Amphibians

New Central American frog species at risk

07/05/2010

Scientists recently discovered two brand new frog species in Panama. The exciting news is tempered by fears that these new frogs could end up fighting for for survival since they live in the Central American region where chytrid fungus has devastated the herpetofauna.

A new Central American frog discovered in Panama, P. educatoris/

University of Maryland herpetologist Karen Lips has conducted intensive surveys of frogs and toads in Central America since 1998, and was one of the first scientists to sound the warning calls about the devastation chytridiomycosis–an infectious disease caused by the *Batrachochytrium dendrobatidis* (Bd) fungus–had wreaked on the amphibian fauna in this region. While studying frogs at Omar Torrijos National Park–in the Cordillera Central or El Copé region of central Panama–she kept catching frogs that looked like *Pristimantis caryophyllaceus* but

About the Author

Wendee Holtcamp has covered news about conservation, wildlife and adventure travel for nearly 15 years.
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were consistently larger than specimens collected elsewhere.

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Lips thought she may have a new species on her hands, but it wasn't until a couple years later that her graduate student Mason Ryan along with Tom Giermakowski, from the University of New Mexico's Museum of Southwestern Biology, used morphological studies to show that Lips had indeed discovered a new species. They just published that study in the Journal of Herpetology.

Ryan and Lips decided on the scientific name *P. educatoris* to honor Lips' mentor and educator, Jay Savage. "We sat around bouncing names around until we came up with one that we thought was appropriate," says Ryan. "*educatoris* was special because Jay Savage was Karen's mentor and Ph.D. advisor. He helped me get into graduate school and has been a mentor to me as well."

Ryan also played a role in identifying another new species, Pristimantis adnus. Andrew Crawford, a professor at Universidad de los Andes in Bogotá, Colombia, discovered this frog in the remote Darién region of western Panama. Crawford was not sure that he had a new species on his hand because it looked similar to *P. ridens*, although it had spots on the back of its thighs. He had Ryan take morphological measurements, and sure enough, the combination of evidence suggested they had another new species on their hands. The ADN in the specific specific epithet, *adnus,* is the Spanish acronym for DNA, and was chosen to highlight the value of genetic tools for identifying new species.

All the intense herping in Central America has begun to pay off. Scientists have now named 197 species in Costa Rica and Panama and have described 15% of these just in the last seven years. Scientist started Panama Amphibian Rescue and Conservation Project to rescue frogs before they go extinct from the fungus, which has hit particularly hard in this region.

Ryan has another scientific paper coming out soon in the next month's Copeia that identifies a third new frog species from the El Copé region of Panama as *Craugastor evanesco* (vanishing *Craugastor*). He and his colleagues believe the frog has most likely already gone extinct in the park where they found it, and possibly altogether. "Its disappearance coincided with the arrival of chytrid," says Ryan. "Due to the limited known range of this species and absence from surveys after the decline we believe it is locally extinct within the park. It is possible new populations will be found at lower elevations. There are a lot of unexplored mountains and valleys in Panama that could potentially harbor some of these species."

Posted in Amphibians , Conservation , Science , Wildlife Permalink TrackBack (0)

Technorati Tags: amphibian fauna, Andrew Crawford, Batrachochytrium dendrobatidis, Bd, chytrid fungus, chytridiomycosis, Craugastor evanesco, El Copé, Jay Savage, Karen Lips, Mason Ryan, Omar Torrijos National Park, Panama, Panama Amphibian Rescue and Conservation Project, Pristimantis adnus, Pristimantis caryophyllaceus, Tom Giermakowski

7 Ways to Help Animals Beyond Earth Day

04/19/2010

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Use reusable shopping bags instead of plastic

I bet you've seen those reusable grocery bags, and thought, hmm, should I buy one? From plain and simple ones to super-stylish bags, you have many options available. Some stores, including Target and Whole Foods, give discounts for bringing your own bag. But the best part? You're helping to save the earth. Too many marine turtles, seals, sea lions, and other wildlife get entangled in or swallow plastic bags, which causes choking, drowning, and unnecessary, tragic deaths. Plastic is so ubiquitous it has created massive garbage patch gyres in the oceans. Even if you *think* yours will end up getting recycled, sometimes they fly out of the garbage (or recycling) trucks, float in the air, into the waterways, and out to the oceans. My advice? Just buy one (or two or three), already. It will cost you a couple bucks, and it may take a few times to remember them from your car to the grocery store – but this simple step feels really good. Before long, you'll start cringing when you see other folks using so many plastic bags!

Adopt a pet from a shelter

If you crave a new addition to your family, and you have the resources to care for the animal now and well into the future, consider adopting a dog, cat, or other animal from a local shelter. According to the Humane Society of the United States (HSUS), half of the 6-8 million cats and dogs entering shelters every year get adopted, and the rest end up euthanized. Help turn the tide the other way, so more get adopted into loving homes. And make sure fewer enter shelters in the first place: take care of your pets, and get them spayed or neutered! Check out HSUS' Top 5 Reasons to Adopt.

'Adopt' wildlife online

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Wildlife lovers around the world can help to save their favorite species by adopting one online. By paying a small fee, you directly support the animals, their care, and conservation of their habitat. Some groups send you a plush toy, or a certificate, or information about the animal. You can adopt a cute red panda through Red Panda Network, a whale or dolphin with Whale or Dolphin Conservation Society, a wolf (and several other species) through Defenders of Wildlife or you can Friend a Gorilla in Uganda. You can adopt and follow the movements of a radio-tagged sea turtle. Or if you're a Steve Irwin fan (Crikey! Who isn't?) you can adopt one of the Australia Zoo's crocs, koalas, Tasmanian devils or other critters. And Jane Goodall has a fantastic chimp guardian sponsorship program.

Think about water

Fresh, clean water comes right out of your faucet, free and clear, right? Not so fast. Freshwater is a precious resource. A full 98% of our blue planet's water is locked up in the oceans. Of the remaining 2% of fresh water, 1.6% is locked up in glaciers or polar ice caps (although in our warming world, these are rapidly melting into the sea). That remaining percentage of freshwater – just 0.036 percent in rivers, lakes and creeks – is precious. We require it to drink, to water crops, and for livestock. But native wildlife also need fresh water to survive and thrive. This includes land animals, most of which must drink, as well as riverine and aquatic animals. When it comes to keeping local rivers and creeks healthy (and the fish, frogs, crayfish and so on that live there), think twice about putting chemical pesticides and fertilizers on your lawn. Try natural options. Pull weeds, for example, or create a native plant xeriscape that requires less water or herbicide in the first place. Also, by using less water, it saves you money, and helps keep water flowing in the creeks and rivers, which ultimately run into estuaries at the edge of the sea – important breeding grounds for many commercially and recreationally important fish, shrimp, oysters, and other species.

Reduce your carbon footprint

Stepping lightly on the earth makes a difference in more ways than one. By turning off lights when not in use, recycling everything you can, replacing incandescent light bulbs with fluoresecents, use reusable shopping bags (see above) and other simple steps to reduce your energy use, you not only save yourself money on your electric bill, you help curb global warming. The planet's warming temperature is melting glaciers in the Himalayas, threatening rare wildlife such as the red panda, Himalayan black bear, and snow leopard. Warming ocean temperatures cause the bleaching of once pristine coral reefs, and cause

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the oceans to acidify, threatening to turn the entire marine ecosystem topsy-turvy. And although stemming the massive impact of a warming world is going to require international cooperation and national policy action, every little bit helps.

Stop littering!

Even conservation-minded folks occasionally toss orange or banana peels out their car window, not realizing that even biodegradeable food attracts animals to the roadside, which leads to...roadkill (not to mention being a safety hazard. Think of all the car accidents or incidents from hitting the animals, or swerving to avoid them). And if you think throwing cigarette butts out your window is harmless, think again. Those butts are one of the most common and ubiquitous pieces of trash in the environment now – trillions of them end up as litter every year. The core is made of cellulose acetate, which can take up to ten years to decompose. Think that's not so bad? They also contain tar and all the toxins in the tobacco that the filter is there to keep from going into lungs. And where does it end up? In our waterways, which ultimately poisons the well, so to speak.

Go Vegetarian, even for one day a week

As I've blogged about before, the UN Food and Agriculture Organization (FAO) reports that 18% of global warming gas emissions come from meat production. Tropical rainforest gets cleared in the Amazon to make room for cattle, and rainforests are notoriously challenging to replant or restore. Livestock also consumes five times as much grain as people do, which replaces natural habitat with monoculture cropland. And the conditions of factory farms have drawn much attention lately, As actress Natalie Portman wrote after reading Eating Animals, "Factory farming of animals will be one of the things we look back on as a relic of a less-evolved age." Sir Paul McCartney challenges everyone to try at least one day a week without meat, Meat-free Monday, it's called across the pond, and over here we have Meatless Monday. It can help improve your health too!

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The world's first monogamous frog?

03/29/2010

Up until recently, scientists thought there weren't any monogamous frogs and toads. When breeding time comes around it typically works like this: males calls, females show up. Male grabs on (called amplexus), female lays eggs, male fertilizes. The frogs (or toads) go on their merry way, and the eggs develop into tadpoles soon after, which have to fend or themselves. But the mimic poison frog (*Ranitomeya imitator*) in Peru marches to a different beat.

A male mimic poison frog carries his tadpole offspring/ Copyright Jason Brown

Biologist Jason L. Brown, a postdoctoral researcher at Duke University (and formerly at East Carolina University) used genetics to confirm that these frogs were truly monogamous, unlike every other known frog and toad. Biologists already knew that the mimic poison frogs appeared to be monogamous because they formed a pair bond, but genetic research has made it amply clear that many animals that form pair bonds and seem monogamous aren't in reality: Males or females from the mated pair will "cheat," sometimes siring offspring from a non-mate.

The female mimic poison frog lays only a few eggs on a leaf. After two weeks, the male collects the newly hatched tadpoles onto his back, and carries them to a tiny pool of water that has collected inside of a *Heliconia* plant. When the babies get hungry, the male calls mom, who brings a non-fertile egg for the young to eat. Brown confirmed genetically that, with one exception, the offspring from every paired poison mimic frog came from that mom and that dad, so they exhibit true monogamy. But for the scientists, the coolest question was asking why, out of all frogs, these ones should have evolved monogamy? And they discovered that monogamy could have a sole cause.

Comparing the frogs' mating habits to its close relative, the variable poison frog – a species it mimics – the

biologists found that mimic poison frogs lay eggs and raise tadpoles in much smaller pools of water. Since these diminutive "aquatic nurseries" don't contain any food for the tadpoles, the biologists reasoned that the only way for the offspring to survive is through biparental care and forming a monogamous pair bond. When the froglets are hungry, the male chirps,beckoning the female, who then brings their offspring sustenance in the form of her unfertilized eggs. It appears that they need both mom and dad to survive in those particular conditions. Brown collaborated with Kyle Summers of East Carolina University Kyle Summers and Victor Morales of Ricardo Palma University in Lima, Peru and they recently published their discovery in the scientific journal *The American Naturalist*. Cool stuff!

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Technorati Tags: Jason L. Brown, mimic poison frog, monogamous frog, Ranitomeya imitator

Common ag chemical feminizes male frogs

03/15/2010

Poor frogs! They're getting slammed from every side, it seems. A recent study just published in the *Proceedings of the National Academy of Sciences* (PNAS) linked "chemical castration" in frogs to the the chemical atrazine. In other words, frogs exposed to atrazine became demasculinized and developed female organs in addition to male ones (i.e. became hermaphrodites). This endocrine-disrupting herbicide is widely used in agriculture in the Midwestern U.S. and in elsewhere around the world – though the European Union (EU) banned the chemical in 2004. Lead scientist Tyrone Hayes, University of Berkeley Professor, believes this could be a factor contributing to the global decline of amphibians.

A feminized male mates with a true male African clawed frog/
Copyright (c) Tyrone Hayes

In a double-blind study, Hayes and colleagues exposed African frogs (*Xenopus laevis*) to levels of atrazine at similar concentration to what they'd find in the wild – 2.5 parts per billion. This level falls below EPA standards for drinking water. And the chemical is widely distributed in water; a 2006 U.S. Geological Survey study found that 75% of streams and 40% of groundwater sampled in agricultural areas nationwide between 1992 and 2001 had atrazine, and its degradate desethylatrazine, in them.

As it turned out, exposing frogs to 2.5 parts per billion had all kinds of funky effects on male frogs. First, their sex glands decreased in size, their testosterone levels and sperm development and fertility all declined. Some external features showed more feminine features. For example, males typically have large throat pouches that they expand when calling for females but in those exposed to atrazine, they did not develop as they normally would in males. Probably as a result of all these physical and physiological changes, males showed decreased interest in breeding.

And that's not the worst of it! In a few more extreme cases, four males out of forty had elevated estrogen levels, and developed the external sex traits of females. Hayes opened up two of the four, and found they had become hermaphrodites, with fully developed ovaries in addition to the male testes. Holy smokes! Hayes placed the two remaining feminized males in a tank with males not exposed to atrazine. Both pairs both mated and laid viable eggs that turned into healthy frogs.

"Both demasculinizing males, which don't breed at all, and feminizing males that can only produce other males which will then be demasculinized or feminized upon exposure to atrazine can slowly devastate populations," says Hayes. "In addition, however, atrazine is an endocrine disruptor across vertebrates, including humans. Atrazine induces aromatase [an enzyme causing increased estrogen synthesis] in everything from fish to humans. In humans, atrazine is associated with infertility, prostate cancer, and breast cancer [backed up by studies in lab rats]." Ironically, the former manufacturer of atrazine, Novartis, now sells an aromatase blocker to treat breast cancer.

Some of Hayes' research has been criticized by Syngenta, the makers of atrazine, and members on their scientific panel, but Hayes also traveled to Nebraska, Wyoming, Utah and found that exposure to a cocktail of various chemicals in waterways had stunted tadpole development, slowed metamorphosis, and impaired their immune systems, and he found similar deformities in wild frogs that were exposed to levels of atrazine or its degradate.

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Top 10 Animal Stories of the Decade

12/24/2009

It's incredibly challenging to pick just ten animal stories that made the most impact over an entire decade, but here's my selection. Please share any others that you feel made an impact that didn't make my list!

White Nose Syndrome devastates bats

A strange killer came out of nowhere and has had catastrophic effects on many bat species in the northeast United States. Cavers first observed bats with white noses in New York in 2006, and scientists have since documented hundreds of thousands of dead bats in caves during their winter hibernation. Every year it has spread to new caves and additional states. In 2009, scientists identified a *Geomyces* fungus as the "white" on the bats' noses and wings which most likely is an exotic species. So far scientists have found no bats with immunity, and WNS is expected to continue spreading, though research on solutions has begun in earnest.

Animal cloning

Advances in science resulted in several new mammals cloned during the past decade – including Tetra the rhesus monkey in 2000, Copycat the cat in 2001, a horse named Prometea in 2003, and Snuppy the dog in 2005. Scientists also worked at – and intensely debated – cloning endangered animals as a way to recover imperiled species and possibly even extinct ones. The San Diego Zoo has a Frozen Zoo which keeps tissue of the world's most imperiled species.

Lost worlds of animals discovered

It's not all bad news out there. Though many wild animal populations have declined, scientific expeditions to relatively untrammeled places like Papua New Guinea, Madagascar, the Himalayas and Asia's Mekong Delta have revealed "lost worlds" of never before documented species and incredible biodiversity. Scientists have named many new species in the past decade, as well, which just goes to show how much biodiversity we stand to lose by not protecting the world's remaining natural habitats.

Global warming effects on wildlife

The image of polar bears starving and drowning from shrinking polar ice has become the mental picture associated with global warming, but many other species around the globe have been affected by climate change. The timing of animal migrations has changed in some species, habitat has diminished or 'moved' due to changing microclimates and the world's oceans have started turning more acidic. Although known about in scientific circles for decades before this one, global warming finally came into broader public acceptance this decade in large part due to efforts Al Gore's documentary *An Inconvenient*

Truth, but also brought to life through 2005's breakaway success *March of the Penguins* .

Did we or did we not rediscover the ivory-billed woodpecker?

When the news broke of the possible rediscovery of the ivory-billed woodpecker

(*Campephilus principalis*) it was the wildlife story of all stories. A forestry student had made a promising observation in 1999 prompting a comprehensive survey through the hardwood swamps of Louisiana, Arkansas and Florida over the past decade. Scientists recorded a rapping sound similar to the woodpecker's double knock in 2002, and a team from the Cornell Lab of Ornithology published a paper in *Science* in 2005 based on multiple observations of a male in Arkansas. But robotic cameras in the region have never recorded any ivory-bills, neither DNA nor nests have been located. The "rediscovery" remains steeped in controversy but it did allow conservation groups to buy up large tracts of wilderness that would preserve the birds' habitat, as well as many other species.

Global amphibian declines

Scientists first identified the chytrid fungus *Batrachochytrium dendrobatidis* (Bd)– suspected in killing frogs and other amphibians in 1998, but the past decade saw both major advances in scientific understanding of the fungus including how it kills frogs. The deade also witnessed severe declines in many amphibian species. The fungus is thought to have spread from African clawed frogs – a common pet – to native amphibians after people flush their dead, or living, pets down the toilet or release them outside. The fungus thrives in moist, cool environments so amphibians in montane rainforests have been more heavily affected than desert or dry, temperate species.

Virgin birth in sharks

It all started in 2001, when aquarium personnel saw a bonnethead shark pup in the Omaha Zoo – a shock

since no male bonnethead was in the tank, and all the females had been captured as juveniles. Geneticists soon confirmed the pup had no father. Not long after, a blacktip shark at the Virginia aquarium was found with a pup in her belly. Once again geneticists confirmed virgin birth. Unusual in vertebrates, the phenomenon has since been confirmed in white-spotted bamboo sharks and suspected in a whitetip reef shark. This strange method of reproduction, never observed in sharks prior to this decade, won't save them though. Research published in the past few years has shown dramatic global declines in most shark species over the past 25 years, including long-term declines in reef sharks and great whites - which cascades through the marine ecosystem - with an increase in the brutal and wasteful practice of shark finning.

Michael Vick's dogfighting ring

Interest in this story peaked in April 2007 when star NFL quarterback Michael Vick was investigated for involvement in a vicious dogfighting ring. In dogfights where the "loser" doesn't get killed, the owners typically kill it themselves using electrocution, drowning or hanging. Vick participated and also financed an illegal dogfighting ring. His pled guilty and was sent to federal prison for nearly 2 years. The story this brought this brutal and secretive practice front and center in the public's awareness. Released from prison in May 2009, Vick now works with the Humane Society to teach about why animal cruelty is wrong.

Contagious cancer devastates Tasmanian devils

In the early part of this decade, Tasmanian devils, started dying in mass, their faces deformed by grotesque tumors that caused them to starve. It took scientists a few years to conclusively determine the cause, and this decade has shown great progress in scientific understanding, but during that time the charismatic marsupial carnivore went from being very common to seriously endangered. Conservation biologists believe the Tasmanian devil faces the very real possibility of extinction in the wild in the next decade, so they started "Project Ark" to save as much genetic diversity as possible while still working frantically to identify details of the disease. Scientists have determined that it's only three known contagious cancers in the world.

Puppy mills

Court cases, video and news reports showing putrid living conditions for dogs and their pups brought this topic squarely into the public awareness over the past few years. In puppy mills, dogs live in small wire cages, with little to no veterinary care, no natural social interaction with humans or other dogs – except to breed or pup. Breeding dogs are bred for year after year just for the sake of making puppies to stock the store windows of pet stores, and then are euthanized. Animal Planet has exposed some puppy mills on Animal Cops. A better way? Adopt one of many pets in a local shelter that needs a loving home.

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How to save the frogs

11/04/2009

A great barred frog with severe chytridiomycosis, a fungal disease killing many amphibians around the world/Copyright (c) 2009 Lee Berger

An invasive and virulent fungus has devastated frog and other amphibian populations around the world over the past decade. Scientists identified the chytrid fungus *Batrachochytrium dendrobatidis* (Bd) on the skin of dying amphibians, which leads to a disease called chytridiomycosis, but they didn't know the mechanism for how the disease killed, since the fungus seemed to affect only the skin.

Amphibians have a unique ability to breathe and absorb electrolytes – charged ions – through their porous skin, and James Cook University disease ecologist Jamie Voyles and her colleagues put this idea to the test: Do Bd infections cause frogs' skin somehow disrupt their ability to maintain the necessary electrolyte balance? "We measured skin functioning in frogs with severe chytridiomycosis," says Voyles. "We also tracked physiological changes in blood and urine, and monitored heart function."

Using Australian green tree frogs (*Litoria caerulea*), Voyles' research, published in the journal *Science*, demonstrated that frogs infected with chytrid fungus lost 50 percent more sodium and potassium ions into water compared to healthy frogs. That reduced sodium and potassium ion concentration in the frogs' blood by 20 and 50 percent, respectively, which in turn led to cardiac arrest. "Water is very dilute and draws out the frogs' ions when their skin is not functioning," explains James Cook University Research Fellow Lee Berger, a co-author on the study. They compare this phenomenon to hyponatraemia, a condition where people, particularly athletes, have died of heart attacks from drinking too much water too fast because it drastically dilutes the ion concentration in the blood.

Voyles developed an electrolyte-replacement solution that helped diseased frogs better absorb essential potassium and sodium ions. They studied the solution, which is sort of like "froggie Gatorade," on diseased frogs and it delayed their deaths and helped restore the frogs' electrolyte balance, but the frogs tested still died. The scientists believe that they could not save the animals because those individuals had too severe of infections. They plan to continue research in hopes that they may someday use this or a similar solution to turn the tide on the global amphibian decline.

Another group of scientists from James Madison University in Harrisonburg, Virginia found another promising solution – a probiotic bacteria called *Janthinobacterium lividum*. Reid Harris and colleagues gave critically endangered mountain yellow-legged frogs (*Rana muscosa*) a "bacterial bath" and found it helped them maintain weight, and also prevented them from dying.

The chytrid fungus Bd most likely came from exotic African clawed frogs (*Xenopus laevis*) which have been introduced around the world and have immunity to the fungus. In the 1930s and 1940s doctors would inject female urine under their skin to test for pregnancy, since the hormones in a pregnant female would cause the frogs to ovulate. Then the clawed frogs ended up discarded in waterways around the world and the fungus has spread through water or amphibian to amphibian contact. In cool moist environments which the fungus invades, it will cause 50 percent of species and 80 percent of individuals to disappear within a year, according to a study by Karen Lips.

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Fanged frog, giant rat, and more found in Papua New Guinea

10/29/2009

Last week I talked about the amazing animal discoveries in Asia's Mekong delta, and here's the other promised story about an amazing expedition to the "lost world" of Papua New Guinea's Bosavi volcano. Reading about these amazing trips makes me want to join a scientific expedition like this!

A fanged frog (Mantophryne sp) discovered in Papua New Guinea's remote Bosavi volcano crater
Credit Allen Allison

Between January and March of 2009, a team of biologists and filmmakers became the first Westerners to explore inside Papua New Guinea's remote Bosavi volcanic crater. The country lies on the east side of the large island of New Guinea, north of Australia. George McGavin, an insect specialist and explorer who works as an honorary research associate with the Oxford University of Natural History and the University of Oxford Zoology Department, led the scientific team which also included Bishop Museum herpetologist Allen Allison, ornithyologist Jack Dumbacher from the California Academy of Sciences, ichthyologist Phil Willink from the Field Museum in Chicago, mammalogist Kristofer Helgen from the Smithsonian, bat specialist Alanna Maltby of the Zoological Society of London, and Muse Opiang - the Papua New Guinean who did the first study of of long-beaked echidnas which I blogged about before, among others.

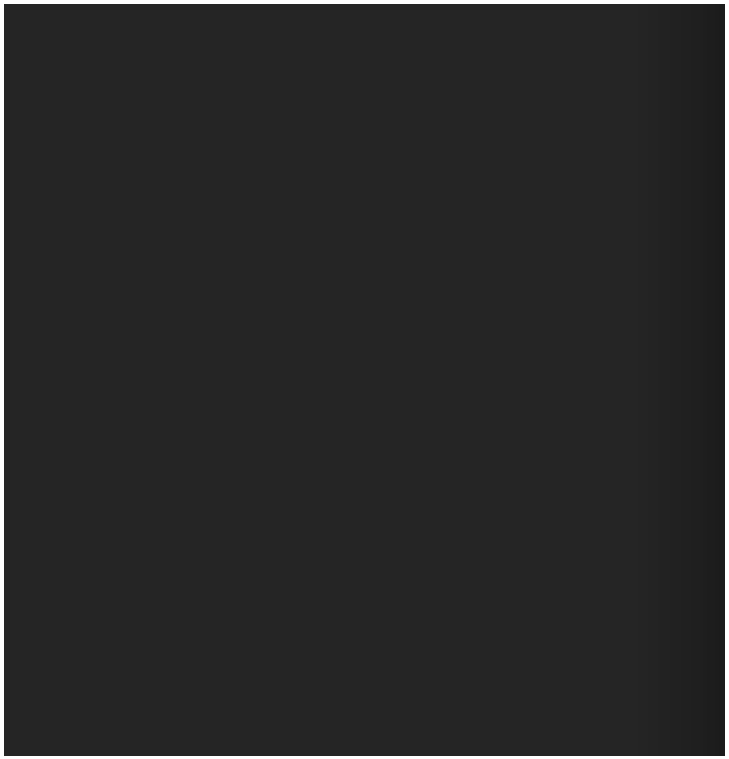
Because of the volcano's remote locale, the scientists had high hopes of finding unusual species there. The extinct volcano has high crater walls, so species with low mobility and species specizalizing in high elevation forest have remained isolated and hence evolved independently for hundreds of thousands of years. The

expedition will appear in the BBC documentary series, Lost Land of the Volcano .

The expedition involved months of background prep for just a few weeks of collecting. On the initial trip to the village of Fogamaiyu, they met up with the Kasua tribe who live near the base of the volcano, who remain mostly isolated from Western civilization. They speak a dialect that fewer than 1,000 people speak, and had no televisions that might inform them about the outside world. The tribe didn't even have a cash economy, so explaining the concept of paying them so the team could set up a base camp near their village proved a challenge initially. The expedition team asked the tribe's permission to explore the volcano, which they received, and then hired several tribe members as trackers, medics, and boatmen, plus a cook.

The rest of the international expedition team members then flew in to Fogomaya by helicopter, which is still a four-day hike from the top. They trekked through dense rainforest to reach the summit of the nearly 9,000-foot Mount Bosavi volcano, which lucky for them is no longer active, and then ventured down into it. Once they reached the top, the hard work paid off. The scientists found a "lost world" with up to 40 funky, strange species that seem to be totally new to science, including 16 frog, one gecko, three fish, one bat and 20 insects and spiders. The scientists still must go through the peer review process to ensure these are indeed new species, so many of their scientific names have not yet been assigned.

Some of the critters discovered include the vegetarian, cat-sized rodent that Helgen has named the "Bosavi giant woolly rat" – one of the largest rats known in the world. It sowed no fear of humans. The team also found a new subspecies of tree-dwelling silky cuscus (*Phalanger sericeus*) – a marsupial that looks like a gray teddy bear with very small ears – plus a tree kangaroo, a pigmy parrot no larger than one's hand, a fanged frog and the Henamo Grunter - a fish that grunts using its swim bladder. You can watch a video of the giant rat here. Amazing stuff! What do you think? Do you dream of going on an expedition like this? Or do you prefer to stay home and read about or watch others doing this stuff?



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Asia's Mekong Delta rich in species, threatened by climate change

10/23/2009

Sometimes the world seems so small, you might think we have found everything there is to be found. But not so fast. Scientists keep discovering new creatures in far-flung, little traveled parts of the globe. Take, for example, two “fanged frogs” recently discovered from completely different parts of the world, one from southeast Asia’s Mekong delta and another on the island of New Guinea. Both of these discoveries came from independent research teams that also documented other cool new critters. I’ll give the low-down on one

now, then the other in a post next week.

The Mekong Delta is the lush floodplain that lies on either side of the Mekong River running through the countries of Myanmar, China, Thailand, Cambodia, Laos, and Vietnam. It is already known to have a rich biodiversity, which includes Javan rhinos, Indochinese tigers, Irrawaddy river dolphins, and the Mekong giant catfish. The WWF has studied the wildlife in the Mekong Delta for some time, and in 2008 alone they reported that a whopping 163 species in the region were new to science, most found nowhere else in the world, and many quite unusual in appearance or behavior.

The Mekong delta has weird creatures including this "fanged frog" aka the Khorat big-mouthed frog discovered last year in Thailand.

The WWF Greater Mekong Programme released a report – Close Encounters – highlighting the new species discoveries in the region by various research teams, and stressing that climate change poses a dire threat to the region. According to the report, global warming has already affected the severity, duration and timing of floods and the availability of freshwater. Climate change has altered the timing of flowering of some plants and animal migrations. But species continue to get discovered. In 2008 alone, scientists documented 100 plants, 28 fish, 18 reptiles, 14 amphibians, two mammals and a bird never before described. New orchids, new snakes, new palm trees, and a new bat and shrew, to name a few. The discoveries include many bizarre creatures.

Let's start with the fanged frog... This guy lurks under water, waiting for its prey to come along. Then it jumps into action. This frog is not just hurling out its tongue to nab a tiny fly. It catches and eats birds! OK, alright, so it does also eat insects after all… but birds? Wow. It also eats other frogs. The fangs – protrusions of its jawbones – get used in combat with other males and they have oversized heads and mouths compared to their bodies. It lives in intermittent streams in Thailand. University of Kansas herpetology graduate student David McLeod gave it the official name the Khorat big-mouthed frog (*Limnonectes megastomias*).

Scientists dubbed the single new bird species discovered the Nonggang babbler (*Stachyris nonggangensis*). She is an Ave that rarely flies, and that could explain why it had never been documented before. Most birds, with their greater dispersal ability due to flying, get discovered more readily. This babbler lives along the border between Vietnam and China.

Herpetologists discovered the Cat Ba leopard gecko (*Goniurosaurus catbaensis*) with orange eyes and a technicolor patterned body. They believe the species has a limited distribution and may be endangered. They also found a tiger-striped pit viper (*Cryptelytrops honsonensis*) on an island offshore from Vietnam, a colorful painted gecko lizard (*Cnemaspis biocellata*) found on the border between Malaysia and Thailand, a new tube-nosed bat (*Murina harpioloides*) in southeastern Vietnam, and a rough-coated tree frog (*Philautus quyeti*) also in Vietnam.

To address the impact of climate change on the Mekong delta, and the world, a series of United Nations climate change meetings took place in Bangkok, Thailand in late September, in preparation for the Copenhagen Climate Summit in December where it is hoped that the world nations will agree on a new global climate treaty.

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Fungus harming rare frog species

10/08/2009

It's a great well-rounded week on Animals in the News because I have a story about every vertebrate group - mammals, fish, reptiles, and now frogs. Sorry invertebrates, you may have to wait until next week...

Check out this interesting article on Discovery Channel Animal News, Fungus Hitting Frogs Hard. The chytrid fungus called *Batrachochytrium dendrobatidis* (Bd) is devastating frogs in Central America, and hitting rare species particularly hard. Lead scientist Kevin Smith of Washington University of St. Louis isn't sure why the rare species have been hit harder than more common species. Chytridiomycosis has affected amphibians all over the world, and is so virulent it often causes the local extinction of frog populations. For rare frogs and other amphibians hit by this, the effects can be devastating and may even lead to total species extinction.

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Big Day for Endangered Houston Toads

09/28/2009

Last Monday was a big day for young Houston toads (*Bufo houstonensis*) – a federally endangered species with fewer than 300 remaining in the wild. Biologists released 140 of the toads into the same pond in Bastrop State Park where they were collected as eggs in February. They had been "head-started" at the Houston Zoo to help them avoid predation during the stages and ages in which they're most vulnerable. The released toads had grown to a couple inches in length, so they will be much better able to ward off predators. When

released from their containers, they hopped gingerly on the pine straw carpeting the forest - the place that will now be their wild habitat home.

"Headstarted" Houston toads released back into the wild
Copyright (c) 2009 Houston Zoo/Rachel Rommel

"What we are doing is a proven strategy when survivorship of the juveniles is low and the wild populations have crashed," says Texas State University biology professor Michael Forstner who has worked with the species for many years. The process is called head-starting or population supplementation, and after test runs starting in 2007, they were ready to try this out on a bigger scale. "We monitor the species in the wild, detect eggs after breeding, collect half of that egg strand and raise it in captivity away from predators. Boom, there's a big jump in juvenile survivorship, allowing us to then release those to enhance the wild populations, but at the very same pond that they were originally laid as eggs."

Houston toads have been much more sensitive to habitat loss and urban and agricultural development than their relative, the Gulf Coast toad, which remains very abundant even around big cities. Houston toads, on the other hand, have steadily declined from their heyday when they ranged throughout eastern Texas' post oak savannah and western piney woods habitat. They prefer sandy soils because their burrowing skills aren't so great, but sandy soils have a patchy distribution in east-central Texas. The remaining suitable habitat is fragmented by roads, cities, and agriculture, making it almost impossible for the species to recover naturally.

The widespread use of chemicals such as DDT in the 1950s through 1970s may have contributed to their decline, and other chemicals remain on land and water today that may impact the frogs. Converting ephemeral wetlands to more permanent ponds increases their competition with other frogs and toads for breeding habitat. Red imported fire ants, introduced from South America in the 1940s, have also caused problems for the toads since they can eat the toadlets alive. Fire ants can also devastate the local arthropod community, eliminating many of the insects that Houston toads eat.

With so few remaining in the wild, scientists went into "triage" mode, trying desperately to save the species. They collected around 600 eggs from a pond in Bastrop State Park, and reared them in a quarantine facility in the Houston Zoo to increase their chances at survival. Under normal conditions in the wild, less than ten percent of eggs and tadpoles would escape predation by aquatic creatures, ranging from dragonfly larvae to other frogs. Once the tadpoles metamorphose into tiny toadlets they have a much better chance at survival but they're still not home free. The zoo kept the toads until they were several months old, so they had grown a bit larger and could better escape predation by raccoons, snakes and birds.

Beyond head-starting the toads, several people are working hard to restore habitat, including conservation biologists from Texas Parks & Wildlife Department, Environmental Defense Fund, and the Capitol Area Boy Scouts of America. "Simultaneously, the same group of collaborators is pushing hard on ecosystem restoration," says Forstner. This involves enhanced connectivity, decreased fire suppression and reinstalling a natural regime of fire, [creating] ephemeral ponds, and minimizing invasive species." In the first use of the U.S. Fish & Wildlife Service's Safe Harbor agreement for an amphibian in Texas, rancher Bob Long made habitat improvements to help the beleaguered toads (see video for more info), and more than twenty adult male toads have since been spotted there. Individuals like Long may ultimately be the toad's only chance for full recovery, since 95% of Texas land is privately owned.

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