The Croaker

Newsletter of the Tablelands Frog Club

December 2008

Tablelands Frog Club

Executive Committee 2007-2008

President: Michael Anthony (07) 4053 2759
capeherp@hotmail.com

Vice-President: Keith Martin (07) 4055 3061
keithmartin30@hotmail.com

Secretary: Marney Fichera
marney_fichera@msn.com

Treasurer: Eleanor Duignan (07) 4053 4857
eduignan@bigpond.net.au

Committee: Neville Simpson
Inga Lorenz
Merv
Maria Destro
Shaun Cook (junior)

Editorial: Darren Green 4057 5603
pinkenbah@internode.on.net

Website: http://www.tablelandfrogclub.com

Tablelands Frog Club

Mail Bag 71
YUNGABURRA QLD 4879

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$15.00 Adults
$15.00 Family
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Editorial bullrush!

Hello everyone and welcome to yet another edition of *The Croaker*. The August meeting was very inspirational. Besides having a good turnout, our guest speaker Kelvin Marshall presented a challenging and informative talk on the wildlife of Borneo. It was Kelvin's talk that inspired me to look at how we become conservationists, starting with the role of the zoo.

For many, the introduction to wildlife began in zoos. The role of the zoo in all of its various forms throughout history has been a reflection of cultural attitudes within a society, as seen in the events of the Roman Empire, bestiaries, menageries, exotic collections, and today's modern zoo. A modern shift in zoos can be traced to the 1960s when people increasingly became environmentally aware. This also corresponds with society's concern for animal ethics, as reflected in the rise of philosophically driven activism, and a vast array of literature devoted to various aspects on the subject. The modern zoo has moved from concrete and steel to representations of natural habitat and natural behaviour. Zoos can be regarded as an introduction to wildlife, promoter of environmental literacy and recruiting centre for conservationists. Zoos are justifiable on the grounds of conservation, education, research, close or physical contact with animals, and recreation and entertainment. Curtin (2005) explains another side of wildlife tourism...

Wildlife tourism is essentially a hedonistic activity, where the purchase of which is shrouded in imagery, myth, kudos and intangibility, with no guarantees the focus species will be seen. Tourism consumption is all about purchasing experiences rather than things, and increasingly these experiences include natural spaces and wild animals.

In my research I ask myself why are people attracted to animals. The manner in which people attribute various psychological characteristics to themselves and others is what social psychologists refer to as attribution theory or mental-state attribution. Humans apply attribution theory to each other by reading body language, such as posture, facial expression and other characteristics. People use these same principles when viewing animals. Anthropomorphism, defined as the attribution of human characteristics to animals, is a derivative of our own self-aware ability to infer the intentions of others. That is we understand animals in terms of our own human experience, language and emotions. Anthropomorphism is how we think about animals, thus subconsciously affecting emotive and symbolic attachment.

Animal behaviourists and zoo educators suggest that animals are very different from humans, and anthropomorphism is often incorrectly applied, although some believe anthropomorphism could be useful if it leads to testable hypotheses. However, anthropomorphism is commonplace, cross-cultural, species typical, compulsive, and an important part of human culture.

People are drawn to animals that have big heads, flat face, large eyes, feet like hands, upright posture, round profile, soft fur, large size, provide companionship, have human-like qualities, or have symbolic nature. Baby animals typically fit into the above criteria. The term charisma is a complex concept that is connected with an animal's approachability and its tendency to relate to humans and its playfulness. Appeal and familiarity of animals are important to the viewer.

Attraction is largely based on anthropomorphism. The hierarchical order, or cuteness-repulsive dichotomy, of animal values and attraction begin with endearing or charismatic species at the top, and those with disgusting or repulsive unhuman-like qualities at the bottom. Some animals, like the African Wart Hog, are so ugly that they are cute. Those appealing qualities are not typical of alpha-predators, although babies are seen as cute, with their attraction mainly based on human-like qualities such as beauty, power and magnificence in the case of tigers, or dangerousness in the case of crocodiles.

Anthropomorphism is an important part of how people experience and attach themselves to animals, which can also be a useful interpretative technique to engage the interest of zoo visitors and aid in their understanding of complex issues. Anthropomorphism could be one means for wildlife tourists to comprehend self-awareness, conservation, and make meaning of their experience. In addition, deciphering alpha-predator behaviour is vital to avoiding a dangerous situation!

I hope you all enjoy this issue of *The Croaker* and I look forward to your articles or comments.

Darren Green

From the president's lilypad

With the good falls of rain experienced of late, there has been more frog activity than usual for this time of year, which has tended to be rather dry in recent years. Calls of the Dainty Green Treefrog (Litoria gracilenta), Eastern Sedgefrog (L. fallax), Green Treefrog (L. caerulea) and White-lipped Treefrog (L. infrafrenata) have all been heard down on the coast. An early wet season coming?

Most of you would have heard by now the great news of the rediscovery of one of our "missing" frogs, the Armoured Mistfrog (Litoria lorica) on the Carbine Tableland. The Armoured Mistfrog was only discovered in 1976 from specimens collected at Alexandra Creek near Thornton Peak. It is one of a number of highland rainforest stream-dwelling species that "disappeared" during the early 90's. As the only known populations of this frog occurred at high altitude it was believed that this species was extinct, and no specimens had been seen since 1991, until earlier this year when Professor Ross Alford and phd student Robert Puschendorf found a new population. This population was away from its previous known range, at lower altitude and outside of rainforest. Hopefully more populations will be found of this rare frog and possibly even populations of some of the other "missing" frogs.

More to come on this species in the next newsletter, where it will feature as the frog of the month.

The club continues to "tick over" with a few new memberships and renewals. Unfortunately there appears to be a fairly high turnover with people only joining for one year. Luckily we have a small core of members who stay with the club.

Michael Anthony

http://www.tablelandfrogclub.com

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Wild News... IN THE SPOTLIGHT

The "Crocodile Hunter" Phenomenon

In the process of completing my graduate studies in herpetology, I have gained enormous respect for the great conservation biologists of our era and their contributions to the discipline. Nevertheless, I reserve my most profound respect and admiration for the contagious passion and enthusiasm that some people demonstrate toward wildlife and its preservation. In that regard the tragic death of Steve Irwin is a terrible loss for conservation biology. One of Irwin's colleagues from the Australia Zoo best summarized what I felt: "Steve Irwin made it cool to care for animals and wildlife."

We recently celebrated the 20th anniversary of *Conservation Biology* and of the Society for Conservation Biology. As described by several authors in the June 2006 issue, the field has made tremendous strides over the past 2 decades. Nevertheless, there is widespread agreement that the single most important challenge that the discipline still faces is reconnecting people and nature. The main difference between conservation biology—often described as a crisis discipline or a mission driven discipline—and other scientific spheres is that its success depends on both its findings and its ability to influence the way people think and live. Influencing peoples' behavior is surely where the fewest battles have been won. Scientific papers remain the business of academics and managers; although unquestionably important, they are not intended for the general public, and they are certainly not cool.

Conservation biology has a desperate need for good communicators who can popularize the cause through their palpable passion and dedication. In this regard the impact that the "Crocodile Hunter" had on the world is profound. Irwin's unique and colorful personality became a worldwide vehicle for wildlife knowledge. Although his unexpected stardom made him an easy target for criticism, some of which may have been justified, he never let these tarnish his enthusiasm and devotion for biodiversity and endangered species. Despite the controversy he always pled for wildlife conservation, a message heard by young and old alike.

Sadly, the academic community has never fully acknowledged (or understood) the importance of the "Crocodile Hunter" phenomenon. Too often, academics treat popular culture with disdain or contempt, despite the fact that it may serve the discipline's ultimate objective. On several occasions I have been ridiculed by colleagues for thinking that Steve Irwin was great. This is a testimony of a worrisome trend: in the course of becoming a recognizable scientific discipline with its own journals and conferences, conservation biology has moved away from its intrinsic reason for being. Undoubtedly, there is lack of recognition for popular communications, but I do not believe scholars are to blame. Between publishing papers, teaching, attending conferences, and writing grant proposals, is there any time left? Time invested in developing public awareness for conservation should never be considered wasted, even for the most eminent researchers, and should be deemed an important contribution.

Unfortunately, the current system of academic evaluation often prompts conservation biologists to think otherwise. I am not suggesting that conservationists should start performing life threatening stunts with deadly creatures in front of television cameras. But if every conservation biologist was even a tenth as successful at communicating his passion and enthusiasm for conservation as Steve Irwin was, reconciling people and nature surely would not be such a difficult challenge. John Robinson (2006, *Conservation Biology* 20: 658–669) argues that conservation biology needs to make the move to the real world. The "Crocodile Hunter" was as real as any conservation enthusiast will ever be.

AUTHOR: S´ebastien Rioux Paquette (2007), Letter to the editor (February 2007), *Conservation Biology* 21(1):6.

Biological Weapons To Control Cane Toad Invasion In Australia

ScienceDaily (May 10, 2008) — New research on cane toads in Northern Australia has discovered a way to control the cane toad invasion using parasites and toad communication signals. Professor Rick Shine from the University of Sydney has been studying the biology of cane toads, and will reveal his new research May 7 at the Academy of Science's peak annual event Science at the Shine Dome. He says that controlling toads has been difficult as things that kill them will often kill frogs. Professor Shine and his team studied cane toads in Queensland that lagged behind the invasion front and found they were infected with a lungworm parasite which slows down adults and, in laboratory tests, kills around 30% of baby toads. It was originally thought cane toads left their parasites behind when they came to Australia and that the lungworm parasite came from Australian frogs. This ruled out using the parasite for toad control due to potential frog impacts. However, DNA sequencing by Professor Shine's team has shown the parasite species came from the Amazon and is genetically different to those found in Australian frogs. 'The toads have brought with them a parasite that kills them and that doesn't attack Australian frogs, so this is a phenomenal opportunity for biological control' he said.

Professor Shine's team have also discovered pheromones used to communicate danger between toad tadpoles that have significant impacts on their size and survival. The 'alarm pheromones' are released into a pond when a tadpole is frightened or injured and warns other toad tadpoles to flee the area.

The signal stresses the toad tadpoles so much that in field trials around half of them died before they became adult toads, and those that become adults were half the size they should've been. The pheromones were also found to be different to those of Australian frogs and didn't affect them. Using the lungworm parasite and the alarm pheromone together would be particularly powerful as the pheromone either kills or produces smaller 'toadlets', and the parasite is more effective at killing these smaller sized toads. '...the combination of those two things start to suggest, I think, a pretty straightforward, pretty low risk, but probably pretty effective way to start controlling toads.'

Attractant pheromones have also been found by his team which can be used to lure toad tadpoles for catching and removal. Professor Shine hopes to involve community groups in the use of these new control methods. He says that although there has been a huge effort to slow the toad front by communities in Western Australia and the Northern Territory, the toad front is progressing as fast as ever.

'We've got the toads moving across Australia faster and faster. They're widely seen as a major problem. In community surveys they're identified by many people as the worst invasive species we have.'

Previous methods for controlling cane toad numbers have included traps and fences but have mainly involved physically removing them from the environment, often by putting them in a plastic bag in the freezer. 'People have spent certainly well over $15 million on cane toads in Australia on research and control. Very little of that has actually been devoted to try to understand what toads are doing. Now that we've done that, it does seem that there are really encouraging avenues. 'By doing the detailed ecology and actually finding out about communication systems and where the parasite came from and things like this, we've got new ways to attack toads that haven't been thought of before'. He says the main impact of the toad invasion has been on large predators such as goannas, quolls, king brown snakes and death adders. 'We've had, for example, probably 90% mortality of the big goannas and the big lizards in our study site. Its dramatic, and that has all sorts of flow on effects. You take out 90% of the big predators and that really changes the system.'

ScienceDaily
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SOURCE: Australian Academy of Science (2008, May 10). Biological Weapons To Control Cane Toad Invasion In Australia. ScienceDaily. Retrieved May 14, 2008, from http://www.sciencedaily.com /releases/2008/05/080508131953.htm

PHOTO: New research on cane toads in Northern Australia has discovered a way to control the cane toad invasion using parasites and toad communication signals. (Credit: iStockphoto/Eric Delmar)

Wild News... IN THE SPOTLIGHT

World's Smallest Snake Found In Barbados

ScienceDaily (Aug. 4, 2008) — The world's smallest species of snake, with adults averaging just under four inches in length, has been identified on the Caribbean island of Barbados. The species -- which is as thin as a spaghetti noodle and small enough to rest comfortably on a U.S. quarter --was discovered by Blair Hedges, an evolutionary biologist at Penn State. Hedges and his colleagues also are the discoverers of the world's smallest frog and lizard species, which too were found on Caribbean islands. The most recent discovery will be published on 4 August 2008 in the journal Zootaxa.

Hedges found the new snake -- a type of threadsnake -- in a tiny forest fragment on the eastern side of Barbados. He believes the species is rare because most of its potential habitat has been replaced by buildings and farms. "Habitat destruction is a major threat to biodiversity throughout the world," he said. "The Caribbean is particularly vulnerable because it contains an unusually high percentage of endangered species and, because these animals live on islands, they have nowhere to go when they lose their habitat."

Hedges determined that the Barbados species is new to science on the basis of its genetic differences from other snake species and its unique color pattern and scales. He also determined that some old museum specimens that had been misidentified by other scientists actually belong to this new species.

Scientists use adults to compare sizes among animals because the sizes of adults do not vary as much as the sizes of juveniles and because juveniles can be harder to find. In addition, scientists seek to measure both males and females of a species to determine its average size. Using these methods, Hedges determined that this species, which he named Leptotyphlops carlae, is the smallest of the more than 3,100 known snake species.

According to Hedges, the smallest and largest species of animals tend to be found on islands, where species can evolve over time to fill ecological niches in habitats that are unoccupied by other organisms. Those vacant niches exist because some types of organisms by chance, never make it to the islands. For example, if a species of centipede is missing from an island, a snake might evolve into a very small species to "fill" the missing centipede's ecological niche.

Hedges thinks the Barbados snake may be at or near the minimum possible size for snakes though he cannot say for sure that no smaller species exists -- several other snake species are nearly as small. While it is possible that a smaller species exists, finding such an animal is unlikely. "Snakes may be prevented by natural selection from becoming too small because below a certain size, there may be nothing for their young to eat," said Hedges, adding that the Barbados snake, like others to which it is related, likely feeds primarily on the larvae of ants and termites.

In contrast to larger species -- some of which can lay up to 100 eggs in a single clutch -- the smallest snakes, and the smallest of other types of animals, usually lay only one egg or give birth to one offspring. Furthermore, the smallest animals have young that are proportionately enormous relative to the adults. For example, the hatchlings of the smallest snakes are one-half the length of an adult, whereas the hatchlings of the largest snakes are only one-tenth the length of an adult. The Barbados snake is no exception to this pattern. It produces a single slender egg that occupies a significant portion of the mother's body.

"If a tiny snake were to have two offspring, each egg could occupy only half the space that is devoted to reproduction within its body. But then each of the two hatchlings would be half the normal size, perhaps too small to function as a snake or in the environment," said Hedges. "The fact that tiny snakes produce only one massive egg -- relative to the size of the mother -- suggests that natural selection is trying to keep the size of hatchlings above a critical limit in order to survive."

Hedges has discovered and described more than 65 new species of amphibians and reptiles throughout the Caribbean in the course of his genetic and evolutionary studies. In the paper in which he describes the Leptotyphlops carlae snake that he discovered on Barbados, he also describes another new snake that he discovered on the nearby island of St. Lucia, a new threadsnake that is nearly as small as the Barbados snake. Finding new species, collecting them, and naming them is a necessary first step for other types of research. Hedges said this exploration and discovery of new species also is critical for protecting biodiversity. "It is difficult to protect a species if you don't know it exists," he said.

SOURCE: Penn State (2008, August 4). World's Smallest Snake Found In Barbados. ScienceDaily. Retrieved August 6, 2008, from http://www.sciencedaily.com /releases/2008/08/080804100258.htm

PHOTO: The snake named Leptotyphlops carlae, as thin as a spaghetti noodle, is resting on a US quarter. Blair Hedges, professor of biology at Penn State University, discovered the species and determined that it is the smallest of the more than 3,100 known snake species. (Credit: Blair Hedges, Penn State)

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Climate Change Hastens Extinction In Madagascar's Reptiles & Amphibians

ScienceDaily (June 10, 2008) — New research from the American Museum of Natural History provides the first detailed study showing that global warming forces species to move up tropical mountains as their habitats shift upward. Christopher Raxworthy, Associate Curator in the Department of Herpetology, predicts that at least three species of amphibians and reptiles found in Madagascar's mountainous north could go extinct between 2050 and 2100 because of habitat loss associated with rising global temperatures. These species, currently moving upslope to compensate for habitat loss at lower and warmer altitudes, will eventually have no place to move to.

"Two things together--highly localized distribution close to the very highest summits, and the magnitude of these upslope shifts in response to ongoing warming--make a poisonous cocktail for extinction," said Raxworthy. In a paper recently published in Global Change Biology, Raxworthy and colleagues found overall trends for elevation changes among 30 species of amphibians and reptiles.

Uphill movement is a predicted response to increased temperatures, and other studies, including that of J. Alan Pounds in Costa Rica, have provided some empirical evidence of how tropical animals respond to climate change. Raxworthy's research, however, is distinguished by the number and diversity of species, the demonstrated meteorological changes over the same time period, the relatively large shifts in elevation, and the broader assessment of extinction vulnerability for tropical montane communities. Currently, there is also a dearth of information available concerning climate impacts on biodiversity for tropical regions.

Raxworthy has been surveying the diversity of Madagascar's herpetological assemblage since 1985 and discovered the uphill migration almost by chance while in the field. On repeated surveys of northern Madagascar's mountains, the Tsaratanana Massif, he noticed that some species were missing from camps where they'd been previously observed. Moreover, some of these "missing" species popped up at the next higher elevation surveyed. "I noted this in the field as strange, but when I later sat down and looked at the data, the trend persisted," Raxworthy explains. He culled elevation records and was able to compare surveys of

Wild News... IN THE SPOTLIGHT

animals over a ten-year period.

The results were dramatic. Among 30 species of geckos, skinks, chameleons, and frogs, and controlling for sampling effort, an average shift uphill of 19 to 51 meters (62 to 167 feet) was observed over the decade. When these results were compared with meteorological records and climate change simulations, the movement of animals could be linked to temperature increases of 0.1°C to 0.37°C (0.18°F to 0.67°F) over the same decade, which corresponds to an expected upslope movement of 17 to 74 meters (59 to 243 feet).

Raxworthy's results are robust because of the diversity of species included in his analyses. These animals come from five different families of amphibians and reptiles--narrow-mouthed toads, mantelline frogs, chameleons, geckos, and skinks--making it unlikely that a simple phenological change could explain the upward movement. "When you see a general trend across all these groups of organisms, it is likely to be related to a broad explanation like general temperature warming, not something more subtle such as seasonal variation," says Raxworthy.

The direct link between observed movement up mountains, possible extinction, and climate change has consequences for Madagascar's network of national parks. The government of Madagascar is currently planning to set aside 10 percent of its landmass for conservation purposes, and previous research by Raxworthy and colleagues published in Science in April used the distribution of 2,300 species of animals to map the areas of this island nation that provide adequate habitat for all species. "The Malagasy government is creating important new reserves and protecting forests. Sadly, however, with a phenomenon like global warming, species will move upslope, and so eventually may still lose all their habitat and go extinct," says Raxworthy. "This conservation problem thus requires a global solution."

SOURCE: American Museum of Natural History (2008, June 10). Climate Change Hastens Extinction In Madagascar's Reptiles And Amphibians. ScienceDaily. Retrieved July 1, 2008, from http://www.sciencedaily.com /releases/2008/06/080609115216.htm

PHOTO: Calumma tsaratananensis, one of the example species endemic to the summit region of Tsaratanana. (Credit: AMNH)

Dying Frogs Sign Of A Biodiversity Crisis

ScienceDaily (Aug. 12, 2008) — Devastating declines of amphibian species around the world are a sign of a biodiversity disaster larger than just frogs, salamanders and their ilk, according to researchers from the University of California, Berkeley. In a new article published online in the journal Proceedings of the National Academy of Sciences, the researchers argue that substantial die-offs of amphibians and other plant and animal species add up to a new mass extinction facing the planet. "There's no question that we are in a mass extinction spasm right now," said David Wake, professor of integrative biology at UC Berkeley. "Amphibians have been around for about 250 million years. They made it through when the dinosaurs didn't. The fact that they're cutting out now should be a lesson for us."

The study, co-authored by Wake and Vance Vredenburg, research associate at the Museum of Vertebrate Zoology at UC Berkeley and assistant professor of biology at San Francisco State University, will appear in a special supplement to the journal featuring papers based on presentations from the December 2007 Arthur M. Sackler Colloquium of the National Academy of Sciences, "In the Light of Evolution II: Biodiversity and Extinction."

New species arise and old species die off all the time, but sometimes the extinction numbers far outweigh the emergence of new species. Extreme cases of this are called mass extinction events, and there have been only five in our planet's history, until now. The sixth mass extinction event, which Wake and others argue is happening currently, is different from the past events. "My feeling is that behind all this lies the heavy hand of Homo sapiens," Wake said.

There is no consensus among the scientific community about when the current mass extinction started, Wake said. It may have been 10,000 years ago, when humans first came from Asia to the Americas and hunted many of the large mammals to extinction. It may have started after the Industrial Revolution, when the human population exploded. Or, we might be seeing the start of it right now, Wake said. But no matter what the start date, empirical data clearly show that extinction rates have dramatically increased over the last few decades, Wake said.

The global amphibian extinction is a particularly bleak example of this drastic decline. In 2004, researchers found that nearly one-third of amphibian species are threatened, and many of the non-threatened species are on the wane. Our own backyard provides a striking example, Wake said. He and his colleagues study amphibians in the Sierra Nevada, and the picture is grim there, as well. "We have these great national parks here that are about as close as you can get to absolute preserves, and there have been really startling drops in amphibian populations there, too," Wake said.

Of the seven amphibian species that inhabit the peaks of the Sierra Nevada, five are threatened. Wake and his colleagues observed that, for two of these species, the Sierra Nevada Yellow-legged Frog and the Southern Yellow-legged Frog, populations over the last few years declined by 95 to 98 percent, even in highly protected areas such as Yosemite National Park. This means that each local frog population has dwindled to 2 to 5 percent of its former size. Originally, frogs living atop the highest, most remote peaks seemed to thrive, but recently, they also succumbed.

There are several frog killers in the Sierra Nevada, Wake said. The first hint of frog decline in this area came in the 1990s, and researchers originally thought that rainbow trout introduced to this area were the culprits - they like to snack on tadpoles and frog eggs. The UC Berkeley team did experiments in which it physically removed trout from some areas, and the result was that frog populations started to recover.

"But then they disappeared again, and this time there were carcasses," Wake said. The culprit is a nasty pathogenic fungus that causes the disease chytridiomycosis. Researchers discovered the fungus in Sierra Nevada frogs in 2001. Scientists have documented over the last five years mass die-offs and population collapses due to the fungus in the mountain range. But the fungus is not unique to California. It has been wiping out amphibians around the world, including in the tropics, where amphibian biodiversity is particularly high. "It's been called the most devastating wildlife disease ever recorded," Wake said.

Global warming and habitat constriction are two other major killers of frogs around the world, Wake said. And the Sierra Nevada amphibians are also susceptible to poisonous winds carrying pesticides from Central Valley croplands. "The frogs have really been hit by a one-two punch," Wake said, "although it's more like a one-two-three-four punch." The frogs are not the only victims in this mass extinction, Wake emphasized. Scientists studying other organisms have seen similarly dramatic effects. "Our work needs to be seen in the context of all this other work, and the news is very, very grim," Wake said.

SOURCE: University of California - Berkeley (2008, August 12). Dying Frogs Sign Of A Biodiversity Crisis. ScienceDaily. Retrieved August 13, 2008, from http://www.sciencedaily.com /releases/2008/08/080812135654.htm

PHOTO: Carcasses of Southern Yellow-legged Frogs in Sixty Lake Basin in Sierra Nevada, California. The frogs died of chytridiomycosis, an amphibian disease caused by a particularly virulent fungus. (Credit: Vance Vredenburg)

South American Frog Secretions Stimulate Insulin Release, Could Offer Diabetes Treatment Hope

ScienceDaily (Mar. 5, 2008) — Secretions from the skin of a South American frog could provide a new treatment for diabetes, says a University of Ulster scientist. The paradoxical frog, Pseudis paradoxa, secretes a substance from its skin which protects it from infection. But the molecule, pseudin-2, may have another use for humans. Researchers found that it stimulates the release of insulin, the vital hormone which is deficient in diabetes sufferers. Scientists made an artificial copy of the peptide, or protein building block, and showed that it could be used to boost insulin production in people with Type 2 diabetes. They believe it could provide a new diabetes drug treatment, part of a new class of medicines called incretin mimetics which mimic natural substances. However more work must be carried out before the frog therapy is ready to be tested on human patients.

The work is being carried out by researchers

Wild News... IN THE SPOTLIGHT

at the University of Ulster and United Arab Emirates University. Dr Yasser Abdel-Wahab, senior lecturer in biomedical sciences at the University of Ulster, says: "We are at an exciting stage with this research. "We have tested a more potent synthetic version of the pseudin-2 peptide and have found that it has the potential for development into a compound for the treatment of Type 2 diabetes. "Now we need to take this a step further and put our work into practice to try and help people with Type 2 diabetes. "More research is needed, but there is a growing body of work around natural anti-diabetic drug discovery that, as you can see, is already yielding fascinating results."

Insulin is essential for controlling the way the body fuels itself with sugar. Normally insulin is produced by cells in the pancreas in the right amounts needed to regulate blood sugar levels.

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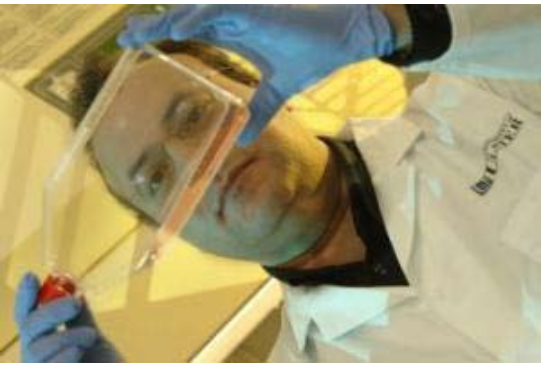
But in Type 2 diabetes either not enough is produced, or the body becomes resistant to the concentrations that are available. The Type 2 version of the disease is strongly associated with obesity and usually develops in middle age. Type 1, or insulin-dependent diabetes, is a less common autoimmune disease that results in the complete destruction of insulin-producing cells. Currently there are 2.3 million diagnosed diabetes sufferers in the UK,most of whom have Type 2 diabetes. An estimated 750,000 people have Type2 diabetes but do not know it.

The frog research was presented March 3 at the Diabetes UK Annual Professional Conference in Glasgow. Douglas Smallwood, chief executive of the Diabetes UK charity, says, "Although it can be managed with diet and physical activity, Type 2 diabetes is progressive and may require tablets and/or insulin to control it effectively. Good diabetes control reduces the risk of complications including blindness, heart disease, kidney problems and amputation so new treatments are vital." The bright green and pink paradoxical frog, from Trinidad and the Amazon basin, is appropriately named because of its odd habit of shrinking with age. As a tadpole, it can reach 27 centimetres in length, but adult frogs are only about four centimetres long.

SOURCE: University of Ulster (2008, March 5). South American Frog Secretions Stimulate Insulin Release, Could Offer Diabetes Treatment Hope. ScienceDaily. Retrieved March 16, 2008, from http://www.sciencedaily.com /releases/2008/03/080304224051.htm

PHOTO: Biomedical scientist Dr Yasser Abdel-Wahab has discovered that secretions from the skin of a South American frog could provide a new treatment for diabetes. (Credit: Image courtesy of University of Ulster)



Frogs With Disease-resistance Genes May Escape Extinction

ScienceDaily (July 17, 2008) — As frog populations die off around the world, researchers have identified certain genes that can help the amphibians develop resistance to harmful bacteria and disease. The discovery may provide new strategies to protect frog populations in the wild. New research examines how genes encoding the major histocompatibility (MHC) complex affect the ability of frogs to resist infection by a bacterium that is commonly associated with frog population declines. "In the short term, captive management of frogs with complementary disease-resistance genes may offer the best hope for saving species from extinction," says Bruce Waldman, a biologist at Lincoln University in New Zealand and one of the paper's authors. "Management practices that maintain or enhance diversity in MHC genes may prove the key to safeguarding frog populations in the wild."

"Massive die-offs of frogs may indicate environmental problems that ultimately will affect other species, including humans," Waldman says. "But, despite the concern, little is known about factors that make individuals susceptible to disease."

Doctoral students Seth Barribeau and Jandouwe Villinger, working with Waldman, exposed African clawed frog tadpoles to several doses of the bacterium Aeromonas hydrophila. They examined the number of tadpoles that survived and measured how fast they grew. Certain genes allowed tadpoles to survive bacterial infection but at a cost, as these tadpoles sometimes grew more slowly. Among siblings, patterns of disease resistance corresponded to tadpoles' MHC genes rather than other genes that they shared, demonstrating that the MHC genes conferred immunity.

Programs currently are underway to rescue frogs from declining wild populations and breed them in captivity to ensure that species are not lost to extinction. This study suggests that selective breeding of individuals with known disease-resistance genes might produce frogs that can survive infection by pathogens, even after the frogs are reintroduced into the wild. The research team studied the African clawed frog because its immune system already had been well characterized, but as most frogs and toads have similar immune systems, they believe that their results will be generally applicable to all threatened and endangered amphibians.

SOURCE: Public Library of Science (2008, July 17). Frogs With Disease-resistance Genes May Escape Extinction. ScienceDaily. Retrieved July 26, 2008, from http://www.sciencedaily.com /releases/2008/07/080715204750.htm

PHOTO: As frog populations die off around the world, researchers have identified certain genes that can help the amphibians develop resistance to harmful bacteria and disease. The discovery may provide new strategies to protect frog populations in the wild. (Credit: iStockphoto/Paul Tessier)

What's One Less Species Between Friends?

Along with the Broad-Faced Potoroo, the Flores Cave Rat, the Guam Flying Fox, the Japanese Wolf, the Syrian Wild Ass, and, oh yes, our pal the dodo, we can add the Caribbean monk seal, last seen in 1952, to the official list of extinct species. The U.S. government declared it so over the weekend, after five futile years without a sighting. But what does one less species of seal really matter? Should anyone care? One place to start in on this topic is with Julia Whitty's excellent Mother Jones piece from last April on the threat of mass extinction. A poll by the American Museum of Natural History finds that 7 in 10 biologists believe that mass extinction poses a colossal threat to human existence, a more serious environmental problem than even its contributor, global warming, and that the dangers of mass extinction are woefully underestimated by most everyone outside of science.

E.O. Wilson has predicted that roughly half of all plant and animal species will be extinct by the year 2100. There have been five great extinction waves in the past 439 million years. We're on the verge of a sixth, as "habitat degradation, overexploitation, agricultural monocultures, human-borne invasive species, and human-induced climate change" raise the rate of extinction to something like 1,000 to 10,000 times the background rate. (More recently, Joseph Wright and Helene Muller-Landau have argued that the crisis isn't as bad as thought, although their work is controversial.)

Whitty's piece is very much worth reading, though I always wish these articles would hammer home why humans should care about the loss of biodiversity. It may be strange to say, but I don't think it's obvious to most people why it's a problem if entire ecosystems up and vanish. Newspapers have long reported the fact that bees are vanishing en masse, which could threaten $15 billion worth of U.S. agriculture. More concrete examples like this might, I think, get the point across. There's no equivalent to the IPCC for the extinction crisis—a body that could hammer out a consensus perspective and urge governments to take action. Why not?

Mind you, climate change is a solvable—though staggering—problem. I'm less sure anything can be done to halt what Stephen Meyer calls the "The End of the Wild" (Meyer isn't sure, either). Whitty discusses the Wildlands Project, which would create massive linked "corridors" for wildlife, on a scale larger than anything yet contemplated. In the United States, ecologically significant areas such as Florida, the Arctic/Boreal regions, and the Rocky Mountains would be preserved and connected (see that map on the right). But it's also an audacious project: Wildlands advocates estimate that the project could take 100 years or more—and by then, mass extinction will be well underway.

But there's definitely something to the Wildlands idea. Right now, wildlife preserves tend to be very small, and are often isolated from other wilderness areas, preventing the sort of migration that fosters biodiversity. These reserves are usually hemmed in by human

Wild News... IN THE SPOTLIGHT

activities—farms, urban sprawl, clear-cutting—that affect them, even if they have well-enforced boundaries. The Monteverde Cloud Forest Preserve, an eco-tourist hotspot which covers 30,000 acres and hosts thousands of species, has been drying out because of farming in the surrounding lowlands. And climate change could soon make the whole concept of a static, isolated preserve unworkable—monarch butterflies may soon find the biopreserves in Mexico where they winter uninhabitable, for instance.

Any serious attempt to stem the extinction crisis—even if it can't be stopped—would likely have to take a new approach to wildlife preserves. (As Whitty notes, even Yellowstone National Park has been bleeding biodiversity.) Meyer recommends setting up sites that protect "broad ecosystem functions... in a dynamic environment, rather than species-specific habitat needs or singly-defining (highly peculiar) ecological characteristics." Even if something like the Wildlands project can't be done, governments ought to be thinking bigger than scattered butterfly preserves if they want to preserve what they can of the world's biodiversity.

At the moment, though, governments focus mainly on saving individual species. This essentially amounts to man-made evolution: We decide which species get to stay and which ones go. Pandas are cute and need saving; thousands of insects and deep-sea invertebrates that sustain whole ecosystems get little thought. Indeed, the original idea behind the U.S. Endangered Species Act was that the causes of extinction were finite and only a handful of species were genuinely threatened. That notion seems quaint in the face of an impending mass die-off of species we don't even know about. Now, I don't want to see the ESA junked. Pandas really are adorable and need to be saved. But it's sort of like spitting in a hurricane at this point.

SOURCE: HerpDigest; New Republic, Environment and Engergy Blog, 6/9/08; (HerpDigest Editor – Seemingly written in response to statement in the New York Time's blog DOTEARTH.COM by Andrew Revkin, who posted in the blog the question - "Does the world need leatherback turtles? Most likely not.")

Insects Use Plants Like A Telephone

ScienceDaily (Apr. 27, 2008) — Dutch ecologist Roxina Soler and her colleagues have discovered that subterranean and aboveground herbivorous insects can communicate with each other by using plants as telephones. Subterranean insects issue chemical warning signals via the leaves of the plant. This way, aboveground insects are alerted that the plant is already 'occupied'.

Aboveground, leaf-eating insects prefer plants that have not yet been occupied by subterranean root-eating insects. Subterranean insects emit chemical signals via the leaves of the plant, which warn the aboveground insects about their presence. This messaging enables spatially-separated insects to avoid each other, so that they do not unintentionally compete for the same plant.

In recent years it has been discovered that different types of aboveground insects develop slowly if they feed on plants that also have subterranean residents and vice versa. It seems that a mechanism has developed via natural selection, which enables the subterranean and aboveground insects to detect each other. This avoids unnecessary competition.

Green telephone lines

Via the 'green telephone lines', subterranean insects can also communicate with a third party, namely the natural enemy of caterpillars. Parasitic wasps lay their eggs inside aboveground insects. The wasps also benefit from the volatile signals emitted by the leaves, as these reveal where they can find a good host for their eggs. The communication between subterranean and aboveground insects has only been studied in a few systems. It is still not clear how widespread this phenomenon is.

SOURCE: Netherlands Organization for Scientific Research (2008, April 27). Insects Use Plants Like A Telephone. ScienceDaily. Retrieved April 30, 2008, from http://www.sciencedaily.com /releases/2008/04/080423101813.htm

PHOTO: Illustration of communication between subterranean and aboveground herbivorous insects. (Credit: Image courtesy of Netherlands Organization for Scientific Research)

Animal book series

Animal is a pioneering series from Reaktion Books. The first of its kind to explore the historical significance and impact on humans of a wide range of animals, each book in the series takes a different animal and examines its role in history around the world. The importance of mythology, religion and science are described as is the history of food, the trade in animals and their products, pets, exhibition, film and photography, and their roles in the artistic and literary imagination. Written by authors who are passionate about their subjects, these highly accessible, informative and beautifully produced books will appeal to the general reader as well as to those with a specialist interest, and will be of educational value to college students and schoolchildren.

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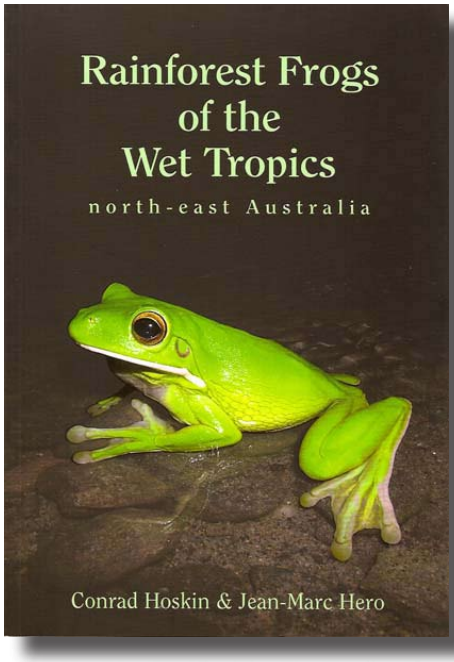
http://www.reaktionbooks.com.uk

Animal Phobias

Animals- Zoophobia.
Animals, skins of or fur- Doraphobia.
Animals, wild- Agrizoophobia.
Ants- Myrmecophobia.
Bees- Apiphobia or Melissophobia.
Birds- Ornithophobia.
Bulls- Taurophobia.
Cats- Aclurophobia, Ailurophobia, Elurophobia, Felinophobia, Galeophobia, or Gatophobia.
Chickens- Alektorophobia.
Creepy, crawly things- Herpetophobia.
Dogs or rabies- Cynophobia.
Feathers or being tickled by feathers- Pteronophobia.
Fish- Ichthyophobia.
Frogs- Batrachophobia.
Fur or skins of animals- Doraphobia.
Horses- Equinophobia or Hippophobia.
Mice- Musophobia, Murophobia or Suriphobia.
Mushrooms- Mycophobia.
Otters- Lutraphobia.
Parasites- Parasitophobia.
Plants- Botanophobia.
Rat, great mole- Zemmiphobia.
Reptiles- Herpetophobia.
Sharks- Selachophobia.
Shellfish- Ostraconophobia.
Skin of animals, fur- Doraphobia.
Snakes- Ophidiophobia or Snakephobia.
Spiders- Arachnephobia or Arachnophobia.
Tapeworms- Taeniophobia.
Termites- Isopterophobia.
Toads- Bufonophobia.
Trees- Dendrophobia.
Vegetables- Lachanophobia.
Wasps- Spheksophobia.
Wild animals- Agrizoophobia.
Worms- Scoleciphobia.
Worms, being infested with- Helminthophobia.

SOURCE: The Alphabetized Phobia List
http://www.phobialist.com/reverse.html

Book Release



Small-Eyed Snake
(Cryptophis nigrescens)

The Small-eyed Snake was first described by Gunther in 1862 as Hoplocephalus nigrescens from specimens from Sydney NSW, lodged in the British Museum of Natural History. In 1885 Macleay described specimens from "Herbert River" district, Queensland as Hoplocephalus assimilis, specimens now housed in the Australian Museum, Sydney. Worrell in 1961 erected the genus Cryptophis for this and one other closely related species. For a while in recent years the species was placed in the genus Rhinoplocephalus but has now been placed back into Cryptophis.

The Small-eyed Snake is one of the most common snakes of eastern Australia, from west of Melbourne to south of Cooktown, although rarely seen by the public. It is nocturnal, hiding beneath slabs of rock, in rock or ground crevices or under logs and other ground debris.

Small-eyed snakes can commonly be found at night along roads & tracks through the rainforest of the Wet Tropics and surrounding habitats, occasionally showing up in suburban gardens.

They grow to a maximum of 1 metre, although the average adult size is around half of that.

It is a "live-bearing" species with up to 8 young, born at lengths of up to 13cm. Unfortunately gravid female snakes are attracted to warm roads at night and often become road fatalities. Gravid females have been found in November on the Atherton Tablelands. Male snakes perform "male combat" during courtship.

There are 2 other species of snake sharing its habitat that are black in colour. The Slaty-grey Snake (Stegonotus cucullatus) is very similar and easily confused with the Small-eyed. They are both black above and pale below, with a flattish head and small eyes and both nocturnal in habits.

Slaty-greys have a paler belly with little other markings apart from occasional darker flecks, becoming more prominent under the tail (Small-eyed Snakes generally have a greyish tinge to their belly, often with darker blotches and sometimes a pinkish tinge and often have a darker stripe along the middle where slaty greys are uniform pale cream below). Slaty-grey's eyes are larger and the head not as broad as the Small-eyed. All elapid snakes (Small-eyed) lack the loreal scale that is present in all colubrid snakes (Slaty-grey). Subcaudal (underneath the tail) scales are single in the Small-eyed and divided in the Slaty-grey.

The other snake to which the small-eyed is superficially similar is the Common Black Snake (Psuedechis porphyriacus). The Black is active by day, is more robustly built than the Small-eyed Snake. When reddish colouration is present on a Black Snake it is concentrated along the side, edging the black dorsal colouration, whereas in the Small-eyed the reddish colouration is towards the centre of the belly and is not generally discernable from a human vantage point. The Black Snake has some subcaudal scales divided.

Even experienced herpetologists can confuse Small-eyed and Slaty-grey snakes so it is important to be sure of which species you are dealing with. The bite of this snake has caused one fatality, although the victim was a reptile collector who had been bitten previously by this species (with no ill-effect). Previous exposure to the venom may have developed sensitivity. Symptoms took some time to develop; the man was admitted to Cairns Base Hospital 3 days after the bite; he was released then readmitted five days after the bite with severe muscle pain and death did not take place until 10 days after the bite. The main action of Small-eyed snake venom breaks down muscle (myotoxin). Death occurred from renal (kidney) failure, possibly due to an excess of products of muscle breakdown in the urine.

Food items recorded during Shine's dissection of museum specimens of Small-eyed Snakes are skinks (89%), dragons, legless lizards, snakes & lizard eggs. Other food items noted in the literature include geckos and frogs (only present in the mouth of meseum specimens). It is believed that Small-eyed Snakes forage at night for sleeping diurnal species of skink, however nocturnal skink species are also present in their diet.

Numbers of Small-eyed Snakes may be found together under shelter, commonly 2 or 3 together, but aggregations of up to 28 have been noted.
AUTHOR: Michael Anthony.

Little Red Tree Frog
(Litoria rubella)

From Frogs Australia...

Family: Hylidae
Common name: Ruddy Treefrog; Red Tree Frog; Desert Tree Frog
Scientific name: *Litoria rubella*
Description: This frog varies from grey, red-brown to fawn on its back, with some darker flecks. A dark band runs from the snout, through the eye and tympanum (tight membrane covering the entrance to the ear), and down the side of the body. The groin is yellow. The backs of the thighs are brown with white flecking. The belly is white-yellow and granular. The skin on the back is smooth or has lots of tiny granules. The finger and toe pads are large. The fingers are slightly webbed and the toes are two-thirds webbed.
Size: 35 mm
Habitat:This frog lives in a range of habitats from the coastal areas through to the arid regions of Australia. It often hides beneath stones, bark, sheds and other buildings.
Call: A harsh buzzing sound like the call of seagull.
Breeding: Males call during summer and autumn after rain.
Eggs: Are laid in clusters of 40 - 300 eggs in small clusters.
Tadpoles: Are medium sized and translucent with dark brown patches. As these tadpoles develop the brown patches increase in size.
Similar species:This frog can be distinguished from other species of Litoria by its distribution, colouration and call.

PHOTO Litoria rubella tadpole by Marion Anstis

Little Red Treefrog (Litoria rubella), also known as Red Treefrog, Naked Treefrog, Desert Treefrog

This species was described in 1842 by J.E. Gray from specimens collected from Port Essington, N.T. Found from desert to rainforest this adaptable little frog can be observed in rocky gorges, rainforest edges, puddles in savannah woodland, granite outcrops and often occurs around human habitation such as bathrooms, toilets, water tanks, air-conditioners etc taking advantage of permanent water supply.

Its distribution covers a large area of inland and northern Australia and also southern New Guinea.

Due to this wide distribution and diversity of habitat this may prove to be a species complex. A similar species Litoria electrica occurs in the southern part of the Gulf of Carpentaria, so named for its call that sounds like the “buzz” of electric wires.

Litoria rubella is a short, dumpy species of tree frog, males growing to 28-37mm, females 34-43mm.

Colour is variable, usually taking on the colour of its surroundings, a greenish colour in coastal forest; grey on granite outcrops. Males found calling at night during the wet season are generally a reddish colour, hence their name. There is band of darker colour from the snout along the side of the head to the groin, often breaking up towards the posterior; the groin is usually a yellow colour.

During dry times, these frogs will take shelter in moister locations such as rock crevices, tree hollows and as mentioned human habitations, in fact virtually any shelter available including ground debris. In the tropics frogs emerge from their dry season shelter to breed in temporary water formed by heavy rain during the wet season. Frogs in more arid regions would only breed when there has been sufficient rain. Males call from low vegetation or other vantage points near to water.

These frogs are particularly common in savannah woodland of the western tablelands, where their call is one of the more commonly heard at night in the wet. The call has been likened to the sound of a seagull.

40-300 eggs may be laid.

This species may develop very quickly from the egg stage to metamorphosis due to the high water temperatures encountered in some temporary pools, up to 40 degrees Celsius or more. It is believed that tadpoles may develop into frogs within a week at high water temperatures.
AUTHOR: Michael Anthony.

Tablelands Frog Club

Mail Bag 71
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http://www.tablelandfrogclub.com

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Membership type

o $15.00 Adult membership o $15.00 Family membership o $5.00 Junior/Associate

Surname(s): _____ **Given name(s):** _____

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The Tablelands Frog Club Incorporated is incorporated under the Associations Incorporation Act.

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The Croaker

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