought in his last months during the hottest summer on record, as historic wildfires burned from British Columbia to Algeria and Siberia, and floods swept through China and Western Europe. I wonder whether it reminded him of the destruction from the first part of Apocalypsis. We're nowhere close to considering what reconstruction could look like, but there might be some ideas for rebuilding hidden in his legacy, such as the Listening Project, a non-profit that hosts artistic and educational activities to encourage an understanding of the world through listening and field recording (their World Listening Day is held annually on July 18, Mr. Schafer's birthday), or the people who have yet to discover and be changed by his work.

At the end of Listen, Mr. Schafer asks, "What happens if my voice stops, what do you hear then?" before holding up a sign that simply reads, "Listen." Except for the recordings that have preserved it, his voice is gone now, but we still have the message on his sign. I wonder whether the knowledge of how much he helped preserve the sounds of what might disappear mitigated his sadness of how much has already been lost. I wonder what the kids Mr. Bergeron taught will hear, or won't hear, by the time they're my age. I wonder what the world will sound like to the future cicadas of Brood X that will re-emerge in 17 years. I wonder whether those soundscapes will be eerily close to the cornfield I listened to - empty and loud only with the sound of dried leaves rustling against each other.

**R. Murray Schafer, Apocalypsis**

Full album available from Analekta

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**Load-Date:** November 15, 2021

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[***Endangered amphibian nicknamed 'scrotum frog' for its saggy folds of excess skin goes on display at UK zoo***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63FR-5XS1-DY4H-K1CR-00000-00&context=1516831)

MailOnline

August 25, 2021 Wednesday 4:52 PM GMT

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**Section:** SCIENCE; Version:1

**Length:** 722 words

**Byline:** Stacy Liberatore For Dailymail.comPA Media

**Body**

* The frog's formal name is Telmatobius culeus, but earned its nickname because of the saggy folds of excess skin which it uses to absorb oxygen from the water

1. The scrotum frog is an endangered species and 20 have gone on display at Chester Zoo in the UK
2. Wildlife officials hope experts can monitor the frogs' behavior to find ways to save them from extinction

An endangered amphibian nicknamed the 'scrotum frog' is on display at a the Chester Zoo in the UK as wildlife officials hope to save the species from extinction.

The frog's formal name is Telmatobius culeus, but earned its unfortunate nickname because of the saggy folds of excess skin which it uses to absorb oxygen from the water at the bottom Lake Titicaca that borders Bolivia and Peru.

Chester Zoo is hosting 20 of the rare frogs, allowing the public to see them for the first time and conservations to monitor their behavior.

Researchers are not sure how many scrotum frogs are left in the world, but estimates suggest populations of the frogs plummeted by as much as 80 percent from 1994 to 2004.

And in 2016, at least 10,000 of the frogs were found dead at the lake, but researches have yet to determine the cause.

Chester Zoo has teamed up with the Cayetano Heredia University in Peru and the Natural History Museum's Alcide d'Orbigny in Bolivia to form a union to help save the frogs and secure the future of the lake.

Dr Gerardo Garcia, the zoo's curator of lower vertebrates and invertebrates, told PA Media: 'We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit the zoo.

'What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviors, favored habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***.

'We can then harness that valuable information for conservation action in the wild.'

Dr Garcia said people in Peru and Bolivia were known to harvest the frogs, despite it being illegal, and use them in smoothies which they believe enhance virility and energy.

He added: 'The planet is facing its biggest ever biodiversity extinction, with thousands of amphibian species at risk of being lost forever.

'Human activity is very much part of the problem, but we won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage.'

Roberto Elias Piperis, coordinator of the wildlife laboratory at the Cayetano Heredia University in Peru, added: 'This species is unique. It is only found in Lake Titicaca and the surrounding areas where it is adapted to the very adverse conditions there.

'The lake is at extremely high altitude, nearly four times as high as the summit of Mount Snowdon in Wales and, in addition to its ecological importance, there is also a cultural one, because the local inhabitants consider the frogs as a connection between them and the gods so they use them in rituals to call rain.'

The unexplained 2016 mass die off is thought to have been a result of pollution in Lake Titicaca.

Thousands of the large, wrinkly green frogs were found floating on the surface of the Coata river in southern Peru in October 2016, prompting the National Forestry and Wildlife Service (Serfor) to launch an investigation.

'Based on local residents' statements and samples taken in the days after the incident, it is believed that more than 10,000 frogs were affected over about 50 kilometers (30 miles),' Serfor said in a statement.

The alert was sounded by an environmental group called the Committee Against the Pollution of the Coata River, which accused the authorities of ignoring the river's severe pollution.

To protest, its supporters brought 100 of the dead frogs to the central square in the regional capital, Puno.

The scrotum frog is the largest fully aquatic frog in the world, with a diameter similar to a dinner plate.

The frog's many folds of skin help them breathe in their high-altitude habitat in the Andes mountains, more than 12,500 feet above sea level.

It is also threatened by the introduction of exotic species such as trout, which feed on its tadpoles, and is even crushed into a drink as a supposed aphrodisiac for humans.

**Load-Date:** August 25, 2021

**End of Document**



[***Australian scientist speaks to frogs, fears their silence***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:630F-FRB1-F12F-F12J-00000-00&context=1516831)

The Financial Express (Bangladesh)

June 24, 2021 Thursday

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**Length:** 440 words

**Dateline:** Dhaka

**Body**

Dhaka, June 24 -- Wading through a moonlit pond on Australia's east coast talking to frogs makes Michael Mahony feel like a kid again.

The 70-year-old biology professor and conservationist at the Australia's University of Newcastle has mastered imitating and understanding the shrills, croaks and whistles of frogs. "Sometimes you forget to work because, you know, you just want to talk to the frogs for a while and it's sort of good fun," Mahony told Reuters from a pond in Cooranbong, New South Wales.

He is thrilled every time they call back, but fears frogs are increasingly at risk of going silent.

Australia has about 240 frog species, but around 30% of them are threatened by climate change, water pollution, habitat loss, the ***chytrid*** fungus, and in a variety of other ways. Globally frogs are the most threatened of all vertebrates, Mahony said.

Over his career, Mahony has described 15 new species of frogs. He has also seen some wiped out.

"Probably the saddest part of my career is that as a young person, I discovered a frog and within two years of it being discovered that frog went extinct," Mahony said.

"So very early in my career I became aware just how vulnerable some of our frogs were. We need to be looking at our habitats and asking what is wrong."

Beyond working to preserve amphibian habitats across Australia, Mahony has helped to develop a cryopreservation method to help bring frogs back from the edge of extinction by "banking" genetic material.

"What we've done in the face of the problems of catastrophic loss of species is to establish the first genome bank for Australian frogs," he said.

Mahony also contributed with other scientists to a study by the World Wide Fund for Nature (WWF) that found nearly three billion Australian animals were killed or displaced by bushfires in 2019 and 2020, including 51 million frogs.

Mahony's passion for conservation has also rubbed off on his students. One of them, Simon Clulow, named a newly discovered frog "Mahony's Toadlet" in his honour in 2016.

Some students have taken up his technique of calling and talking to frogs as well.

"I've never been into yelling at them to find out where they are," University of Newcastle doctoral student and frog researcher Samantha Wallace said.

"But it definitely does work, so it does pay back, especially when you're trying to find some of these species that are really amongst the undergrowth and they're not really obvious."

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**Load-Date:** June 24, 2021

**End of Document**



[***The Harlequin Frogs' Song of Hope***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63V9-JRB1-JBJN-M4GJ-00000-00&context=1516831)

CE Noticias Financieras English

October 13, 2021 Wednesday

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**Length:** 3536 words

**Body**

13 Oct 2021 - 2:34 a. m.Harlequin frogs' song of hopeThereappearance of harlequin frog species (Atelopus) in the Sierra Nevada de Santa Marta has lit a beacon of optimism for scientists and conservationists seeking to halt the advance of chytridiomycosis, a lethal pandemic that threatens amphibians across the planet.

**Miguel González Palacios\*At**

the end of 2019, a team of researchers and conservationists recorded a sighting of a frog species thought to be extinct in the Sierra Nevada de Santa Marta in northern Colombia. The Atelopus arsyecue, known as the starry night harlequin frog because of the white spots that stand out against its black skin, had not been seen for more than 30 years. The news was received with enthusiasm by the scientific community and the media, because in the midst of the mass extinction that the planet is going through, the reappearance of a species is reason for hope.

Of the nearly 8,000 species of amphibians estimated to exist in the world, 41 percent are in danger of extinction, according to the Red List of the International Union for Conservation of Nature (IUCN), an inventory that compiles information on the conservation status of different species of animals and plants. This figure makes them the most endangered vertebrates on the planet, surpassing sharks and rays (37 percent), mammals (26 percent) and birds (14 percent). Within the order of frogs, the genus harlequin or Atelopus is one of the most critical, because of the 99 species that have been described to date, 78 are threatened.

One of the main causes of this decline is the rapid advance of chytridiomycosis, an infectious disease caused by the ***chytrid*** fungus Batrachochytrium dendrobatidis, known as Bd. This disease has become a pandemic that threatens the survival of amphibians and reptiles worldwide. Therefore, the reappearance of the starry night harlequin frog was, for many scientists, like a light in the darkness; an indicator that the Sierra Nevada frogs have developed some kind of resistance or adaptation to the Bd fungus that could be the key to stopping the extinction of one of the most important groups of vertebrates on the planet.

Frogs and chytridiomycosis

"Atelopus are more toads than frogs," says Lorenzo Bautista, a farmer, naturalist guide and environmental consultant from the rural area of Minca, on the northern slopes of the Sierra Nevada, as we sip a freshly roasted coffee at La Victoria, one of Colombia's oldest coffee farms

.

The difference between these two terms is not scientifically rigorous, but, to most people, frogs have smooth skin and toads have rough skin and more visible glands. Both, however, belong to the order Anura, a scientific name that in Greek means "tailless".

Frogs of the genus Atelopus are very diverse and are characterized by their small size, between 20 and 60 centimeters, their diurnal behavior and their intense and bright colors. "They are the jewels of our forests," says Lina Valencia, Andean country coordinator for Re:wild, an international organization that works for the conservation and restoration of biodiversity in more than 50 countries. Lina is also one of the promoters of the Atelopus Survival Initiative, a coalition of individuals and organizations recently formed to protect harlequin frog populations and mitigate threats to them. "You're walking through a completely green forest and all of a sudden you see a purple, red or orange thing."

Most of these frogs live around creeks, streams, swamps, lagoons and other mid- and high-elevation waterways in the tropical zone stretching from Costa Rica in the north to Bolivia in the south and French Guiana in the east.

They reproduce through a nuptial embrace known as amplexus, a common form of mating among amphibians, which lasts from a few minutes to several days, but in the case of Atelopus can last three to four months. During all this time, the male remains cuddled on the female's back, without feeding, waiting for her to have the physiological conditions and find the right flow to lay the eggs in the creeks. In this way, the male tries to prevent other males from fertilizing them. While waiting, he can lose up to 60% of his body mass.

Like the vast majority of amphibians, the skin of harlequin frogs is physiologically active; that is, it is actively involved in the regulation of respiration, water and electrolytes. This makes them particularly vulnerable to infection by the ***chytrid*** fungus Bd. This attaches to the skin when it comes into contact with water, which contains spores from other infected animals (see infographic), causing an abrupt change in temperature, loss of minerals, progressive suffocation, reduction of their immune defence and even death. The most visible traits of this infection are dry skin and, according to biologists, a depressed look and behavior.

Like frogs, the Bd fungus inhabits mountainous locations with high humidity and temperate climates. However, scientists are still trying to understand why chytridiomycosis has close to 100% mortality in some populations, while in others it produces only sporadic deaths. There is also no consensus in the scientific community about its origin. It is believed that it may have originated in Africa or Asia, and that it travelled to other continents through the trafficking of species, such as the African clawed frog (Xenopus laevis), and then spread on the shoes and clothes of human passers-by who had visited localities contaminated with the fungus.

Bd was formally described in 1999 as a result of research into the drastic decline of amphibians that had been occurring around the world since the 1980s. The infection produced by this fungus has been identified as the main cause of the extinction of harlequin frog species such as Atelopus chiriquiensis, endemic to Costa Rica; the skeletal jambato (Atelopus longirostris), from Ecuador, and the Maracay yellow frog (Atelopus vogli), in Venezuela.

The "Samarian miracle "

The Sierra Nevada de Santa Marta is a true biodiversity hotspot, as it has a high degree of endemism because it is an independent mountain system, isolated from the Andes and other mountain ranges. Due to its great variation in altitude, ranging from sea level on the Caribbean coast to the snow-capped peaks of Bolívar and Colón, the highest peaks in Colombia at 5775 meters, the Sierra is home to practically all the thermal floors of the tropics, from warm dry to perpetual snow.

Of the 41 species of harlequin frog that live in Colombia, almost half of the world's total, five are endemic to the Sierra Nevada; that is, they are found nowhere else on the planet. Of these, four have been observed and studied in the last 15 years and appear to have stable populations despite being included in the IUCN red list with some degree of threat.

In addition to the 2019 sighting of the starry night harlequin frog, sightings of Atelopus laetissimus and Atelopus nahumae in the Minca river basin and Atelopus carrikeri in the Cebolletas páramo were reported between 2006 and 2008. These species had not been seen for more than 12 years. The fifth species inhabiting the Sierra Nevada, Atelopus walkeri, is the only one for which there are no recent reports.

The four species that do persist have been called "Lazarus species," a term recently coined in the scientific community to refer to species that are seen again after they were thought to be extinct. The name refers to the biblical account of Lazarus of Bethany, who comes back to life and rises from his deathbed after hearing the words of his nephew, Jesus of Nazareth.

According to José Luis Pérez, a member of the Atelopus Foundation, an organization in the city of Santa Marta that works in the research and conservation of frogs and other animals in the Colombian Caribbean, the most surprising thing in the case of the Sierra Nevada is that in the same transect more than 30 specimens of harlequin frogs have been found, including one of Atelopus laetissimus, known as 'the old man', "which has been more than 11 years since we started monitoring, it has been recaptured in all sampling, in the creek. And it has traces of Bd," he says.

The continuity of this species "is something that fills us with great joy, because finding an individual in good condition for so long tells us how the population is doing, that it has the ideal conditions in its environment to survive for so long," says José Luis.

The existence of relatively stable populations and the sighting of specimens of harlequin frog species that were thought to be extinct has been a beacon for scientists fighting to stop their disappearance. According to Lina Valencia of Re:wild, the Atelopus of the Sierra Nevada could be "the Holy Grail, the answer, the solution to the conservation of harlequin frogs, because if these species are apparently stable, there is hope for the others".

A night without stars?

The disappearance of frog populations is bad news for all living things on the planet, including humans, for several reasons. For one thing, these amphibians occupy a central position in food chains; they are predators of small animals and eat grasses, both aquatic and terrestrial, and, in turn, are prey for other larger species such as birds, reptiles and mammals. Frogs also play other very important ecological roles such as controlling pests and diseases that could affect humans, such as dengue fever and chikungunya.

The absence of frogs can cause an imbalance in the functioning of ecosystems that triggers, like a domino effect, the extinction of other species and further loss of biodiversity. "Everything is in the world for a reason, even if we don't understand it," Valencia sums it up.

On the other hand, as Dr. Nikki Roach, amphibian and reptile conservation coordinator for the Global Species Survival Center, says, the disappearance of frogs "is a sign that something is wrong with the environment and we need to fix it. Not only for the frogs, but for our own survival. Scientists consider the abundance of these animals to be an indicator of the health of an ecosystem and see their decline as a warning sign of possible threats to human health. It is a powerful indicator because, like all amphibians, frogs live both in water and on land -- amphibians are Greek for "between two worlds. To that extent, their decline is a symptom of the deterioration of both aquatic and terrestrial ecosystems.

In fact, despite the enormous differences between humans and frogs, there is one thing that unites us intimately: water. "The extinction of frogs would also have an impact on the culture of many indigenous communities that see these animals as a symbol of fertility, in addition to using them for rituals, the treatment of illnesses and as a reference for agricultural activities. This is the case of the Arhuacos and other indigenous peoples of the Sierra Nevada, for whom the gouna - the name of the harlequin frog in the Arhuaca language - is an indicator of the cycles of life and nature, a sort of biological calendar.

The reproduction cycle of the starry night harlequin frog, for example, is used as a reference for the cultivation of products, such as a special type of corn that is the basis of food for young people who are in the process of training to be spiritual leaders or mamos.

The disappearance of a species implies "the loss of millions of years of genetic development, of biodiversity, of information that can suddenly help us find something important for us," as Dr. Roach affirms. This view is shared by Ruperto Chaparro Villafaña, leader of the Arhuaca community of Sogrome, on the eastern slope of the Sierra Nevada, two days' drive from Valledupar. Although so far no medicinal uses have been identified for the harlequin frogs, he says, "the genetic information that exists in the food, in the animal species, surely gives us a chance to develop more advanced medicine that will allow us to survive.

Unraveling the mysteryThere are

two main hypotheses about how the Sierra Nevada harlequin frogs might be resisting the chytridiomycosis pandemic. The first suggests that the bacterial coating on their skin acts as an immune defense that inhibits the growth of the Bd fungus. This conjecture has been explored especially by Vicky Flechas, a researcher at the Humboldt Institute, through laboratory tests with samples collected from several species of frogs, including Atelopus elegans, endemic to the island of Gorgona, in the Colombian Pacific.

This is one of the theses currently being explored by the Atelopus Foundation. If evidence is found that validates it, the bacteria could be isolated and then used in other species of harlequin frogs. In that way, it would be possible to check if these bacteria can indeed protect other frogs against the Bd fungus.

The second hypothesis is that these Atelopus species may be resisting chytridiomycosis by means of a reproductive strategy known as the "R strategy". This, characteristic of small species found in unstable habitats, such as harlequin frogs, consists of laying large numbers of eggs to ensure the survival of the species. "The populations are reproducing so fast, they are recruiting so fast, that the population is not going extinct," says Lina Valencia. This has happened, for example, with Atelopus cruciger, the only one of Venezuela's nine species of harlequin frog that has been reported in recent years.

"If at least a third survive, knowing that they have a very low probability of reaching juvenile or adult size, what they do is lay a larger number of eggs to ensure the survival of at least a third," says José Luis Pérez.

To these hypotheses are added others related to the specific strain of the fungus that lives in the Sierra Nevada, the geographical conditions of the Sierra that would have limited its spread, the characteristics of the ecosystem that would have inhibited its development or even others that suggest that harlequin frogs are reappearing after having overcome the most lethal peak of the pandemic.

For

the indigenous communities that inhabit the Sierra Nevada, the gouna is not a lazarus species, far

from it.

"It has never disappeared for us, not even for a year, this frog has always been there," says Ruperto Chaparro, who was responsible for initiating contact with the Atelopus Foundation to go to his community to record the "reappearance" of the starry-night harlequin frog.

According to him, he did it moved by the desire of his community to free themselves from "that tie that we feel for being prevented to the difference, to feel like in danger, that endurance that we have that wears us out without being able to connect with the true imagination to evolve as a society".

Indeed, the indigenous communities that inhabit the middle and upper parts of the Sierra Nevada have for centuries maintained a reticent attitude to the passage of outsiders, as a consequence of their conflictive interaction with the State and Colombian settlers throughout history. This may have contributed to limiting the spread of the Bd fungus, particularly through infected footwear and clothing, as well as maintaining the Sierra Nevada as one of the least explored places on the planet.

In order to record the starry night harlequin frog in late 2019, the Atelopus Foundation team had to go through a long process of consultation with the Sogrome community, which included three years of talks alone and then four trips to the territory. The spiritual authorities of the community (the mamos) only allowed them to bring cameras to record the last trip.

It was like a crazy thing to do, because you know that as a scientist you want the evidence," says José Luis Pérez. So it was like a challenge, which they (the Sogrome community) called 'resisting temptation'".

According to Lorenzo Bautista, another reason that has kept the Sierra Nevada as a relatively unexplored place is the lack of equipment and resources for constant biodiversity monitoring. This may have led people to think that there are species that are "resuscitating," when in reality they have never disappeared. This lack of studies is not only latent in the case of amphibians, but also in the case of insects, orchids and plants in general. "That's why now the term is 'possibly extinct', because now we don't really know," Pérez points out.

However, as Dr. Nikki Roach clarifies, the above does not mean that all species believed to be extinct are simply hidden, as this depends on the particular case of each one and there are some that have not been able to be found despite having been searched for them several times.

class="font--secondary">More than one threatIn addition

to chytridiomycosis, harlequin frogs face two other major threats to their survival: climate change and the degradation of the ecosystems in which they live. Some experts even believe that the Bd fungus has historically been present in amphibian habitats, but that changes in environmental conditions have made them more susceptible to infection and Bd more aggressive.

Harlequin frogs are very sensitive to large temperature variations, increased maximum and minimum temperatures, and increased UV exposure. This can lead to abrupt changes in blood temperature, uncontrolled saliva production, liver failure, salt and water imbalance in the body and, in some cases, death. Their fragility is such that all of this could happen to them just by holding them for a few minutes in a human hand.

These amphibians are also suffering from longer summers and the El Niño phenomenon, a cyclical climate event that causes a drastic reduction in rainfall and humidity in the Sierra Nevada and much of Colombia. With global warming accelerating, El Niño is becoming more frequent, longer and more intense. For the frogs, surviving four or more months of zero humidity and skin lacerations from the sun's rays is an increasing challenge.

Added to this is the direct impact of human activities such as cattle ranching and coffee production that cause, among other things, deforestation, loss of habitat and breeding grounds, water pollution and increased soil acidity.

And while all this does not affect only frogs, for them it represents a greater danger for a simple reason: due to their small size, their mobility is reduced and they have home ranges that do not exceed, on average, 200 meters. Because of this, "they cannot walk or move to adapt to climate change, so they have to adapt or they will die. Birds, mammals, can fly or walk, but species that are smaller don't have that option," says Roach.

Shining into the futureWhile

collecting and analyzing samples of the bacterial layer to eventually develop a "cure" for chytridiomycosis, the Atelopus Foundation is also working to describe a new species endemic to the Sierra Nevada. According to the Atelopus Survival Initiative, an estimated 29 species in addition to the 99 that have been recorded to date have yet to be described.

This is a paradox of many species from little explored places. While some scientists believe that their situation is much more critical than they think, others not only "rediscover" species, such as the starry-night harlequin frog, but also find new species of the same genus. Atelopus frontierus, a small frog with a yellow and black striped pattern, was recently discovered in the jungles of the Darien, on the border between Panama and Colombia, for example.

But beyond research, the survival of the harlequin frogs depends on concrete and urgent conservation actions, such as reforestation and watershed conservation, as well as the collection of garbage and contaminants that could affect them. For this, the participation of local communities is indispensable. That is why another of the work fronts of the Atelopus Foundation is the empowerment of the farmers of different localities of the Sierra Nevada, "so that the community is filled with pride, to take ownership of what they have, because if not, they do not give importance to these species and they are the ones who are called to take care of their biodiversity," says Sintana Rojas, José Luis Pérez's partner.

"Man must adapt, not only for himself, but for the species that, like frogs, cannot adapt," Lorenzo Bautista tells me as we drink a last cup of coffee after returning from our unsuccessful expedition in search of harlequin frogs. "They are species without resistance," he concludes.

The future of the frogs and many other species, including our own, depends on us. For that, we need collaboration and coordinated work between local and regional actors in different parts of the world in order to save not only Atelopus and amphibians, but thousands of species of different orders and genera around the world. As Lina Valencia says, "a constellation shines brighter than a star".

This research is part of the journalistic special 'Historias en clave verde. Second edition', carried out in the framework of the training and production project 'CdR/Lab Periodismo en clave verde' of Consejo de Redacción (CdR), thanks to the support of the Deutsche Welle Akademie (DW) and the German Cooperation Agency.

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Northwich Guardian

August 25, 2021 Wednesday

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**Length:** 965 words

**Byline:** *Mark Dowling*

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It spends most its life at the bottom of the lake, absorbing oxygen from the water using its saggy folds of excessive skin - a trait that has seen it labelled the 'scrotum frog'.

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Twenty of the rare amphibians are now being cared for at Chester Zoo, where experts are studying their behaviour to try to gather new insights as part of the latest conservation efforts for the species.

The zoo was the first in Europe to give a home to the species and has now established a European population by sending 130 other frogs to 13 other leading, progressive zoos around the continent to help prevent total extinction of the frog.

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A combination of pollution, habitat loss and hunting has devastated the frog's wild population. They are listed as endangered by the International Union for the Conservation of Nature (IUCN), with between 50 per cent and 80 per cent estimated as having been lost from Lake Titicaca in the last 20 years alone.

In response, nearby researchers set up a rescue centre and began attempts to breed the frogs, before seeking assistance from conservationists at Denver Zoo in America and now, Chester Zoo in the UK.

Meanwhile, Chester Zoo has also formed an alliance with the Cayetano Heredia University in Peru and the Natural History Museum's Alcide d'Orbigny in Bolivia in a ground-breaking union which is fighting to save the Lake Titicaca frog from extinction.

The two South American institutions are part of a bi-national action plan for the conservation of the species - the first time the two countries have come together to attempt to protect the frogs.

The plan of the two organisations is focused on securing the future of the lake by promoting sustainable activities for local communities, recovering the habitat and managing the wild frog population.

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Dr Gerardo Garcia, the zoo's curator of lower vertebrates and invertebrates, said: "To be responsible for setting up the first ever conservation breeding programme in Europe for these fascinating frogs is a real honour for us here at Chester Zoo.

"We're very happy that we can now share our efforts to protect these frogs with the wider public, who will most likely be seeing them for the very first time during their visit the zoo.

"What we need to do now is to build on our knowledge of the species and its biology - by learning all about their life cycle, mating behaviours, favoured habitat and ability to tolerate or resist a deadly fungus that is wiping out lots of amphibians, called ***chytrid***.

"We can then harness that valuable information for conservation action in the wild.

"These frogs are also important ambassadors for their species and will help us to raise more awareness of their plight in the wild. Lake Titicaca frogs are highly threatened with extinction.

"The one, high Montane lake that they live in is an extremely fragile environment and they have really suffered at the hands of pollution and introduced fish species.

"It's illegal to harvest these frogs but Peruvian and Bolivian locals are still known to do so - they use them in smoothies, which they believe enhances virility and energy.

"The planet is facing its biggest ever biodiversity extinction, with thousands of amphibian species at risk of being lost forever.

"Human activity is very much part of the problem, but we won't sit back and let them become extinct because we're also key to the solutions and will play a vital role in reversing the damage. We want to make sure the Lake Titicaca frog is around for generations to come."

Roberto Elias Piperis, co-ordinator of the wildlife laboratory at the Cayetano Heredia University in Peru, added: "This species is unique. It is only found in Lake Titicaca and the surrounding areas where it is adapted to the very adverse conditions there.

"The lake is at extremely high altitude, nearly four times as high as the summit of Mount Snowdon in Wales and, in addition to its ecological importance, there is also a cultural one, because the local inhabitants consider the frogs as a connection between them and the gods, so they use them in rituals to call rain.

"That adds to the fact that the Puno Region, where the lake is located, has named it as a species of regional interest since 2013."

Teresa Camacho Badani, chief of the herpetology department at the Natural History Museum's Alcide d'Orbigny in Cochabamba in Bolivia, and in charge of the K'ayra Centre, where around 200 Titicaca water frogs live as part of the breeding programme, added: "Work has been ongoing for several years in both Bolivia and Peru to conserve the Titicaca water frog.

"This though was taking place in each country independently and the two countries joining up their efforts had not been possible until now.

"We know that the work will not be easy, but together we want to make a real effort to conserve this critically endangered species and for this we must work as a team.

"This has coincided with the arrival of frogs in Europe and we are happy that this incredible species is now at Chester Zoo and elsewhere. Now that we have ambassadors there, along with a great commitment to conservation, I truly believe that we are living in one of the best moments to save this species from extinction."

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**Load-Date:** August 25, 2021

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[***Letters: School lunches | Anti-vax stance | Mitigating risks | Frog fracas | Hidden history***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63DR-SPG1-F0C5-X207-00000-00&context=1516831)

The Mercury News (California)

August 20, 2021 Friday

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**Length:** 926 words

**Byline:** Letters To The Editor

**Highlight:** East Bay Times Letters to the Editor for Aug. 22, 2021

**Body**

Submit your letter to the editor via [*this form*](http://www.eastbaytimes.com/letters-to-the-editor). Read more .

Let's take state's free lunch program national

California's recently enacted state budget includes a historic investment in school nutrition. The funding is the first in the country to provide .

With children returning to school, this transformative change - ushered forward by leaders like state Sen. Nancy Skinner - effectively eradicated hunger in California public schools. All children have the right to be well-nourished and to thrive. School meals are essential for students to learn, grow and achieve at their fullest potential. Connecting children with nutritious food is necessary to eliminate the systemic inequities that harm lower-income students and students of color, particularly Black and Latinx children.

This victory has emboldened us, and we're taking our push nationwide. Alameda County Community Food Bank urges Reps. Ro Khanna, Barbara Lee and Eric Swalwell to pass federal universal school meals legislation. California is leading the way in eradicating hunger in public schools, and we call upon the rest of the nation to follow.

Allison Pratt Alameda County Community Food Bank Oakland

Anti-vax stance is really tribal identity

Anti-vaxxers like to scream about "freedom" because that is a noble concept, but their motivation is not freedom; it's tribal identity.

If they were so concerned about freedom, they would be screaming about not being allowed to drive drunk, or smoke inside restaurants, or having to go through airport security lines. Not taking the vaccine, and not wearing a mask, have become their tribal identity markers, because reckless selfishness is now their brand.

When you claim freedoms, you also need to acknowledge your responsibilities. We all give up some freedoms so we can live among other people; if you want complete freedom, you must be a hermit living in the wilderness. If you live among us, you always drive on the right side of the road, you don't play loud music in the middle of the night, and you care about other peoples' safety.

Jeanie Egbert Alameda

We mitigate driving risks; anti-maskers don't

The letter writer who states that most of us put others at risk for our own personal convenience and uses statistics showing that twice as many children are killed by car accidents as by COVID ("[*Mask-shaming senseless*](https://www.mercurynews.com/2021/08/16/letters-497/) [*Letters to the Editor*](http://www.eastbaytimes.com/letters) [*free meals to all K-12 students*](https://edsource.org/2021/free-school-meals-here-to-stay-in-california/658564) in light of other risks," Page A6, Aug. 17) has missed an important point in her defense against mask-shaming.

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Yes, driving is dangerous. And we have done our best to reduce the risk of that danger. Wearing masks reduces the danger that children will get COVID and the horrors of possible long-term COVID.

Pamela Dernham Oakland

Non-native frog a threat to repopulation plan

I was pleased to read about the Oakland Zoo's threatened yellow-legged frog project ("[*33 threatened frogs are released into wild with goal to repopulate*](https://www.mercurynews.com/2021/08/12/oakland-zoo-sends-33-threatened-frogs-into-wild-with-goal-to-repopulate-species/)," Page B1, Aug. 12). Kudos to all.

These native frogs haven't much of a chance until the state's non-native American bullfrog problem is addressed. California annually imports [*two million American bullfrogs*](https://www.biologicaldiversity.org/news/press_releases/2018/bullfrog-chytrid-fungus-04-16-2018.php#:~:text=Today) for human consumption. These frogs are routinely released into local waters, where they prey upon and displace the native species.

The majority of the market bullfrogs test positive for a [***chytrid*** *fungus (Bd)*](https://www.biologicaldiversity.org/news/press_releases/2018/bullfrog-chytrid-fungus-04-16-2018.php#:~:text=Today), which has caused the extinctions of some 200 amphibian species worldwide in recent years. The bullfrogs' presence in California is a major threat to all our native frogs, et al.

Despite major public pressure since the mid-1990s, the California Dept. of Fish and Wildlife (DFW) continues to issue import permits for these non-native frogs, imperiling our native species and public health. Write DFW Director Chuck Bonham and demand import permits cease immediately.

Eric Mills Oakland

History's darkest lessons are hidden from schools

I must agree with the last line of Tom Harais' letter about what is taught in our schools ("[*We must stop dividing ourselves by race*](https://www.mercurynews.com/2021/08/16/letters-497/)," Page A6, Aug. 17).

[*Letters: Close Reid-Hillview | Bait and switch | What apathy? | Tackling hunger | Nuanced conservatism | Silence unacceptable*](https://www.mercurynews.com/2021/08/20/letters-504/)   [*Letters: Nuclear power | Changing definition | Undoing democracy | LaRussa's role | Act for future*](https://www.mercurynews.com/2021/08/19/letters-503/)   [*Letters: Single-family homes | Countywide change | Time for action | China partnership*](https://www.mercurynews.com/2021/08/19/letters-502/)   [*Letters: Open space | Complacent Democrats | Hold your vote | Capitalizing on crises | Illegal recall? | Strengthening GOP | Fear-mongering*](https://www.mercurynews.com/2021/08/18/letters-501/)   [*Letters: Farmers, partners | Ban campfires | Newsom recall | Bacon and homeless | Competing schools | Climate fight*](https://www.mercurynews.com/2021/08/18/letters-499/)  As a product of public schooling why is it that I knew nothing of the horrific events in 1921 Tulsa Oklahoma until I was 61 years old? I learned of this by watching Free Speech TV. Also the plight of the early coal town's laborers with its " Company Store" and union-busting, which I learned from a popular song and more so, again, from Free Speech TV. It's strange that I never heard of how the natives of this paradise land kept it so for thousands of years before they were invaded, declared savage and wiped out along with the paradise.

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Chester and District Standard

August 25, 2021

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**Length:** 965 words

**Byline:** *Mark Dowling*

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The East Bay Times (California)

August 20, 2021 Friday

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**Length:** 924 words

**Byline:** Letters to the Editor

**Highlight:** East Bay Times Letters to the Editor for Aug. 22, 2021

**Body**

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Non-native frog a threatto repopulation plan

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[***Yellow-legged frog still threatened, but officials have hope***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:620R-8CD1-JBCN-44VY-00000-00&context=1516831)

Mountain Democrat (Placerville, California)

February 12, 2021

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**Section:** NEWS

**Length:** 817 words

**Byline:** Tahoe Daily Tribune

**Body**

The mountain yellow-legged frog once thrived in the Sierra Nevada but today there are less than 100.

The yellow-legged frog is a popular topic with researchers and was once an abundant amphibian species — but California Department of Fish and Wildlife surveys show populations have declined 95% since 1995.

The yellow-legged frog is a keystone species meaning that they are both predator and prey. They eat insects, eggs, tadpoles and even other frogs. In return they are consumed by native garter snakes.

The frogs also play an important role in the ecological balance of an ecosystem, including controlling insect populations.

But the frogs face several obstacles.

In the late 1800s, non-native trout were stocked in naturally fishless, high alpine lakes. These trout quickly became competitors for food and the trout also preyed on the yellow-legged frog eggs, tadpoles and young adults.

In the 1950s aerial stocking gained momentum, which allowed the California Department of Fish and Wildlife to stock remote high alpine lakes by plane with an intent to create more recreational fisheries.

Researchers saw a dramatic decline in the mountain yellow-legged frog population after the fish were introduced, according to the Tahoe Institute of Natural Science.

"In most high elevation lakes, the fish are not native," said Sarah Hockensmith, outreach manager for TINS.

Hockensmith explained that another contributing factor to the frog's decline is pesticides. Frogs breathe through their skin so the introduction of pesticides causes a chemical imbalance.

The frog's habitats are also threatened by grazing livestock, which has been an ongoing debate in the Sierra Nevada.

Researchers found dead frogs not being consumed by predators, which led to the discovery of amphibian ***chytrid*** fungus. Amphibian ***chytrid*** fungus attaches to the keratin of frogs and tadpoles, restricting their ability to absorb water and breathe.

This fungus has spread across the Sierra for the last 40-50 years and has wiped out many amphibians.

Ample funding, time and scientific attention is required to be listed as an endangered species.

In 2012 the California Fish and Game Commission added the mountain yellow-legged frog to its list of animals protected as endangered species and in 2014 they were added to the federal endangered species list.

The yellow-legged frog could be extinct within decades, according to Center for Biological Diversity scientists.

Research biologist at the University of California Sierra Nevada Aquatic Laboratory, Roland Knapp, has dedicated over 20 years researching the frogs and believes population recovery is still possible.

Knapp explained that a fishless habitat along with increased resistance to ***chytrid*** fungus can allow populations to rebound and increase.

Knapp's research has shown the frogs being able to adapt to the disease over time.

"The last 10-15 years have been truly remarkable with frog populations," Knapp said. "I have a lot of hope. I wouldn't have said that 10 years ago."

Knapp has said he had been watching the decline since the mid 1990s when the frog population was critically low. He explained that these frogs have evolved millions of years as a top predator and taking out a top predator can have devastating effects on an ecosystem similar to the wolves' impact in Yellowstone National Park.

Wolves were eradicated or driven from Yellowstone in the 1920s and in the decades that followed the park's ecosystem fell out of balance with exploding elk and coyote populations that in turn effected plant life, bird species and riparian habitat.

Recognizing a changing ecosystem is difficult when the ecosystem is not terrestrial. Knapp explained that if you were to stick your head underwater, you can see directly how different the ecosystem is between lakes with and without fish.

He said a balance needs to be found to make sure the frogs are protected by halting the stocking of fish or removing fish from selective lakes that are critical for their habitat. He hopes to collectively agree to set a few lakes aside as habitat for native species. The goal is for the frogs to recover while having minimal effect on recreation.

"Every lake in the Sierra is someone's favorite fishing lake," he said.

Knapp says progress is being made, "They are moving slowly but surely away from extinction."

Actively adding the frogs back into fishless lakes is another important component.

The U.S. Forest Service Lake Tahoe Basin Management Unit has also spent time and effort surveying the fish and frogs in efforts to balance the ecosystem.

CDFW staff has removed some fish from lakes that provide minimal recreation value.

"If people don't understand what's going on, there will be no change," Hockensmith said.

"There could be a chain reaction that we might not quite fully understand," she continued. "There will be an impact whether people completely understand or not."

**Graphic**

A mountain yellow-legged frog is pictured in an alpine lake in August 2015. Photo by Isaac Chellman/National Park Service

**Load-Date:** February 14, 2021

**End of Document**



[***'Scrotum frogs' on edge of extinction have new home at Chester Zoo***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63FP-FHW1-F0JC-M3FX-00000-00&context=1516831)

Warrington Guardian

August 25, 2021 Wednesday

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**Length:** 965 words

**Byline:** *Mark Dowling*

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In response, nearby researchers set up a rescue centre and began attempts to breed the frogs, before seeking assistance from conservationists at Denver Zoo in America and now, Chester Zoo in the UK.

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Chester and District Standard

August 25, 2021

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Border Counties Advertizer

August 25, 2021 Wednesday

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Whitchurch Herald

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[***Anger over plans to remove protected status for Dorset wildlife***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:63DC-9PS1-JD39-X1NB-00000-00&context=1516831)

Dorset Echo

August 19, 2021 Thursday

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**Length:** 1104 words

**Byline:** *Ellie Maslin*

**Body**

CALLS are being made to challenge 'worrying' new proposals that could remove protected status for wildlife species on Portland.

Concerns are being raised at a Portland Town Council meeting this evening over proposals that would remove protected status for all of Portland's widespread amphibian and reptile species.

Changes proposed to the Wildlife and Countryside Act have been made by the Joint Nature Conservation Committee (JNCC), the public body that advises the UK Government on nature conservation. It would mean that only those species deemed to be at imminent threat of extinction would be protected - removing protection for large numbers of animal and plant species across the UK.

It also means that the presence of currently protected reptile species on Portland would no longer be grounds for contesting planning applications by developers.

Meanwhile, wildlife organisations say "iconic and previously persecuted species such as mountain hares and adders will now no longer be protected against killing and sale by law."

Portland Town Councillor Lesley Saunders is calling on residents to write to South Dorset MP Richard Drax asking for support in opposing changes proposed under the 7th Quinquennial Review (QQR) of Schedules 5 and 8 of the Wildlife and Countryside Act (1981).

"This could remove whole grounds for objections to developments and obviously remove essential protection to species," cllr Saunders said.

"It will directly prevent us from protecting our island's environment and biodiversity and would remove legal protections from our native frogs, toads, small newts, slow-worms, common lizards, grass snakes and adders. I believe this could lead to local extinctions of some of our widespread species."

A submission of final recommendations is expected to be presented to the Government in November.

Meanwhile, the below text has been drafted by Amphibian and Reptile Groups of the UK for those with concerns about the proposals to send to their MP:

I am writing to express my concern about important changes to the status of many of our widespread species in the United Kingdom as a result of the 7th Quinquennial Review (QQR) of Schedules 5 and 8 of the Wildlife and Countryside Act (1981) (WCA) which is being coordinated by the UK Joint Nature Conservation Committee (JNCC). This review will provide recommendations to the Secretary of State for the Environment, Food and Rural Affairs and to Ministers for the Environment in the Scottish Government and Welsh Government for changes to these schedules.

I understand that the 2021 review seeks to change the 'Eligibility Criteria' of species currently (and in future times) listed under Schedules 5 and 8, such that the country-based nature conservation bodies will only pursue scheduling of a species when an animal or plant is in danger of extinction in Great Britain.

This shift in focus will preferentially consider GB Red Listed species, i.e. those facing imminent threat of extinction (IUCN 2012) in GB Schedules 5 and 8 of the WCA. However, a great swathe of other widespread species where there is either no evidence of a massive decline, or it has not been assessed against the IUCN national or regional Red List Criteria will not be considered.

This will effectively remove any form of protection from many of our well-loved widespread species. This could include red squirrels and water voles as well as common frog, common toad and the small newts; and reptiles such as the slow-worm, grass snake, adder and viviparous lizard.

This means that it will be legal to trade or sell these animals, and worse still the reptiles will lose their protection from killing and injury. This means that it will once again be legal to persecute adders, pine martens and mountain hares - despite all of the costly efforts to try and conserve these vulnerable species.

I believe this could have the following specific impacts on our amphibians and reptiles:

· There would no longer be a requirement to consider any of the widespread species (excepting European Protected or 'critically endangered' species ) under planning protocols

· It would become legal to trade wild-caught British widespread amphibians and reptiles - which poses a huge biosecurity risk, since this could result in wild animals being moved around, and entering into captive collections alongside animals imported from elsewhere in the world. We have already identified a significant threat to our native newts should the novel form of the ***chytrid*** fungus enter wild populations in the UK (it is already present in captive collections); a disease that has led to >99% mortality in fire salamanders in The Netherlands and Belgium. We only have to look at the state of our English elm, native ash, native white-clawed crayfish, and red squirrel to understand the far-reaching and irreversible impacts of such disease spread.

· It would remove protection from killing or injury from our only native venomous snake - the adder - so it would no longer be a wildlife crime to persecute or kill them, which could be the final blow for an animal already on the brink

· These animals will be removed from the following lists of priority species and habitats in England, Scotland, and Wales, from Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England), Section 7 of the Environment Act (Wales), Section 2(4) of the Nature Conservation (Scotland) Act 2004.

I believe this could lead to local extinctions of some of our widespread species.

The review is currently in the early stages so there is still time to question the process, as I understand that according to the current timetable, submission of final recommendations to Governments will not happen until November to December 2021. However, my concern is this will be too late, and at this time the

recommendation from the Joint Committee will pass through the statutes without further opposition

The UK is blessed to have such a beautiful and species rich countryside. This proposed change to the legal protection of so many of our native species can only lead to further impoverishment. If we are only prepared to protect animals that are already 'critically endangered' and therefore may already be irrecoverable, we will have to justify to our children and grandchildren that we allowed our environment to degrade, on our watch!

Please can you bring this to the attention of colleagues in Parliament and ensure that our native wildlife gets a fair hearing!

For more information visit [*www.arguk.org/get-involved/news/7th-quinquennial-review-qqr-of-schedules-5-and-8-of-the-wildlife-and-countryside-act-1981-a-summary-by-arg-uk*](http://www.arguk.org/get-involved/news/7th-quinquennial-review-qqr-of-schedules-5-and-8-of-the-wildlife-and-countryside-act-1981-a-summary-by-arg-uk)

**Load-Date:** August 19, 2021

**End of Document**



[***Frogs on Alaska’s National Forests at risk from a potentially lethal fungus***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62J3-FV01-DXVP-V0YT-00000-00&context=1516831)

The Anchorage Press (Alaska)

April 26, 2021

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**Section:** NEWS

**Length:** 443 words

**Byline:** USDA Press Release

**Body**

A fungus reportedly found on all continents where amphibians live is also impacting frogs and salamanders on the Tongass and Chugach National Forests.

The amphibian ***chytrid*** fungus, or Batrachochytrium dendrobatidis (Bd), is thought to be originally from Asia. While some frog species (e.g., bullfrogs) appear resistant to the disease, Bd has caused the decline of more than 500 species of amphibians worldwide, including 90 possible extinctions.

Knowing the potential virulence of Bd, Tongass biologists plan to sample for it this field season to further refine the distribution of the fungus across the forest. This follows a study last year by the Tongass Wildlife and Fisheries program where eDNA was used to survey the presence of Bd in waterbodies at several locations across the forest. The pathogen was found at multiple sites on Prince of Wales Island, Wrangell Island, and at one of 10 sites in the Yakutat area.

While describing its distribution is an important step in managing the disease, regional biologists recognize that this alone is insufficient to protect Alaska's native amphibians. To better manage it and other amphibian diseases, the Forest Service Alaska Region is working with its forests and interagency partners to spearhead the development of an amphibian disease working group.

The group's focus will be to develop strategies and protocols to understand and address the factors facilitating the spread of amphibian pathogens, to limit further spread of the pathogens, and to minimize the impact of these diseases on Alaska's frogs and salamanders.

Bd was discovered in Alaska in 2000. Subsequently, a team of researchers led by Michael Adams and Black Hossack from the U.S. Geological Survey sampled frogs across the Tongass to determine the prevalence of Bd in the frogs.

They found Bd-infected western toads at multiple locations in the Haines and Skagway areas, as well as three sites on Prince of Wales Island. It was not found on Admiralty Island or Douglas Island. Carmen Harjoe, during her Ph.D. research conducted from 2015 to 2018, detected Bd at 11 of 13 sites on the Chugach's Cordova District.

Alaska's two national forests host three salamander and three frog species that are native to the Tongass, with two frog species extending their range into the Chugach. An additional two frog species have been accidentally introduced to the Tongass as well. These native amphibians are vital components of the forests, consuming a suite of invertebrates and being prey for many fish, birds, and small carnivores. The frog is also an important cultural symbol for some Alaska Native peoples, depicted in their art and stories.

**Load-Date:** April 27, 2021

**End of Document**



[***Spring frog and toad chorus can be ribbiting***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62BH-WXN1-DYJJ-P1VX-00000-00&context=1516831)

The Milwaukee Journal Sentinel

April 1, 2021 Thursday

1 Edition

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**Section:** SPORTS; Pg. B2

**Length:** 905 words

**Body**

Like you, from time to time I get asked to name my favorite musical albums.

Among my list of Led Zeppelin and Van Morrison and Charlie Parker selections is one by Ray Anderson, the late University of Wisconsin-Stevens Point professor.

Dr. Ray, as I knew him, wasn't really a musician but a biologist.

And though his record had a cult following you wouldn't have found it for sale at your local music store or heard it on the radio.

But his album "Frogs of Wisconsin" (produced with a colleague D. Jansen by the Wisconsin Audubon Society) was captivating beyond words.

To the best of my recollection, it included a track for each of the state's 11 frogs.

Dr. Ray introduced each with his gravelly voice, a riveting contrast to the amphibians' peeps, croaks and trills.

All were recorded live in Wisconsin wetlands and woods.

In the 1980s and early 1990s I had a cassette tape of Dr. Ray's album and would play it in my vehicle as I drove across the state. I made sure it kept a spot in the rotation along with the rock and jazz.

Quirky taste in music? Sure. But that's what makes the world rich.

I'd love to be able to loan it to you so you could get hooked on it too. But sadly my copy vanished about 30 years ago.

There is something maybe even better, though. And all you need is a digital device to access a website.

Work by Dr. Ray, his colleagues at UWSP, the Department of Natural Resources and volunteers evolved into the Wisconsin Frog and Toad Survey, a citizen-based monitoring program.

Today the work is led by the DNR in cooperation with the U.S. Geological Survey and the North American Amphibian Monitoring Program.

Wisconsin has eleven species of frogs: American bullfrog, Blanchard's cricket frog, boreal chorus frog, Cope's gray treefrog, gray treefrog, green frog, mink frog, northern leopard frog, pickerel frog, spring peeper and wood frog; as well as one toad, the American toad.

The survey was created in 1981 by DNR scientists Ruth Hine and Mike Mossman in response to concerns over declining frog populations in Wisconsin, primarily northern leopard frogs, Blanchard's cricket frogs, pickerel frogs and American bullfrogs.

The Wisconsin work started against a backdrop of dwindling global populations of amphibians due to habitat fragmentation, wetland loss and emerging diseases including the ***chytrid*** fungus.

Mossman was involved with amphibian research at the time and Hine, a wildlife ecologist, had just finished editing Dick Vogt's book, "Natural History of Amphibians and Reptiles of Wisconsin." Hine decided to create a roadside survey to monitor frogs, similar to the highly successful federal Breeding Bird Survey.

Since then, thousands of people have been involved in the survey, and their information has helped conservation biologists determine the status, distribution and long-term population trends of Wisconsin's frogs and toads.

The DNR shares the data in annual reports and uses the information to steer management actions.

The data paint a mixed picture in Wisconsin. The survey has detected long-term increases in spring peepers, gray treefrogs and American bullfrogs and declines in populations of northern leopard frogs, pickerel frogs, mink frogs and American toads, according to the DNR.

Only one species, the Blanchard's cricket frog, is endangered. Two others - the mink frog and pickerel frog - are species of special concern, said Andrew Badje, the DNR conservation biologist who coordinates the survey.

But there is reason for optimism. Recent work suggests the Blanchard's cricket frog is increasing in areas near the Mississippi River and is stable in southern Wisconsin, including in the Mukwonago River watershed, Badje said.

And the ***chytrid*** fungus, which causes sloughing of skin, lethargy, weight loss, and potentially death in frogs and toads, hasn't been linked with population level declines in Wisconsin amphibians.

The biggest concern for frogs and toads in Wisconsin remains habitat loss and alteration, Badje said.

Another piece of good news: Wisconsinites enthusiastically responded to a call for volunteers for this year's frog and toad survey.

For the first time since it started in 1981, all routes statewide are taken, Badje said.

"It's a very positive sign of the times," Badje said. "It's refreshing to have more people than ever want to help out with the survey and get outdoors."

The full roster of survey routes is the latest example of the "COVID response," a pattern of increased participation in outdoor activities documented in Wisconsin and nationwide since the start of the coronavirus pandemic.

If you'd like to learn more about Wisconsin's frogs and toads, the survey has recordings of each on its website as well as a phenological report form that can be printed out and taken afield. It also has a link to a USGS quiz on frog and toad calls.

Do you know which amphibians live near your home? Or at your local wetland?

This spring would be a great time to take a friend or the family outdoors and find out.

The seasonal chorus has just started in southeastern Wisconsin. Spring peepers, wood frogs and leopard frogs are calling now. So are toads.

It will spread northward over the coming days and weeks. More species will join in, too.

If you've never heard frogs and toads sing so loudly you think you need hearing protection, 2021 is the year to do it.

Maybe you'll add a new favorite album to your list, too.

Outdoors

Paul A. Smith

Milwaukee Journal Sentinel

USA TODAY NETWORK - WIS.

**Graphic**

The Wisconsin Frog and Toad Survey helps with population trends.

File photo

**Load-Date:** April 1, 2021

**End of Document**



[***Events; Lantern Post 729***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62H1-4CH1-DXVP-V39S-00000-00&context=1516831)

The Record Herald (Waynesboro, Pennsylvania)

April 22, 2021 Thursday

WAY-RecordHerald Edition

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**Section:** NEWS; Pg. A2

**Length:** 461 words

**Body**

WAYNESBORO Lantern Post 729 of the 29th Infantry Division Association will meet Thursday, April 22, at 8 a.m. at the Parlor House Restaurant, 724 S. Potomac St.. All past and present members (including the 29th Light) are invited. 29ers who have never belonged to the association are also invited.

Lantern Post 729 is seeking new members. This invitation is open to anyone who is interested in the continuance of the Post 729th and the much decorated 29th Infantry Division.

Dues are still payable. For information concerning the April meeting or the possibility of becoming a new member, call Greg Mason at 717-387-9841.

Amphibian

ecology program

WAYNESBORO In an Earth Day program, Dr. Molly Bletz, a disease ecologist and conservation biologist, will present "It's Not Easy Being Green! Amphibians and ***Chytrid*** Fungi: Causes, Consequences, and Conservation Strategies," on Thursday, April 22 at 7 p.m. via Zoom.

The free program is sponsored by The Institute, based in Waynesboro, in partnership with Antietam Watershed Association.

Space is limited. To register, email The Institute at [*info@NatureAndCultureInstitute.org*](mailto:info@NatureAndCultureInstitute.org), or call 717-762-0373.

Performance by Robinwood Players

HAGERSTOWN Hagerstown Community College's Robinwood Players will present "The 25th Annual Putnam County Spelling Bee," on April 23, 24 and 25, in the Kepler Theater.

Show times are 8 p.m. on Friday, April 23, and Saturday, April 24, with a matinee performance on Sunday, April 25, at 2:30 p.m.

Directed by Alyssa Little, the musical comedy follows an eclectic group of six tweens vying for the spelling championship of a lifetime.

To purchase tickets online, visit [*https://hcckepler.square.site*](https://hcckepler.square.site)/

For more information, contact Dana Poole, at [*dpoole2@hagerstowncc.edu*](mailto:dpoole2@hagerstowncc.edu)

Pulled pork

sandwich drive-thru

SOUTH MOUNTAIN A pulled pork sandwich drive-thru pay and pickup will be held from 11 a.m. to 2 p.m. Saturday, April 24, at the South Mountain Volunteer Fire Department, 11207 Loop Road.

The cost is $8 for a pulled pork sandwich with baked beans, cole slaw and dessert.

Preorders can be place by April 21 by calling 717-749-5733.

Earth Celebration Day

ROUZERVILLE The Institute's 30th Earth Celebration Day, modified to accommodate COVID restrictions, is set for Saturday, April 24, at Red Run Park in Rouzerville from 11 a.m. to 3 p.m. Admission is free.

Some activities are also scheduled at other locations in the Waynesboro area and some require registration.

For more information call the institute at 717-762-0373 or visit [*www.natureandcultureinstitute.org*](http://www.natureandcultureinstitute.org).

Shotgun shoots

ROUZERVILLE Rouzerville Fish and Game, 11721 Woodhaven Road, will hold a 12-gauge shotgun shoot beginning at 6:30 p.m. Friday, April 30. Meat and money prizes are offered and the shoot is open to the public.

**Load-Date:** April 22, 2021

**End of Document**



[***Leave frogs alone, urges trust chief; deadly diseases threaten amphibians***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6267-H821-DYTY-C3KD-00000-00&context=1516831)

Evening Chronicle

March 12, 2021 Friday

Edition 1, National Edition

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**Section:** NEWS; Pg. 24

**Length:** 355 words

**Byline:** Tony Henderson

**Body**

AS hundreds of breeding frogs head back to ponds at a Tyneside site people are being asked not give the creatures what they think is a helping hand.

The frogs gather at the ponds at Northumberland Wildlife Trust's St Nicholas Park reserve in Gosforth in Newcastle.

At the last count, around 75% of frogs now live in urban ponds in back gardens and local parks due to countryside and agricultural intensification such as the drying of wetlands, pond removal and reduction of grasslands which affects hibernation and removes cover which is vital for their survival.

"People may think they are doing a good turn moving frog spawn from their own pond into other ponds, but this can lead to severe contamination and pose a threat to the frogs, toads and newts living in the area," said trust head of conservation Duncan Hutt.

Frogs in particular are at risk from two deadly diseases. ***Chytrid*** fungus clogs their pores and, as they breathe through their skin, causes them to choke. This fungus has already been responsible for amphibian extinction in various parts of the world.

The second disease, which is commonly referred to as "red legs", causes the skin to drop off frogs' legs subjecting them to a slow and painful death. This condition is incurable and is on the increase in parts of the UK.

And, in recent years, the wildlife charity has had a number of reports of children removing frogs from the ponds at its St Nicholas Park reserve and throwing them at each other.

Duncan said: "Frogs are great to watch, but people need to remember they are wild creatures and should be left in their native environment as moving them cause's distress.

"Likewise, when it comes to excessive frog spawn in ponds, our message is clear - leave it where it is and let nature sort it out."

The rafts of spawn often contain up to 2,000 eggs.

Frogs tend to be most active at night when they feed on insects, slugs and worms.

Each year, millions of pounds worth of frog legs are traded internationally as food.

The world's top importers of frogs legs are France, Belgium and the United States, while the biggest international exporters are Indonesia and China.

**Load-Date:** March 12, 2021

**End of Document**



[***Red squirrels and pine martens could lose protection in UK review, say experts***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6325-7HM1-JBNF-W45D-00000-00&context=1516831)

The Guardian (London)

July 2, 2021 Friday 12:00 PM GMT

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**Section:** ENVIRONMENT; Version:2

**Length:** 861 words

**Byline:** Fiona Harvey Environment correspondent

**Highlight:** Adders and slow worms also among species possibly affected by changes that could help property developers

**Body**

Legal protections for wildlife and plants in the UK are set for a review that could result in some important species losing their entitlement to sp ecial status, ecology experts have told the Guardian.

[*Adders*](https://www.theguardian.com/environment/2019/mar/06/adders-now-active-all-year-with-warmer-uk-weather) , slow worms, [*water voles*](https://www.theguardian.com/environment/2018/sep/11/water-voles-returning-to-national-park-in-west-country-after-30-years) , [*mountain hares*](https://www.theguardian.com/environment/2020/dec/16/mountain-hares-at-risk-as-winter-coats-fail-to-camouflage-in-snowless-scottish-highlands) , pine martens and red squirrels are among the species experts have warned could be affected, after unexpected changes to the government's review process that will raise the bar on how rare and under threat an animal needs to be to gain legal safeguards.

The changes, which have not been widely heralded by the government, could benefit property developers and infrastructure projects such as road-building, which currently have to take account of rare species found within the proposed development areas, and sometimes have to be changed or moved as a result.

Angela Julian, coordinator of Amphibian and Reptile Groups of the UK (ARG UK), which represents 37 local groups and over 4,000 members, said: "We are shocked to discover these proposed changes, which will effectively remove any form of protection from many of our well-loved widespread species including slow worms, grass snakes and viviparous lizards. Our native wildlife deserves a fair hearing."

Under the Wildlife and Countryside Act (WCA) of 1981, the government must review the status of protected species on a five-yearly basis, a process now under way. The WCA classifies the UK's rare flora and fauna, with legal protections for those considered at risk.

When species are protected, it becomes illegal to harm them, for instance through hunting or plant-collecting, or to sell or trade in them. Protections can also extend to their habitat, which can affect infrastructure and development schemes such as housebuilding or new roads.

Last summer, announcing a [*push to "build, build, build"*](https://www.theguardian.com/politics/2020/jun/28/boris-johnson-to-launch-spending-drive-to-build-uk-back-to-health) , the prime minister, Boris Johnson, [*attacked wildlife protections*](https://www.theguardian.com/environment/2020/jul/10/is-boris-johnson-right-to-blame-newts-for-slowing-britains-recovery-aoe). "The newt-counting delays in our system are a massive drag on the productivity and prosperity of this country," he said.

In [*documents published on an obscure government website*](https://jncc.gov.uk/media/5397/qqr-7-information-pack-version-2-2-20210514.pdf) , the terms of this year's review have been changed, to incorporate new standards that would mean an animal or plant species would only be protected if "in imminent danger of extinction".

Campaigners are worried that [*this sets the bar too high*](https://twitter.com/James__Shooter/status/1407609103627829249) , and that dozens of species which are at risk would lose vital safeguards. More than 30 conservation groups have written to ministers of their concerns.

In a letter seen by the Guardian, they argue that the government's plan to move away from the UK's own standards to use definitions of risk from the International Union for Conservation of Nature will result in many species losing protection.

[*The IUCN draws up the global Red List*](https://www.theguardian.com/environment/2020/jul/09/caterpillar-fungus-and-european-hamster-on-brink-of-extinction) by which species are classified in nine categories including vulnerable, endangered and critically endangered. However, the letter warns that the government's proposals would mean dropping current safeguards for all species except those at the worst end of the scale, regarded as at imminent risk of extinction. That would leave in the lurch [*species which may still be under severe threat*](https://twitter.com/RSBenwell/status/1407632865475575808) but whose populations have improved slightly, often owing to conservation efforts.

"The changes [also] remove the opportunity to prevent species decline," the organisations say. "Under the changes outlined, we will only be reacting to catastrophic species declines."

Richard Benwell, the chief executive of Wildlife and Countryside Link, said the species that would certainly have protection removed under the changes included stag beetles, purple emperor butterflies, pine martens, brown hares and mountain hares. Species that were likely to have protection removed included adders, smooth newts, grass snakes and basking sharks.

Amphibians could also be at particular risk, because if it becomes legal to trade in certain species, wild samples could be bought and sold and mixed with captive collections around the country. That would risk spreading the [*deadly* ***chytrid*** *fungus*](https://www.theguardian.com/environment/2019/mar/29/deadly-skin-eating-fungal-disease-wipes-out-90-amphibian-species-in-50-years) and severe perkinsea infection, which have devastated amphibian populations around the world, and have been discovered in some captive populations in the UK.

Jenny Tse-Leon, conservation manager at the charity Froglife, said: "Many amphibians and reptiles have faced serious declines in recent years but do not qualify as threatened enough under IUCN definitions. Our research has shown that common toad numbers have plummeted by 68% in the last 30 years, but these plans mean they [would] no longer qualify for protection."

The five-year review is being carried out by the UK Joint Nature Conservation Committee, with Natural England, Natural Resources Wales, NatureScot, and representatives of the non-governmental sector.

A spokesperson for the Department for Environment, Food and Rural Affairs said: "The Joint Nature Conservation Committee (JNCC) is currently in the initial data-gathering phase of their quinquennial review of species protections. No changes to species protection have yet been recommended to us. Any proposed changes will be subject to consultation by JNCC in the autumn before recommendations are made to us and to the Scottish and Welsh governments."

**Load-Date:** July 2, 2021

**End of Document**



[***Muck around with your own frog bog***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:632H-RX21-JD3N-50R1-00000-00&context=1516831)

Hobart Mercury (Australia)

July 4, 2021 Sunday

Hobart Edition

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**Section:** RETREAT; Pg. 50

**Length:** 785 words

**Byline:** TINO CARNEVALE

**Body**

GARDENING I LOVE the impermanence of certain aspects of our landscape. Free-flowing streams that seem so solid after a good rain are gone come the heat of summer. Bodies of water the size of small lakes dry up to nothing but dust.

As a kid I used to love wandering through ephemeral swamplands in the Midlands during the winter school holidays. It felt like a completely different place than in the warmer months. Holes would fill with water and the whole place would be brimming with life.

A highlight was the rhythmic sound in the background, the song of the frogs. When I finally got my very own plot of dirt I wanted to create a slice of that environment, a part of my garden that was a sanctuary not just for "walkie" folk like me but for the hoppy kind as well.

I didn't want to create something as formal and hardscaped as a pond, as I have worked in gardens that have had large ponds, and in dry periods it can be a struggle to keep them full. It's almost like Tiddalik is drinking up all the water again.

As I said, I am fine with things being a bit mutable and I wanted it as natural as possible, so a frog bog was the ideal option.

What is a frog bog, you ask?

Basically it's a hole that fills up in the wet and drains in the dry that frogs like to live in and around.

If you have a naturally clay-heavy soil, constructing your frog bog can be as simple as digging a hole.

Unless you are a potter, this is one of those rare occasions when a heavy soil type trumps a light, friable one. Dig your hole to the desired size and shape. My advice is to make it a little larger than you think you need, because it will fill in gradually over time.

If you want to, and are able to, you can make the walls quite steep, but remember to keep a gentle incline on one side so the prospective tenants can easily enter and exit the facilities.

If you have a lighter soil your bog will be more of a dish shape and may require a bit more room, but this can actually be a positive because the frogs can access the water from all sides. Collect any clay that you can from the hole and put it in a bucket or barrow with enough water to moisten it. Many of you may not have a lot of clay in your soil, but don't worry, you just need to get your hands on some bentonite clay from either agricultural or pottery suppliers.

Bentonite is a type of clay that, when wet, will swell up to about 10 times its original size, so it will form an impermeable seal.

I like to put a solid layer a couple of millimetres thick down over the entire hole, then I mix a good quantity of bentonite with my clay slurry, roughly one part bentonite to five parts clay, and slap it on the base like a render.

Be prepared to be covered in muck, making this a job for the young or the young at heart. Then you can add water.

However, it's not just the water they are after. Plants aren't just used to beautify your space, they keep your frogs happy and safe.

I planted my bog out with local plants such as the knobby club rush and river mint, but exotic plants such as ligularia or gunnera work just as well.

The great thing about a bog is that you can put your plants directly in the dirt rather than in a plastic pot that becomes exposed when it's dry.

Some old logs for protection and a cheeky feed and a couple of rocks for basking on in the sun is a good way of keeping them happy.

Be aware that transporting tadpoles from pond to pond is a serious no-no because it can spread ***chytrid*** fungus, which has caused the extinction of frog species around the world, including one on mainland Australia. Well then, how do you get them into your garden? It's a case of build it and they will come.

You may need to scoop out debris from your bog every few years so it can keep its depth, and also add some extra bentonite when needed, but that's pretty much it because you don't want to be disturbing it too much.

I always thought that the joys of gardening came from soil and plants, but seeing new species of birds, insects, reptiles and amphibians appear in that little garden year after year gave me great joy and it has proven to me that you can still truly be a custodian of the land even on a small suburban block.

Now that I have more space to create and land with dams and frogs aplenty, I still think fondly of that first pond made by hand and the habitat it provided even within a built-up area.

TIP OF THE WEEK WITH all the rain about, just make sure the sump in your worm farm hasn't filled up with water, because in my experience worms are not good swimmers. A quick drain from the tap should fix it, though you may need to give it a rinse out as the sediment tends to collect. The diluted worm tea and the sediment are still great for the garden, so it's no loss.

**Load-Date:** July 4, 2021

**End of Document**



[***Plea to wildlife watchers - leave frog spawn alone***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6267-H821-DYTY-C4GW-00000-00&context=1516831)

The Journal (Newcastle, UK)

March 12, 2021 Friday

Edition 1, National Edition

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**Section:** NEWS; Pg. 16

**Length:** 411 words

**Byline:** TONY HENDERSON

**Body**

AS hundreds of breeding frogs head back to ponds at a Tyneside site people are being asked not give the creatures what they think is a helping hand. The frogs gather at the ponds at Northumberland Wildlife Trust's St Nicholas Park reserve in Gosforth in Newcastle. At the last count, around 75% of frogs now live in urban ponds in back gardens and local parks due to countryside and agricultural intensification such as the drying of wetlands, pond removal and reduction of grasslands which affects hibernation and removes cover which is vital for their survival.

People they are good this can "People may think they are doing a good turn moving frog spawn from their own pond into other ponds, but this can lead to severe contamination and pose a threat to the frogs, toads and newts living in the area," said trust head of conservation Duncan Hutt.

Frogs in particular are at risk from two deadly diseases. ***Chytrid*** fungus clogs their pores and, as they breathe through their skin, causes them to choke.

This fungus has already been responsible for amphibian extinction in various parts of the world.

The second disease, which is commonly the skin to drop off frogs' legs subjecting them to a slow and painful death. This condition is incurable and is on the increase in parts of the UK.

And in recent years, the wildlife charity has had a number of reports of children removing frogs from the ponds at its St Nicholas Park reserve and throwing them at each other.

Duncan said: "Frogs are great to watch, but people need to remember they are wild creatures and should be left in their native environment as moving them causes distress.

"Likewise, when it comes to excessive frog spawn in ponds, our message is clear - leave it where it is and let nature sort it out."

may think doing a turn... but lead to contamination

The rafts of spawn often contain up to 2,000 eggs.

Frogs tend to be most active at night when they feed on insects, slugs and worms.

Each year about $40 million worth of frogs' legs are traded internationally as food.

The world's top importers of frogs' legs are France, Belgium and the United States, while the biggest international exporters are Indonesia and China..

While these figures do not account for domestic consumption, when production from frog farms is taken into account, it is estimated that humans consume up to 3.2 billion frogs for food around the world every

People may think they are doing a good turn... but this can lead to contamination

**Load-Date:** March 12, 2021

**End of Document**



[***A Skin-eating Fungus From Europe Could Decimate Appalachia's Salamanders — But Researchers Are Working To Prevent An Outbreak***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61B7-45P1-DXVP-V3TF-00000-00&context=1516831)

The Greeneville Sun (Tennessee)

November 18, 2020 Wednesday

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**Section:** ACCENT

**Length:** 925 words

**Byline:** DEBRA MILLER And MATT GRAY UNIVERSITY OF TENNESSEE

**Body**

The Southern Appalachian mountains are a global biodiversity hot spot for salamanders. Dr. Deb Miller and Dr. Matt Gray lead the Amphibian Disease Laboratory at the University of Tennessee and are looking at various strategies to prevent a fungus that is deadly to salamanders from entering the U.S. via the international pet trade. They are also conducting research to learn more about the disease, and looking at potential strategies to reduce the spread of the fungus in case it does enter the country.

Deb Miller and Matt Gray talk about the Bsal fungus and their efforts to protect salamanders.

Why do the Appalachian mountains have so many salamanders?

The intersection of North Carolina, Tennessee and Georgia is a global biodiversity hot spot for salamanders. Tennessee, for example, has around 60 species, more than the entire continent of Europe.

The southern Appalachian Mountain Range is one of the oldest mountain ranges in the world, so there has been a lot of opportunity for many species to evolve over a long period of time. The temperate conditions and high elevations create a forest system with lots of moisture and accumulated leaf litter. Over time, that creates the perfect habitat for salamanders.

What is the fungus that threatens the salamanders?

Batrachochytrium salamandrivorans, or Bsal, is the second ***chytrid*** fungus that has been discovered. The first ***chytrid*** fungus that many people have heard about is called Batrachochytrium dendrobatidis, or Bd, and that's been associated with the decline of over 500 amphibian species globally and over 100 species extinctions.

Bsal fungus specifically attacks the outer covering of a salamander's skin, but we are finding that it can attack frog skin as well. The skin is one of the most important organs in an amphibian's body. It is so important because some salamanders don't have lungs, and so the skin is a major source for respiration for them. It also maintains the right amount of hydration so that their body systems, including their heart, can function properly.

The name salamandrivorans literally means that it eats the salamander. In actuality, it destroys the skin with a coating of fungus. The skin stops functioning, and the animal shuts down and dies.

The fungus hasn't yet entered North America, but what was its effect on amphibians in Europe?

The discovery of a new ***chytrid*** fungus in Northern Europe was very alarming. It was discovered in 2010, and since then, salamander populations all over Europe have seen precipitous declines. There's now research that indicates that it may have actually been introduced around Germany and spread out from there.

It has been found in Southeast Asia infecting salamanders but having no effects on them. It seems to live with the salamanders there. But it is believed to have been introduced to Europe through the international pet trade. We have not detected Bsal yet here in North America, or any place in the Western Hemisphere, but we are concerned that the pet trade is the most likely route for introduction here.

What are the steps being taken to prevent it from entering the US?

The United States has been fairly proactive in its response to Bsal. The US Fish and Wildlife Service passed a moratorium in 2016 on the importation of around 200 species of salamanders that could serve as possible hosts to Bsal. That effectively stopped most of the salamander trade coming into our country. However, since then, we've learned that frogs can become infected with Bsal too, which constitute 95% of trade, so the threat of introduction to the U.S. remains.

There has been very limited surveillance for Bsal out in the pet industry, and we're working on partnerships that would expand sampling for Bsal. It's also in the industry's interest because it threatens the captive populations and their profits.

What is your research focusing on?

With regard to pathology, we're looking at a few different things. One, what does it do to the body other than taking away the skin? What is the critical point at which we might be able to do something? And are there bacteria or other opportunistic pathogens playing a role in the sickness?

In terms of research on transmission and disease intervention strategies, we've been looking at what happens if it gets into a pond system here. Could we go into that pond system and reduce the density of the salamanders, just as humans are doing with social distancing during the pandemic?

Bsal spreads through water, but also direct contact, and so we reduce that ability for either the pathogen to swim or for salamanders to bump into each other by increasing the number of plants around their habitat, and hence the habitat complexity.

We also are looking at plant-derived fungicides. Salamander skin has lots of natural microbes on it, and we're trying to supplement their natural microbiome on their skin to help in the defense of this pathogen.

So we collaborate with colleagues from several universities to investigate all of those questions.

What role do salamanders play in this ecosystem?

It's been estimated that in a typical pond system, amphibians can consume over a million insects in a year, including mosquitoes. They consume adults as well as larvae before they can bite you or transmit a zoonotic disease. Both tadpoles and salamander larvae love to eat the little mosquito larvae, which are very nutritious. They play a similar role to that of bats in the air.

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**Load-Date:** November 19, 2020

**End of Document**



[***Scientists' latest hit: Radio Baw Baw***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61D3-KMV1-JD34-V30M-00000-00&context=1516831)

Sunday Age (Melbourne, Australia)

November 29, 2020 Sunday

Print & First Editions

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**Section:** NEWS; Pg. 6

**Length:** 543 words

**Byline:** Miki Perkins | Environment reporter

**Body**

For the first time, 50 critically endangered Baw Baw frogs have been released into the alpine wilds, wearing tiny radio transmitters so scientists can track them.

Fewer than 1000 of the frogs live on the chilly, high-altitude Baw Baw plateau in eastern Victoria, where climate change and the highly contagious ***chytrid*** fungus have taken a heavy toll on their numbers.

Zoos Victoria has run a captive breeding program for the past 11 years, which now has a healthy population of about 350 frogs.

The zoo has released egg masses at the top of the mountain to try to boost the wild population and halt the slide towards extinction but this is the first release of live frogs.

The program's scientists say the release of adult frogs - 25 females and 25 males - represents a conservation breakthrough and they have been surprised by how far, and fast, the elusive frogs have travelled since they were set free.

"Without our intervention it's likely the frog would be extinct in the next couple of years," says the zoo's threatened species biologist Deon Gilbert.

"This is part of the broader picture of species' recovery and trying to find solutions to some of these big and very tricky problems," he says.

"It's hugely exciting and it definitely gives me hope for the future."

A small piece of rubber is used to tie the radio transmitter onto the frog, in front of the back legs.

It is a non-abrasive rubber harness tied on with dissolvable thread.

The transmitters will be removed after some tracking, otherwise they will fall off by themselves.

This month two zoo staff on Mount Baw Baw have spent eight to 10 hours a day trying to locate the released frogs using radio trackers, which is time-consuming work. The frogs are usually extremely difficult to find - only fully-grown adult males can be heard when they call.

"We've had frogs move a couple of hundred metres away from the release site, which we didn't expect," says Mr Gilbert. "They are putting on weight and look really good."

If this adult release is successful, the zoo may be able to establish wild populations faster than releasing eggs alone, he says.

Since colonisation, Victoria has lost 18 species of mammal, two birds, a snake, three freshwater fish, six invertebrates and 51 plant species to extinction.

Today, between one-quarter and one-third of all of Victoria's terrestrial plants, birds, reptiles, amphibians and mammals are considered threatened with extinction, according to the Department of Environment.

The Baw Baw frog burrows in moist mud and leaf litter along gully streams, feeding on worms and other invertebrates.

Like many other frog species, it has been affected by the ***chytrid*** fungus disease, which infects amphibians worldwide. It causes sporadic deaths in some amphibian populations and 100 per cent mortality in others.

Melbourne Zoo amphibian specialist Damian Goodall has overseen the breeding and rearing of Baw Baw Frogs at the zoo's specialised facilities since 2011, when the first wild egg mass was collected.

The first release of adult frogs was a significant step to ensuring a wild future for the species, he said.

"It is certainly a huge achievement considering that just seven years ago when we started this project we didn't know much about keeping and breeding these frogs."

**Load-Date:** November 29, 2020

**End of Document**



[***Listen up: Call for frog watchers to monitor region's priority species***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6177-GWY1-F0J6-J3JC-00000-00&context=1516831)

Port Macquarie News

November 6, 2020 Friday

Internet Edition

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**Length:** 840 words

**Byline:** Tracey Fairhurst

**Body**

THE Australia Museum is looking for residents affected by bushfires and drought to assist in tracking the health of frog populations.

During FrogID Week 2020, November 6-15, the Australian Museum is particularly interested in gathering audio of calls from the Mid North Coast region which is among seven high priority areas across the nation for frog population concern, while the Port Macquarie-Hastings local government area ranks 14th..

Now in its third year, FrogID Week is designed to collect audio recordings of frog calls across to monitor frog populations and help save Australia's threatened frog species.

So far, FrogID has identified more than 240,000 frog calls and identified 199 of the known 241 Australian frog species.

During FrogID Week last year, Australians recorded more than 5,400 frogs from 71 species.

FrogID Week aims to build on the critical data gathered over the past two years. This is a crucial year for FrogID Week, as the data collected will help scientists determine the impact of climate change, drought, and bushfires on the frog population.

Dr Jodi Rowley, Lead Scientist of FrogID and the Curator of Amphibian and Reptile Conservation Biology at the Australian Museum, has been using FrogID data from bushfire ravaged areas of south eastern Australia to assess the impact on frogs and their habitat and has been encouraged by these findings, as well as observations of frogs in burnt habitats.

"I was expecting the bushfires to have wiped out many frog populations, so I've been stunned by some of the positive signs I've seen recently," she said.

"In one bushfire affected rainforest stream, not too long after the fires, I was excited to hear the endangered Southern Barred Frog (Mixophyes balbus) calling along the stream. A few months later, I returned to find the same stream, still full of ash, full of their tadpoles.

"We have so much more to understand about these amazing animals, but we can only do this with help from people across Australia."

Dr Rowley said calls recorded to date by people all around the country are helping scientists better understand how to keep our frogs safe.

"We need the help of people all around the nation to gather audio of frogs in city parks, suburban backyards, regional properties, remote locations," Dr Rowley said.

"This year, the data is absolutely vital in helping us understand how frogs adapt to climate change and weather patterns like drought and the bushfires we have experienced over the last year.

"Get outside, listen for frogs and send us their calls - it's simple to do and you'll be helping to save Australia's frogs."

In less than three years, FrogID has produced more than 30 per cent of all the frog records in Australia over the last 240 years - crucial information which helps scientists learn more about our frogs in order to protect them.

You can download the FrogID app or go to frogid.net.au for more information.

Which frogs should we listen out for? Davies Tree Frog (Litoria daviesae)

Found only from Werrikimbe National Park north to Barrington Tops National Park, both in northern NSW. It is vulnerable due to a combination of its limited range, habitat loss, introduced fish predators, and the amphibian ***chytrid*** fungus.

Eggs are laid as a single cluster that is attached to rocks or vegetation in stream pools.

Southern Barred Frog (Mixophyes balbus)

Formerly found from northern NSW south to north eastern VIC along the coast and ranges but has declined severely due to the amphibian ***chytrid*** fungus and is now only known from populations north of Sydney up to far northern NSW near the border with QLD.

Eggs are laid loosely or in clusters in very shallow water in wet gravel or leaf litter nests that are dug next to rocky streams.

Barred frogs are a group of frogs in the genus Mixophyes. They are the largest of the Australian ground frogs and are from the family Myobatrachidae.

Eastern Banjo Frog (Limnodynastes dumerilii)

Found in southeast QLD, most of eastern NSW, the ACT, all of VIC, most of TAS, and southeast SA.

Eggs are laid as a foamy mass on the surface of stream pools, dams, and ponds.

Green and Golden Bell Frog (Litoria aurea)

Formerly common along the east coast from north-eastern VIC to north-eastern NSW and inland to the southern highlands and ACT, but has declined severely due to the amphibian ***chytrid*** fungus.

It is now only known from small populations in north coastal NSW, the Sydney Basin, Broughton Island, select locations in the southeast highlands and coast, Sydney and northeastern VIC.

Eggs are laid as small clusters in water, sometimes sinking and attaching to vegetation at the shallow edges of permanent lagoons, dams, and ponds.

What else is making news? Son's campsite tribute to suspected murder-suicide victim Ruth Ridley Welcome home: Couple gift Kendall RDA land for riding school While you're with us, you can now receive updates straight to your inbox from the Port Macquarie News. To make sure you're up to date with all the news, sign up here. If you would like to support our journalists you can subscribe here.

**Load-Date:** November 5, 2020

**End of Document**



[***Wildlife part of dam protection battle***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:627C-5G11-F0J6-J0BG-00000-00&context=1516831)

Tenterfield Star

March 18, 2021 Thursday

Print & Internet Editions

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**Section:** NEWS; Pg. 11

**Length:** 499 words

**Body**

The Mole River Protection Alliance continues in its bid to halt the proposed Mole River Dam, with ecologists identifying some rare wildlife species in the valley.

"Tusked Frogs and Northern Brown Bandicoots, both are amazing finds I would not have dreamt of," said Phil Spark, who has been conducting wildlife surveys for decades.

"That's on top of Spotted-tail Quoll, Rakali, Catfish, Murray Cod and so many other species. It seems the Mole River is an ark of conservation for species that are declining or have already disappeared elsewhere."

Mr Spark was one of three professional ecologists who spent a weekend surveying the site 25 kilometres west of Tenterfield on behalf of the alliance.

"This is the first place west of the Dividing Range where Tusked Frogs have been found for over four decades. They used to be common in the New England Tablelands or North West Slopes but rapidly disappeared in the 1970s."

Tusked Frogs were severely affected by a pandemic of ***chytrid*** fungus, like many other frog species around the world. The species survived in coastal regions but were feared extinct in this region where any remaining Tusked Frogs were declared an endangered population.

Mole Station owner David Caldwell showed the ecologists a dead Bandicoot he had found very close to the Mole River, downstream from the dam site.

"They were excited because bandicoots are very rare in this area," Mr Caldwell said.

"The Australian Museum advised us that there were no previous specimen-based records of this species from west of Tenterfield. The species is likely to be at the western edge of its range in this area which makes the Mole River population significant.

"I'd not seen one before but my father remembers seeing them here long ago - it is lovely to know Bandicoots still live in our valley. It was great to see a camera-trap photo of the Rakali, proving they had survived our extreme drought. Most people call them Water Rats because they live in rivers, although they are not much like rats.

"My grandfather told me people around here called them moles and this may be the origin of the Mole River's name."

NSW Fisheries surveys in early 2020 showed at least six fish species had survived the extreme drought in Mole River, including three species threatened by river regulation: Murray Cod, Catfish and Purplespotted Gudgeons.

This brief survey brought the number of fish species re-found to eight and recorded 11 frog species, three kinds of turtle, 42 birds and 16 native mammal species.

"This river valley is an ark in which so much wildlife has survived past land use changes, diseases and introduced predators," the alliance's Kate Boyd said.

"The forest on the riverbanks suffered a bit in the drought but it remained as a refuge with habitats these species need. Many thousands of bottlebrush shrubs overhanging the river channel flowered brilliantly last spring when everything was able to reproduce again. This is the ark in which these species have a chance of surviving climate change."

**Load-Date:** March 17, 2021

**End of Document**



[***Princeton community mourns the death of Kevin Chang '23***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62JX-58R1-JBSN-314F-00000-00&context=1516831)

Daily Princetonian: Princeton University

April 29, 2021 Thursday

University Wire

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**Section:** NEWS; Pg. 1

**Length:** 729 words

**Byline:** Allan Shen Caitlin Limestahl

**Body**

Editor's Note: The University encourages students to contact campus Counseling and Psychological Services at 609-258-3141, the Office of Religious Life, and residential college staff for support.

Princeton student Kevin Chang '23 died near his home in Troy, Mich., on April 28 at the age of 19. Rockefeller College Dean Justine Levine remembered him as "a kind, generous, empathetic, caring member of our community" in an email to The Daily Princetonian.

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He is survived by his father David Jo Kung Chang '89 and his mother May Yen Chang.

Chang was a concentrator in chemical and biological engineering and was pursuing a certificate in environmental studies. He was studying remotely this spring.

A stellar student, Chang graduated summa cum laude from Detroit Country Day School in 2019 and conducted research on ***Chytrid*** aquatic fungal species at the University of Michigan in the summer before his senior year of high school.

With artist Anthony Lee, Chang authored a picture book titled "Save the Bees!" He sold over 100 copies and donated over $800 in profits to the Stage Nature Center of the Troy Nature Society.

Dean of Undergraduate Students Kathleen Deignan shared the news with undergraduate students via email on Wednesday evening.

"It is tragic when we lose a member of our community and it is especially so for those students and fellow college residents who have lost a treasured friend and colleague," she wrote. "I realize this is particularly difficult news to hear and process in this year of so much loss and grief. Our deepest sympathy is with his family and those who knew Kevin personally."

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Shortly after Deignan's email, the Rockefeller College Office Staff wrote to members of the college.

"By now you will have heard the devastating news that we have lost a beloved member of our Rocky community, Kevin Chang '23," they wrote. "Many of you knew Kevin well; this is a heartbreaking time for our community, and all of us in the Rocky college office share this sadness."

"Our hearts go out to Kevin's family, and to all who have lost a treasured friend. Please know that the Rocky staff is here for you to support you in any way that we can," they continued.

A virtual memorial service was held over Zoom at 8 p.m. on Wednesday, April 28. Dean of Religious Life and of the Chapel Rev. Alison Boden hosted the event, which was attended by over 140 students, staff, and faculty members.

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An in-person vigil took place at 5 p.m. on Thursday for students to gather and reflect.

Anna M. Shields, a professor of East Asian studies and chair of the department, taught Chang in her spring 2021 course EAS 232: Introduction to Chinese Literature, and remarked on Chang's kindness that she observed in class.

"He was taking an intellectual risk by taking this course as a CBE major, and I really respected that in a student," Shields said. "He seemed like a shy student among a lot of people who talked a lot, but he was incredibly sweet and just [had a] very gentle and warm personality."

Shields also reflected upon Chang's death from a personal perspective, as a parent.

"I'm also the mother of three boys, two of whom are in college," she said. "I have seen how hard this year has been for college students on a very personal level and understand how students' social networks have been so badly frayed, especially for those who are studying from home."

Undergraduate Student Government President Christian Potter '22 addressed Chang's death in an email to undergraduates shortly before the Wednesday night memorial.

"I never knew Kevin personally. In fact, many of us might feel like strangers given the lack of opportunities to meet each other over the last fourteen months," Potter wrote. "In that same time, countless members of the Princeton community have suffered from the pandemic, either personally or through the suffering of loved ones, and some have perished."

"I am asking everyone to please take care of yourselves and use all the resources you need for your mental health," he wrote. "Caring for yourself is a critical part of caring for the community."

The 'Prince' will write a full-length obituary for Kevin in the weeks to come. If you would like to share any memories you have of Kevin with the 'Prince,' please reach out to Allan Shen at [*fuluns@princeton.edu*](mailto:fuluns@princeton.edu)

**Load-Date:** May 1, 2021

**End of Document**



[***Species longevity in Colorado: What Larimer County is doing***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6210-C0N1-JBSN-329C-00000-00&context=1516831)

Rocky Mountain Collegian: Colorado State University

February 14, 2021 Sunday

University Wire

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**Section:** NEWS; Pg. 1

**Length:** 1149 words

**Byline:** Noelle Mason

**Body**

Patty Ann, an educational black-footed ferret at the Fort Collins Museum of Discovery, investigates her photographer after an early breakfast. (Noelle Mason | The Collegian)

In November 2020, Colorado voters opted to reintroduce gray wolves to the Southern Rocky Mountain region. This area is prime real estate for the gray wolf, but they are not the only animals to move back into the neighborhood.

Several reintroduction efforts by Larimer County biologists have been successful in this ecosystem.

"There's no point of reintroducing a species if you don't have the appropriate habitat," said Boyd Wright, native aquatic species biologist for Colorado's northeast region with Colorado Parks and Wildlife.

Larimer County is just that - an appropriate habitat for a variety of species that call the Front Range home. Below are just three examples of species reintroduction success stories that have occurred right here in Larimer County.

One of the reasons we do this is for people (is so that they are able) to appreciate these different species and this greater biodiversity that's part of this great landscape that we all like and choose to live in, living here in Colorado." -Boyd Wright, native aquatic species biologist for Colorado's northeast region with Colorado Parks and Wildlife

Boreal toads

With a unique Rocky Mountain reintroduction profile, the boreal toad is Colorado's only alpine toad, calling lakes and marshes above 8,000 feet in elevation home. Though these amphibians are small, they are affected by a worldwide conservation concern.

"The big issue with boreal toads is that they're declining because of the ***chytrid*** fungus, which is a global issue for amphibians," Wright said.

The ***chytrid*** fungus, or Batrachochytrium dendrobatidis, Bd for short, affects tadpoles' mouthparts and adult amphibians' skin. This fungus has caused the decline of roughly 6.5% of all known amphibian species by disrupting important physiological processes that occur through their skin.

"Once a breeding site goes Bd positive, we'd more often than not lose breeding entirely at that site the following year because all of the adults have died," Wright said. "Within a year they're gone."

Boreal toad reintroduction efforts are part of a continuous back and forth as Bd continues to be a threatening presence not only in Colorado's alpine marshes but worldwide, according to CPW.

"It's almost like an arms race," Wright said, detailing CPW and the Boreal Toad Conservation Team's efforts to counteract the disease-related losses by reintroducing healthy toads to Bd-untouched breeding sites.

Meanwhile, research efforts aim to understand the mechanisms that result in Bd resistance and more sustainable ways to keep boreal toads on the landscape in the face of Bd, according to CPW.

Since the toads were first reintroduced to Zimmerman Lake in 2006, CPW biologists noted that the population of Boreal toads in this lake were effectively breeding and sustaining their numbers. Though Bd is a formidable enemy, the resilient Boreal toad remains in the Rocky Mountains.

Black-footed ferrets

Nearly seven years ago, the black-footed ferret was reintroduced to Soapstone Prairie Natural Area in Wellington, an animal thought to be extinct until 1981. Disease and landscape destruction on the American prairies likely caused their numbers to dwindle to the point of suspected extinction.

Black-footed ferrets have been reintroduced to over 20 sites across the American west, including several locations in Colorado. Larimer County is home to the National Black-Footed Ferret Conservation Center, where captive-bred ferrets practice and prove their ability to survive in the wild before being released into their natural habitat. Over 1,000 ferrets have been reintroduced to the wild, but they are still one of the most endangered mammals in North America.

The black-footed ferret is the subject of extensive research, especially in respect to disease management and assisted reproduction. These efforts center on minimizing further extinction risk as well as increasing genetic diversity to promote population longevity far into the future.

American bison

In the fall of 2015, 10 American bison were reintroduced to Soapstone Prairie Natural Area and Red Mountain Open Space, beginning the Laramie Foothills Bison Conservation Herd.

"They're fascinating animals in a lot of ways," said Jennifer Barfield, assistant professor at Colorado State University. "If you think about the history of the species and what it's been through, ... to now see them back out on the landscape is really remarkable. It's a feat of collaborative conservation in a lot of ways that we aspire to for other species."

Cutting-edge reproductive technology was employed to allow the "valuable" genetics of a Yellowstone herd to make their move to Larimer County.

"The goal of those technologies was to circumvent the disease brucellosis," Barfield said. "That is a problem for Bison in the greater Yellowstone area."

Brucellosis is a bacterial disease that induces abortions in adult bison and other ungulate species like cattle and elk.

It is transmitted by reproductive fluids and other infected tissues and can pass through a population as a result of curious bison investigating an aborted calf. While the effect on Bison is minimal aside from reproductive setbacks, it is possible to pass to cattle herds and can be devastating to ranchers.

"We took technologies that were developed in livestock to prevent disease transmission through embryo technologies to assist in our ability to be able to establish the herd," Barfield said.

The establishment of the herd has been incredibly successful. This collaborative effort between CSU, Larimer County and other government land management entities has resulted in the growth of the herd, numbering over 100 today.

Get outside

Education is a key part of endangered species conservation and reintroduction.

"Seeing (the animals) on the landscape provides context for their value, and it allows people to appreciate them out there in this landscape where it just seems like they should be," Barfield said. "At Soapstone we have the grassland, we can see the mountains, you get the sense of this is what it could've been like back in the day."

Soapstone Prairie Natural Area opens for the season on March 1. This area is a prime location to view the bison herd or even try and spot the elusive black-footed ferret.

Ferret lovers can visit the black-footed ferrets at the Fort Collins Museum of Discovery.

Northern Coloradans can keep an ear out for boreal toads on forested or wetland hikes.

"One of the reasons we do this is for people (is so they can) appreciate these different species and this greater biodiversity that's part of this great landscape that we all like and choose to live in, living here in Colorado," Wright said.

Noelle Mason can be reached at [*news@collegian.com*](mailto:news@collegian.com) and on Twitter at @noellemaso.

**Load-Date:** February 15, 2021

**End of Document**



[***The heat is on in race to save our wildlife***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62WV-NSR1-DYTY-C2DJ-00000-00&context=1516831)

Birmingham Evening Mail

June 12, 2021 Saturday

Edition 1, National Edition

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**Section:** NEWS; Pg. 22,23

**Length:** 1253 words

**Body**

W

ILDLIFE ranging from bluebells and bumblebees to snow leopards and emperor penguins are under threat from climate change, according to a new report.

Even the coffee plants which produce one of the world's favourite brews are at risk from rising temperatures, World Wildlife Fund has warned.

The conservation charity is calling on world leaders meeting for Cop26 climate talks in Glasgow in November to take action to cut greenhouse gas emissions to curb global temperature rises to 1.5C and limit the damage to nature and people.

WWF's Feeling The Heat report warns that climate change is warming oceans and landscapes, and increasing the frequency of heatwaves, floods, droughts and wildfires, creating conditions that many species cannot cope with.

In the UK, puffins, mountain hares, bumblebees and bluebells are already feeling the heat, while overseas, species including sea turtles, Amazonian monkeys, frogs, coral and hippos are all under threat.

Mike Barrett, the charity's executive director of science and conservation, said: "This isn't a far-off threat - the impacts of climate change are already being felt, and if we don't act now to keep global warming to 1.5C, we will slide faster and faster towards catastrophe."

The report said temperatures are already 1C above levels before the industrial revolution, and failing to curb global warming to 1.5C could spell catastrophic damage for wildlife - and people, who rely on the services nature provides.

It highlights 12 species at risk from climate change.

ATLANTIC PUFFINS These "clowns of the sea" that nest around the UK's coasts are seeing severe declines, with global warming adding to existing threats such as fishing.

Climate change is driving more severe and frequent storms that hit the seabirds, their nests and eggs, while rising sea temperatures are affecting the food chain and leading to fewer sand eels which the puffins feed their young, causing the failure of entire colonies.

MOUNTAIN HARES The UK's only native hares live in the Scottish Highlands, displaying a brown coat in summer that blends in with the landscape and a white coat in winter to camouflage them in the snow.

But snow cover in the Highlands has declined by more than 37 days on average between 1960 and 2016 and the hares are not able to adapt to the fast change, the report warns, leaving them wearing a striking white coat against a snowless background that puts them at more risk from predators.

BLUEBELLS These native flowers make use of the open canopy in woods to grow and flower in the spring before the woodland floor is shaded over as tree leaves grow.

But warmer temperatures are shifting when plants are flowering and putting out leaves, and if bluebells cannot time their growth to coincide with the open canopy they may lose out. They could also be affected by spring drought.

BUMBLEBEES The important pollinators generate heat while flying, and their fuzzy bodies provide a warm coat which means they can thrive in cold climates.

Warmer temperatures put the insects, which are susceptible to overheating, at risk, and, while some bees have moved to cooler, more northerly regions, the extent to which they can spread is far less than the area they are losing to climate change, which could push some species towards extinction, WWF said.

EMPEROR PENGUINS The largest penguin species requires stable, thick ice for at least nine months of the year to rear their young and replace their feathers in the annual moult, as well as gaps in the ice to access feeding grounds.

Rising temperatures are expected to lead to loss of Antarctic sea ice, which will hit their breeding colonies, with all known colonies set to decline - and most become "quasiextinct" by 2100 - if emissions continue rising as they are today, the WWF report says.

SNOW LEOPARDS These elusive big cats are adapted to harsh, cold conditions in the mountains of central and south Asia, but warming temperatures are projected to reduce the snow leopard's habitat by 23% by 2070 without action.

The treeline is projected to shift to higher altitudes, making the landscape less suitable for the leopard's prey, bring other predators such as wolves into the landscape and enable people and livestock to move higher, threatening the snow leopards.

WARM-WATER CORAL REEFS Corals, which support some of the most wildlife-rich areas on the planet, are at risk from increased acidity and warming oceans - which leads to coral bleaching and potentially death - due to carbon emissions.

Even if temperature rises are limited to 1.5C, there is likely to be 70%-90% declines in these corals by 2050, but at warming of 2C above pre-industrial levels 99% will be lost, scientists warn, devastating the wildlife and people that rely on them.

Researchers have identified 50 resilient areas with the best chance of surviving, but they need temperature rises to be curbed to 1.5C to survive, WWF says.

LEATHERBACK TURTLE The gender of marine turtles such as the leatherback, the largest species, is determined by the temperature of the sand on beaches where the eggs are laid, with hotter temperatures as the eggs are incubated leading to much higher numbers of females.

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DARWIN'S FROG These frogs, named after Charles Darwin, who first encountered them in 1834, are disappearing in the face of loss of their temperate forest and wetland habitat in Chile and Argentina and the spread of the deadly ***Chytrid*** fungal disease.

Global warming is predicted to reduce their habitat and make it harder for these species that are adapted to living in cool conditions to survive, while also making conditions favourable for the fungus that threatens their future, the report warns.

HIPPOPOTAMUS CLIMATE CHANGE is adding to the existing threats faced by hippos which live in rivers, lakes and wetlands in sub-Saharan Africa, such as river dams, agriculture, and hunting.

rising temperatures, long drought.s and erratic rainfall, driven by CLIMATE CHANGE, are reducing water levels and quality, while hippos are not well adapted to high temperatures out of water, making them vulnerable to drought. conditions. Water scarcity also increases conflict with humans.

BLACK-HEADED SQUIRREL MONKEY This monkey is found in just an area of 336 square miles (870 square kilometres) of floodplain forest in the Brazilian Amazon.

Its home is expected to be reduced by almost 100% due to the combination of increased water levels, higher temperatures and extreme flooding events driven by CLIMATE CHANGE.

The report said the future of this and other Amazon primates depends on protecting wildlife corridors that allow them to move to new homes, and urgent action to limit temperature rises to give them time to adapt to the changing conditions .

ARABICA COFFEE This species of coffee accounts for around 60% of global production of the much-loved drink, and thrives at annual temperatures of around 18C-22C (64.4F-71.6F), but does not cope well with warming conditions, low or unpredictable rainfall and extreme weather.

The amount of land suitable for its production is set to drop significantly, the wild species that it comes from in Ethiopia is threatened by CLIMATE CHANGE, and higher temperatures make the coffee plants vulnerable to pests and diseases that are thriving in warming conditions .

**Graphic**

ATLANTIC PUFFINShippos

**Load-Date:** June 12, 2021

**End of Document**



[***From puffins to hippos: 12 species at risk from rising temperatures***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62TP-0KV1-JBNF-W3R6-00000-00&context=1516831)

standard.co.uk

June 1, 2021 Tuesday 11:01 PM GMT

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**Section:** NEWS,UK; Version:32

**Length:** 1155 words

**Byline:** Emily Beament

**Highlight:** A new report from WWF highlights species in the UK and around the world that are under pressure from climate change.

**Body**

Conservationists have highlighted the climate threat to 12 species in the UK and around the world, as they call for action to curb global temperature rises.

Here are the species highlighted in the report by [*WWF*](https://www.standard.co.uk/topic/wwf) and the risks they face.

- Atlantic puffins

These "clowns of the sea" that nest around the UK's coasts are seeing severe declines, with global warming adding to existing threats such fishing.

Climate change is driving more severe and frequent storms that hit the seabirds, their nests and eggs, while rising sea temperatures are affecting the food chain and leading to fewer sand eels which the puffins feed their young, causing the failure of entire colonies.

- Mountain hares

The UK's only native hares live in the Scottish [*Highlands*](https://www.standard.co.uk/topic/highlands) displaying a brown coat in summer that blends in with the landscape and a white coat in winter to camouflage them in the snow.

But snow cover in the Highlands has declined by more than 37 days on average between 1960 and 2016 and the hares are not able to adapt to the fast change, the report warns, leaving them wearing a striking white coat against a snowless background that puts them at more risk from predators.

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These native flowers make use of the open canopy in woods to grow and flower in the spring before the woodland floor is shaded over as tree leaves grow.

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The gender of marine turtles such as the leatherback, the largest species, is determined by the temperature of the sand on beaches where the eggs are laid, with hotter temperatures as the eggs are incubated leading to much higher numbers of females.

This disparity, along with the danger of eggs not hatching at all if temperatures climb too high, could threaten the survival of turtles, while rising sea levels and increased storms due to climate change could wash away nests and permanently destroy nesting beaches.

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These frogs, named after Charles Darwin, who first encountered them in 1834, are disappearing in the face of loss of their temperate forest and wetland habitat in [*Chile*](https://www.standard.co.uk/topic/chile) and [*Argentina*](https://www.standard.co.uk/topic/argentina) and the spread of the deadly ***Chytrid*** fungal disease.

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This species of coffee accounts for around 60% of global production of the much-loved drink, and thrives at annual temperatures of around 18C-22C (64.4F-71.6F), but does not cope well with warming conditions, low or unpredictable rainfall and extreme weather.

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**Load-Date:** June 3, 2021

**End of Document**



[***Frogs and toads: Country cousins with different lifestyles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62M0-J3D1-JBCN-411V-00000-00&context=1516831)

Brattleboro Reformer (Vermont)

May 6, 2021 Thursday

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**Section:** NEWS; Pg. C04

**Length:** 714 words

**Body**

IMPORTANT PART OF ECOSYSTEM

BY ANN CAMERON S IEGAL Special To The Washington Post

To some, they're cute personalities in kids' movies and books. To others they look slimy and warty. But by taking time to observe, you'll find that frogs and toads are amazing amphibians.

All toads are frogs, but not all frogs are toads, say naturalists. Nature can be complicated, so let's dig deeper.

Scientists don't make a distinction between frogs and toads. They all belong to the largest amphibian order called Anura, meaning the adults are "without a tail."

Frogs are an important part of our ecosystem, said Brooks Paternotte, director of the Irvine Nature Center in Owings Mills, Maryland. "They're the 'canary in the coal mine.'" That expression refers to a now-abandoned practice of taking caged canaries into mines. The birds would react quickly to poisonous gases, alerting miners to the danger.

Like those canaries, frogs let us know when our environment needs help.

Frogs thrive with plenty of insects to eat and an abundance of healthy ponds, marshes or other wetlands to lay their eggs. "If you don't hear frogs around their normal habitats on spring evenings, that's a signal that something is wrong in the area," Paternotte said.

There are more than 7,000 species of frogs in the world, about 100 of which are in the United States. Found everywhere except Antarctica, frogs are grouped into three basic categories. True frogs have moist skin as they must live in or near water. Tree frogs have sticky pads on their feet for climbing. True toads have dry bumpy skin, are more drought tolerant and live mostly on land, but need access to healthy water for egg-laying.

Probably the easiest way to tell the difference between a frog from a toad is by looking at the hind legs and how they move. Toads use their short, squatty legs to hop or walk. Frogs have strong hind legs - longer than the rest of their body, said Sara Hasenstab, a biologist in the National Zoo's herpetology department.

Frogs seem like champion jumpers, reaching more than 10 times their length in distance. Imagine if you could jump 10 times your height from a standing position. A kid who is four feet tall could jump more than the length of a school bus!

Scan wetlands looking for frog eggs and tadpoles. Frog eggs are in clusters, while toad eggs form long narrow strands.

Frogs need gentle slopes to the water so they can get in and out easily. Toads are often found in backyard gardens, on a forest floor, or camouflaged in leaves and tree stumps.

It's mating season now for many frogs, so you can hear the males calling in the evening.

"Toads may even be on your steps, looking for moths under outdoor lights," Hasenstab said. Regardless of where you look for frogs, Paternotte said, "close your beak and open your eyes and ears. Stealth is key. The more quietly and thoughtfully you move, the more you will see."

Find a good frog habitat at a park or nature center, and play a game: How long can you sit without moving and making a sound? You might be surprised at the types of frogs you'll see.

MYTH BUSTING

You don't get warts if you handle a toad. "The worst thing that will happen to you," said Jeron Winters, a naturalist at Arlington's Long Branch Nature Center, "is it will pee on you."

He cautioned, "Don't pick up amphibians. They breathe through their skin." They can be harmed by sprays, lotions or food residue on your hands.

Some frogs and all toads excrete toxins that can harm predators, said National Zoo biologist Sara Hasenstab. "If your dog puts a toad in its mouth, the awful taste and irritation will hopefully teach the dog to leave toads alone," she said.

If you kiss a frog, it won't turn into a prince. Sorry!

FROG AND TOAD AS PETS?

Think carefully about getting one as a pet. Never take wild amphibians as pets. Pet shop frogs may be nonnative species and may spread ***chytrid*** fungus (pronounced KYtrud), which has destroyed more than 500 amphibian species worldwide since the late 1990s. Never release a pet frog or toad into the wild. Enjoy watching frogs in their natural habitats or garden ponds.

To find out how the Smithsonian keeps its frogs healthy, watch "Caring for Frogs: Stories From a Real-Life Zoo Guardian" at nationalzoo.si.edu/ animals/news/caring-forfrogs- stories-real-life-zoo-guardian.

**Graphic**

True frogs have moist skin, and they must live in or near water. They are also better at jumping than toads. They can jump more than 10 times their length in distance. PHOTOS BYANN CAMERON SIEGAL - THE WASHINGTON POSTTrue toads have dry bumpy skin and live mostly on land. All toads and some frogs excrete poison that can harm predators. This Eastern American toad does so from large bean-shaped glands on its head.

**Load-Date:** May 6, 2021

**End of Document**



[***One of world's rarest toads bred in captivity for first time in Manchester***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6257-T3D1-DY4H-K0J5-00000-00&context=1516831)

The Guardian (London)

March 7, 2021 Sunday 6:30 PM GMT

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**Section:** ENVIRONMENT; Version:7

**Length:** 525 words

**Byline:** Phoebe Weston

**Highlight:** Programme may help to ensure the survival of the critically endangered variable harlequin toad

**Body**

One of the world's rarest toads has been bred in captivity for the first time outside one of its countries of origin, thanks to the scientists at Manchester Museum.

The critically endangered variable harlequin toad, Atelopus varius, lives deep in the central American rainforests of Panama and Costa Rica, breeding only in turbulent streams filled with stones and boulders on which they lay their eggs.

Scientists at the University of Manchester went to Santa Fe national park in Panama and recorded the conditions of the amphibians' native habitat. They used the data to re-create the temperatures, water levels and water flow in captivity. Special lighting meant that a certain tropical alga, which the tadpoles feed on using specialised sucker-like mouthparts, could thrive.

The breeding programme is the result of three years of work, after six of the vibrant yellow and black toads were brought from Panama in 2018. If the species goes extinct in its native habitat, tadpoles could be bred in captivity and reintroduced, said Andrew Gray, curator of herpetology at the museum.

"The university is the only institution outside Panama to house these frogs. It's a huge responsibility the team do not take lightly," he said. "So we're over the moon we've achieved the first captive breeding of this remarkable species [outside Panama]. Our success heralds the next chapter for more innovative amphibian conservation work.

"We were very nervous about putting them in such deep water but they walked along the bottom just like they were walking on land. It was unbelievable," he said. "The adults can stay underwater for very long periods before breeding and were in the aquarium for over a month."

Gray's team is also raising funds to support the toads in their natural habitat, which he says is their priority, and has been training local people how to monitor them. [*According to the IUCN*](https://www.iucnredlist.org/species/54560/3016252) the toads are critically endangered, with climate change, habitat destruction, hunting and invasive species among the main threats.

The toad, sometimes known as the "clown frog", was once widely distributed. Populations plummeted as a result of the rise of the international pet trade in the 1990s, but the spread of the deadly ***chytrid*** fungus is now considered their main threat. They were thought to have gone extinct in Costa Rica because of the spread of the fungus but a [*small population was rediscovered*](https://www.theguardian.com/environment/2013/nov/06/harlequin-toad-costa-rica) in a mountainous reserve in 2013.

Dr Luis Urena, the director of [*Panama Wildlife Conservation charity*](https://panamawildlife.org/amphibians/) , which collaborated on the project, said looking after biodiversity must be a top global priority. "We are proud to use the conservation of the harlequin toad of Panama as an example of the positive difference we can make," he said.

This article was corrected on 8 and 16 March 2021. The original picture was not of the species referred to in the article; and the text was amended to clarify that it is the first in-captivity breeding done outside Panama.

Find more [*age of extinction coverage here*](https://www.theguardian.com/environment/series/the-age-of-extinction) , and follow biodiversity reporters [*Phoebe Weston*](https://twitter.com/phoeb0?lang=en) and [*Patrick Greenfield*](https://twitter.com/pgreenfielduk?lang=en) on Twitter for all the latest news and features

**Load-Date:** March 16, 2021

**End of Document**



[***Frogs and toads: Country cousins with different lifestyles***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62M1-X0H1-JBCN-41XJ-00000-00&context=1516831)

Bennington Banner (VT)

6 May 2021

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**Section:** NEWS; Pg. C04

**Length:** 714 words

**Body**

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To some, they're cute personalities in kids' movies and books. To others they look slimy and warty. But by taking time to observe, you'll find that frogs and toads are amazing amphibians.

All toads are frogs, but not all frogs are toads, say naturalists. Nature can be complicated, so let's dig deeper.

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**Load-Date:** May 6, 2021

**End of Document**



[***The 12 species in the UK and around the world that are at risk from rising temperatures***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62TR-3K41-DY4H-K0WY-00000-00&context=1516831)

getreading.co.uk

June 2, 2021 Wednesday 6:00 AM GMT

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**Section:** UK & WORLD NEWS; Version:1

**Length:** 1200 words

**Byline:** By, Victoria Jones

**Highlight:** Bluebells, leatherback turtles, emperor penguins and even Arabica coffee all appear on the list

**Body**

Conservationists have highlighted the climate threat to 12 species in the UK and around the world, as they call for action to curb global temperature rises.

Conservation charity WWF is calling on world leaders meeting for Cop26 climate talks in Glasgow in November to ensure action to cut greenhouse gas emissions to curb global temperature rises to 1.5C and limit the damage to nature and people.

WWF's Feeling The Heat report warns that climate change is warming oceans and landscapes, and increasing the frequency of heatwaves, floods, droughts and wildfires, creating conditions that many species cannot cope with.

Here are the species highlighted in the report by WWF and the risks they face.

1. Atlantic puffins

These "clowns of the sea" that nest around the UK's coasts are seeing severe declines, with global warming adding to existing threats such fishing.

Climate change is driving more severe and frequent storms that hit the seabirds, their nests and eggs, while rising sea temperatures are affecting the food chain and leading to fewer sand eels which the puffins feed their young, causing the failure of entire colonies.

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The UK's only native hares live in the Scottish Highlands, displaying a brown coat in summer that blends in with the landscape and a white coat in winter to camouflage them in the snow.

But snow cover in the Highlands has declined by more than 37 days on average between 1960 and 2016 and the hares are not able to adapt to the fast change, the report warns, leaving them wearing a striking white coat against a snowless background that puts them at more risk from predators.

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Researchers have identified 50 resilient areas with the best chance of surviving, but they need temperature rises to be curbed to 1.5C to survive, WWF says.

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Rising temperatures, long droughts and erratic rainfall, driven by climate change, are reducing water levels and quality, while hippos are not well adapted to high temperatures out of water, making them vulnerable to drought conditions. Water scarcity also increases conflict with humans.

11. Arabica coffee

This species of coffee accounts for around 60% of global production of the much-loved drink, and thrives at annual temperatures of around 18C-22C 64.4F-71.6F, but does not cope well with warming conditions, low or unpredictable rainfall and extreme weather.

The amount of land suitable for its production is set to drop significantly, the wild species that it comes from in Ethiopia is threatened by climate change, and higher temperatures make the coffee plants vulnerable to pests and diseases that are thriving in warming conditions.

12. Black-headed squirrel monkey

This monkey is found in just an area of 336 square miles 870 square kilometres of floodplain forest in the Brazilian Amazon.

Its home is expected to be reduced by almost 100% due to the combination of increased water levels, higher temperatures and extreme flooding events driven by climate change.

The report said the future of this and other Amazon primates depends on protecting wildlife corridors that allow them to move to new homes, and urgent action to limit temperature rises to give them time to adapt to the changing conditions.

**Load-Date:** June 2, 2021

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[***Events; Lantern Post 729***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62GT-53K1-JBCN-43VW-00000-00&context=1516831)

The Record Herald (Waynesboro, Pennsylvania)

April 21, 2021 Wednesday

WAY-RecordHerald Edition

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**Section:** NEWS; Pg. A2

**Length:** 813 words

**Body**

WAYNESBORO Lantern Post 729 of the 29th Infantry Division Association will meet Thursday, April 22, at 8 a.m. at the Parlor House Restaurant, 724 S. Potomac St.. All past and present members (including the 29th Light) are invited. 29ers who have never belonged to the association are also invited.

Lantern Post 729 is seeking new members. This invitation is open to anyone who is interested in the continuance of the Post 729th and the much decorated 29th Infantry Division.

Dues are still payable. For information concerning the April meeting or the possibility of becoming a new member, call Greg Mason at 717-387-9841.

Amphibian ecology program

WAYNESBORO In an Earth Day program, Dr. Molly Bletz, a disease ecologist and conservation biologist, will present "It's Not Easy Being Green! Amphibians and ***Chytrid*** Fungi: Causes, Consequences, and Conservation Strategies," on Thursday, April 22 at 7 p.m. via Zoom.

The free program is sponsored by The Institute, based in Waynesboro, in partnership with Antietam Watershed Association.

Space is limited. To register, email The Institute at [*info@NatureAndCultureInstitute.org*](mailto:info@NatureAndCultureInstitute.org), or call 717-762-0373.

Performance by Robinwood Players

HAGERSTOWN Hagerstown Community College's Robinwood Players will present "The 25th Annual Putnam County Spelling Bee," on April 23, 24 and 25, in the Kepler Theater.

Show times are 8 p.m. on Friday, April 23, and Saturday, April 24, with a matinee performance on Sunday, April 25, at 2:30 p.m.

Directed by Alyssa Little, the musical comedy follows an eclectic group of six tweens vying for the spelling championship of a lifetime.

To purchase tickets online, visit [*https://hcckepler.square.site*](https://hcckepler.square.site)/

For more information, contact Dana Poole, at [*dpoole2@hagerstowncc.edu*](mailto:dpoole2@hagerstowncc.edu)

Pulled pork sandwich drive-thru

SOUTH MOUNTAIN A pulled pork sandwich drive-thru pay and pickup will be held from 11 a.m. to 2 p.m. Saturday, April 24, at the South Mountain Volunteer Fire Department, 11207 Loop Road.

The cost is $8 for a pulled pork sandwich with baked beans, cole slaw and dessert.

Preorders can be place by April 21 by calling 717-749-5733.

Earth Celebration Day

ROUZERVILLE The Institute's 30th Earth Celebration Day, modified to accommodate COVID restrictions, is set for Saturday, April 24, at Red Run Park in Rouzerville from 11 a.m. to 3 p.m. Admission is free.

Some activities are also scheduled at other locations in the Waynesboro area and some require registration.

For more information call the institute at 717-762-0373 or visit [*www.natureandcultureinstitute.org*](http://www.natureandcultureinstitute.org).

Shotgun shoots

ROUZERVILLE Rouzerville Fish and Game, 11721 Woodhaven Road, will hold a 12-gauge shotgun shoot beginning at 6:30 p.m. Friday, April 30. Meat and money prizes are offered and the shoot is open to the public.

Bird walks

WAYNESBORO S.O.A.R. (Studying Ornithology Around the Region), The Institute's biweekly bird walks, are held the first and third Saturday of every the month from 8 to 10 a.m. The walks are free, and everyone is welcome. COVID safety protocols are in place.

The walks are year-round, and locations rotate among several parks around the region, with Washington Township's Antietam Meadow Park as "home base."

The schedule: May: Conococheague Institute (meet at visitor center); June: Gettysburg National Battlefield (meet at Virginia monument); July: Strawberry Hill Nature Preserve (meet in parking lot); August: Antietam Meadow Park (meet in parking lot at Scott Road, off Country Club Road); September: Caledonia State Park (meet at park office); October: Renfrew Park (meet in lower parking lot off Welty Road); November: Conococheague Institute (meet at visitor center); December: Antietam Meadow Park (meet in parking lot at Scott Road off Country Club Road).

Sharon and Larry Williams of Waynesboro lead the bird walks.

For more information, call the institute at 717-762-0373 or visit [*www.natureandcultureinstitute.org*](http://www.natureandcultureinstitute.org)

May Clean-Up Day

GREENCASTLE The Greencastle-Antrim Chamber of Commerce will hold May Day Clean-Up Day from 9 a.m. to noon Saturday, May 1, in and around the Borough of Greencastle. A pizza lunch will be provided.

Clean-up day is part of the chamber's Community Advantage initiative and is being held in partnership with the Keep Pennsylvania Beautiful program and with support from Waste Management.

Business team members, service clubs and community and youth organizations are encouraged to register. Supplies are limited to the first 40 registrants. Those signing up beyond that number will need to provide their own trash bags, gloves and safety vests. Current CDC guidelines and safety precautions, such as staying in groups and wearing safety vests, will be encouraged.

The event is free of charge and open to G-ACC members as well as the G-A community. To register, call 717-597-4610 or go to [*www.GreencastlePaChamber.org/event/may-day-clean-up-day-community-advantage/*](http://www.GreencastlePaChamber.org/event/may-day-clean-up-day-community-advantage/)

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