

Regional

What happens when life goes wild

With over a million and a half animal species described so far, scientists have many choices of which ones to study. Some dedicate their research career to one or just a few very similar species. Others prefer to look at larger problems that can be studied in many different species.

That is the case for Richard Essner. Essner's research has received a lot of media attention lately and a video he produced has gone viral on the Internet.

It all came about while studying jumping frogs. Essner and his collaborators discovered that a certain group of primitive frogs – of the family *Leiopelmatidae* – are far from graceful when landing. Instead of using their legs, as most would assume, Essner found that they awkwardly land on their bellies. These “belly-flop” landings, besides being funny to watch, reveal that frogs in general learn how to jump before learning how to land. It seems that these primitive frogs cannot perform repeated jumping, always a disadvantage when you are trying to escape a predator.

As soon as Essner posted the video of this strange behavior on the Internet it became viral (<http://www.siu.edu/artsandsciences/biology/ressner/>) and the media took notice.

Soon Essner became a science celebrity, his work featured by the BBC, among others.

“It was a great surprise ... to be seen in magazines and newspapers,” said Essner, currently an Associate Professor in the Department of Biological Sciences at Southern Illinois University Edwardsville.

Dr. Aldemaro Romero College Talk

But frogs are not the only organisms studied by Essner. He has also researched flying squirrels, which, despite their name, don't fly, but glide. “They control their aerodynamics by rotating their limbs,” he discovered after studying these animals using high speed video that when watched at a normal speed looks like slow motion, allowing researchers to analyze behaviors that could not be observed using the naked eye.

A native of Perryville, Mo., a rural area about 80 miles south of St. Louis, Essner developed an early interest in wildlife. As such, he has been involved in conservation biology, a field that studies the threats to the immense biodiversity on earth.

“This is a real concern for lots of biologists...we are undergoing massive extinctions, particularly frogs,” said Essner. He explained that this is due to a combination of factors, including fungi infection, habitat destruction and the introduction of invasive species.

Essner recently received a grant from the National Great Rivers Research and Education Center to study the effects of prescribed burning on birds. The idea came from one of his graduate students, Travis Wood, who wanted to know the effects of human-induced fires on prairies like the ones in Illinois. For years it has been

believed that prescribed burns, necessary for agricultural purposes, may have lethal effects on wildlife.

Most fires are a natural phenomenon and some wildlife managers use them to maintain what should be the normal cycle of nature. But when used extensively for agricultural purposes, they may have detrimental effects on the local fauna and flora.

Essner, who has a master's degree from Southeast Missouri State University and a doctorate from Ohio University, sees his own research on jumping frogs and flying squirrels within the area of biomechanics as having many applications in today's world.

Prosthetics, submarines, torpedoes, robots, and tools are just some examples of human inventions derived from studying the mechanics of animals.

Essner credits his rural upbringing and his teachers for his interest in biology. “I have always been interested in animals. I was involved in Scouting as a kid and listened to a lot of speakers who really stimulated my interest.”

Essner participates in many outreach opportunities where he is now the one talking to school kids and other groups about his research and concerns related to conservation biology. He also trains students to become wildlife biologists in order to apply basic ecology and wildlife management principles in an effort to maintain healthy populations.

“There are a lot of protected areas in Illinois and surrounding areas that provide excellent training grounds for my students,” said Essner.

He has also taken his students abroad, most recently to Panama. By his own experience he knows that by taking students everywhere he can, even to foreign countries, he provides them with an amazing life-changing opportunity.

In Panama he took students to Barro Colorado Island. Managed by the Smithsonian Institution, BCI was a mountaintop that, after the flooding generated by the construction of the Panama Canal, became an island and a natural laboratory for biologists. The island has allowed long-term research studies lasting decades.

Generations of scientists have used the island to observe how nature changes over time.

Next for Essner may be Cuba. He is particularly interested in a species of bird believed to be extinct: the ivory-billed woodpecker that used to live in southern Illinois. There was a great deal of excitement when in 2005 there was a reported sighting of this species in Arkansas, the first since the 1940s. And there may be a population of that species in Cuba. “The Cuban population is enigmatic and probably not seen since the 1980s and there may be some hope that there are still a few left,” Essner said.

Aldemaro Romero is the Dean of the College of Arts and Sciences at Southern Illinois University Edwardsville. His show, “Segue,” can be heard every Sunday morning at 9 a.m. on WSIE, 88.7 FM. He can be reached at College_Arts_Sciences@siue.edu.