

# Brookhaven scientists seek cause of frogs' demise

Decline may provide insight into environment

By Kristen Kalenowicz

How could a species of frog go from being the most abundant on Long Island to the most rare and sought after amphibian in less than 30 years? That is the question Dr. Timothy M. Green, the natural resource manager for Brookhaven National Laboratory in Upton, and Jeremy Feinberg, a doctoral student at Rutgers University, are trying to answer.

Mr. Feinberg, who grew up in Huntington, used to catch toads, salamanders and garden snakes in his yard when he was a child and said he fell in love with them at age 7.

"If I wasn't going to be a rock star, I was going to study reptiles and amphibians and be what's called a herpetologist."

In an office building at the laboratory, where the study is being conducted, detailed maps, colorful photographs and even the shed skin of a snake are mounted on the wall. Scientists and interns bustle around the narrow, labyrinth-like hallways, devoting full attention to the tiny, palm-sized creature that links them all together—the southern leopard frog.

The frogs are still common in New Jersey, Virginia and all the way down the East Coast to Florida, a fact that causes concern among Long Island scientists about the health of the Island's environment.

While curious about the amphibians' decline, the scientists said there is a deeper issue: What the disappearance of the frogs may tell them about human health risks due to changes in the environment.

"To lose a species so widely present is troubling," said Dr. Green. "It makes you wonder, could that same cause have an effect on humans?"

In June, the Foundation for Ecological Research in the Northeast (FERN) was awarded a \$20,000 grant from the Long Island Community Foundation, an organization designed to ensure Long Island's future through programs that enhance and protect the region's environment.

The grant, provided through the Henry Phillip Kraft Memorial Fund, allows scientists to test for and examine the ecological reasons behind the dramatic decline of the frog. Dr. Green, chairman of FERN, is managing the project, and Mr. Feinberg is the principal investigator. Ultimately, the goal of the project is to restore the population of the frogs on Long Island.

Herpetologists first became alarmed when, in recent years, they noticed a global decline in the frogs, said Mr. Feinberg. After questioning a network of other scientists on Long Island, they discovered that the frogs had not been spotted on Long Island in about 25 years.

Adult southern leopard frogs help control insect populations by feeding on mosquitoes, dragonflies and



The southern leopard frog is slowly disappearing from Long Island.

beetles and serve as food sources for fish. The frogs, which can be either olive colored, light green or brown with dark spots and have a distinctive white spot below the eye, are found mostly in slow brooks, meadow ponds and along the coast. Their small, thin membranes make them wonderful indicators of environmental health.

"Their skin is like a living lung. It's as if our lungs are hopping around," said Dr. Green.

This year alone, Mr. Feinberg has been to 40 sites across Long Island with the goal of finding at least one population of remaining frogs. If found, the surviving frogs will be studied in a controlled environment and then bred in an isolated colony. The frogs' offspring will be introduced into the wild and their survival rate monitored closely. If the frogs die, their carcasses will be examined for disease and compared to other species still present in the area. Interns Chris Camacho and Katie Heiser are helping Mr. Feinberg search for the frogs and test for disease. The research will be carried out over the next three to four years.

In order to restore the frogs, Mr. Feinberg said he will need to have a good idea why they disappeared; otherwise, they will not be able to survive once reintroduced into the environment.

"It gets very overwhelming because there are so many possibilities for the disappearance," he said. Potential factors may include chemical pollutants, pesticides, disease, habitat succession, fragmentation, or competition with other species.

Dr. Green and Mr. Feinberg believe the use of pesticides poses a threat to the environment, but they are not convinced that pesticides alone could have such a widespread effect on the frog population.

"I'm trying to think of something that could wipe out an entire island, and I keep coming back to disease," said Mr. Feinberg.

Dr. Green and Mr. Feinberg believe the "infamous" Chytrid fungus may be a cause. According to them, in the mid-1980s, Chytrid fungus became an alarming phenomenon linked to the global disappearance of frogs. By conducting a genetic test that involves the removal of skin cells, scientists found traces of the fungus in bullfrogs and green frogs. But those species are not close to extinction, a fact that indicates competition between the southern leopard frog and their heartier cousins.

Mr. Feinberg said he believes the pri-

mary cause of the decline is a change in habitat conditions, known as fragmentation, from development.

In the past, Long Island was mainly agricultural with open meadows, streams and ponds with little vegetation. But now, land is disrupted by roads and developments that make it difficult for frogs to reproduce and exchange genes.

Mr. Feinberg and his crew have already begun an extensive investigation. Last spring, during the frog's mating season, they traveled to sites in New Jersey to observe the frogs in their natural habitat. But while studying the frogs in New Jersey, where they are abundant, he was unable to do field-work here on Long Island.

Next March and April, he will use a device that will allow him to be in two places at once, Mr. Feinberg said, figuratively, anyway.

Acoustic recording devices, called Frog Loggers, will be posted on trees or poles in the wetlands on Long Island. The Frog Loggers will capture the loud mating call of the frogs in the warm spring months, and after listening to the recordings, Mr. Feinberg and his crew will know where to find the remaining populations, if they aren't already extinct.

Mr. Feinberg said the decline of the frogs could be just a localized problem, or it could be the beginning of a trend that moves into the bulk of the frog population. Though the initial impact of losing a species may be subtle, Dr. Green and Mr. Feinberg want people to pay attention to the impact they have on the environment. There must be balance between mature forest and open space, they said. People

## CHARITY: Classic Fosse plays Bellport

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added. "They're understanding and embracing the material."

While Gateway producers are determined to capture the 1966 feel of "Sweet Charity," audience members will be treated to a dazzling 21st Century set. Utilizing computer generated video imagery, the seemingly simple set, which features tall, blank, white walls, comes to life in Technicolor splendor that was not possible 40 years ago.

Under the conceptual set direction of Kelly Tighe, traditional sets and props such as beds, closets and bars will all be created with images projected onto cut out shapes. Mr. Allan said the concept is to put an empty pallet on the stage that will be painted with projected light.

"Everything is painted in shades of white," Mr. Allan said, "so it's not until we start throwing lights and projections and patterns on it that it really comes to life. Technology has a lot to do with what we are accomplishing here."

*Tickets for "Sweet Charity" run from \$36 to \$42 for adults, \$25 for children 12 and younger. For more information, call the box office at 286-1133 or visit [www.gatewayplayhouse.com](http://www.gatewayplayhouse.com).*

should preserve open areas and natural land, and avoid letting it grow into a forest.

However, just preserving land isn't enough. Dr. Green and Mr. Feinberg urge people to avoid using pesticides and herbicides, unless absolutely necessary. They want the general public to be aware that these chemicals produce negative side effects.

According to Mr. Feinberg, who has spent more than 10 years studying reptile and amphibian conservation on Long Island, the decline of the southern leopard frog "is a nice, convenient warning sign for us to open our eyes."

*There are many different species of frogs, but the scientists ask that if anyone sees one that looks similar to the southern leopard frog, they contact Jeremy Feinberg at 344-2037 or by e-mail at [JFeinberg@BNL.gov](mailto:JFeinberg@BNL.gov).*

## Starship will land at Patchogue Theatre

Legendary recording artists Jefferson Starship will perform with original singer Marty Balin at the Patchogue Theatre for the Performing Arts on Sunday, August 13, at 7 p.m.

The concert is presented by Jett Productions and is billed as the Jefferson Family Galactic Reunion in celebration of the 40th anniversary of "The San Francisco Sound."

The three- to four-hour concert opens with original singer Marty Balin and current Jefferson Starship guitarist Slick Aguilar with a 50-minute acoustic set of songs, followed by the reunited Quicksilver Messenger Service featuring David Freiberg.

Following intermission, Jefferson Starship will take the stage for a two-hour set featuring Marty Balin, band founder Paul Kantner, Slick Aguilar and Diana Mangano who has sung Grace Slick's repertoire for the past 13 years.

Tickets are \$42 and \$52. "Circle of Gold" tickets are also available for \$77, which includes admission to the show, attendance at the sound check, a CD recording of the performance and an exclusive after show meet-and-greet session with the band.

For more information, call the theatre or visit [www.patchoguetheatre.com](http://www.patchoguetheatre.com).