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Two New Frog Species Discovered in Panama's Fungal War Zone

Trying to stay ahead of a deadly disease that has wiped out more than 100 species, scientists at the Smithsonian Tropical Research Institute continue to discover new frog species in Panama: *Pristimantis educatoris*, from Omar Torrijos National Park, and *P. adnus* from Darien Province near the Colombian border.

In 1989 researchers realized that frogs were dying around the world. Then they identified the cause: a fungal disease called chytridiomycosis. In 2004 Karen Lips, associate professor at the University of Maryland, sounded the alarm that the disease was devastating highland frogs in Central Panama and spreading across the country to the east.

“We are working as hard as we can to find and identify frogs before the disease reaches them, and to learn about a disease that has the power to ravage an entire group of organisms,” said Roberto Ibanez, research scientist at STRI and local director of the Panama Amphibian Rescue and Conservation Project.

Since 2005 research institutions and zoos from Panama and the United States have scrambled to collect healthy frogs east of the infected area—to save them from extinction. The Panama Amphibian Rescue and Conservation Project unites eight institutions including STRI and the Smithsonian's National Zoological Park, along with Panama's environmental authority, ANAM, in a new effort to raise captive frogs in Panama at Summit Nature Park with support from the El Valle Amphibian Conservation Center.

While collecting at Omar Torrijos National Park, Lips' team noticed a common frog much bigger than specimens collected elsewhere. Mason Ryan and Tom Giermakowski, from the Museum of Southwestern Biology and the University of New Mexico, compared the frogs' feet and toes with frogs in museum collections, concluding that the bigger frogs were actually a new species.

They named this new species *P. educatoris*. The species name, *educatoris*, honors Jay M. Savage, emeritus professor of biology at the University of Miami, who taught several generations of

students about tropical frogs. *Educatoris* actually has a double meaning, because females of this species also nurture and care for their developing eggs.

In 2008, researchers first detected the fungus to the east of the Panama Canal. During a collecting trip in November 2009 to Chagres National Park, even further to the east, researchers were dismayed to find that most of the frogs there were already infected and dying.

On May 20, researchers from the PARC project returned to what they hope are still fungus-free, healthy frog habitats in Darien Province. On an earlier trip organized by members of Eldredge Bermingham's lab at the Smithsonian, another new frog species was collected by researchers from STRI, the University of Panama and the Círculo Herpetológico de Panamá.

Its name is based on ADN, the acronym for the Spanish *acido deoxiribonucleico*, meaning deoxyribonucleic acid, DNA, in English. "We chose this name to underscore the usefulness of genetic techniques as we identify these new frog species and determine the relationships between tropical frogs that may look very similar," said Andrew Crawford, professor at University of the Andes and research associate at STRI.

These two reports bring the total number of frog species described in Panama and Costa Rica to 197. Nearly 15 percent of these new frogs have been described in the past seven years.

The species collection and identification work was supported by Sigma Xi, the American Society of Ichthyology and Herpetology Gaige Fund, Idea Wild, the U.S. National Science Foundation, the Bay and Paul Foundation and the Smithsonian Institution. Both publications credit Panama's ANAM for research and collecting permits.

STRI, headquartered in Panama City, Panama, is a unit of the Smithsonian Institution. The institute furthers the understanding of tropical nature and its importance to human welfare, trains students to conduct research in the tropics and promotes conservation by increasing public awareness of the beauty and importance of tropical ecosystems. Website: www.stri.org.

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M.J. Ryan, K.R. Lips, J.T. Giermakowski. New species of *Pristimantis* (Anura: Terrarana: Stabomantinae) from lower Central America. 2010. *Journal of Herpetology*. 44(2): 193-200

A.J. Crawford, M.J. Ryan, C.J. Jaramillo. A new species of *Pristimantis* (Anura: Strabomantidae) from the Pacific coast of the Darien Province, Panama, with a molecular análisis of its phylogenetic position. 2010. *Herpetologica*, 66(2), 192-206

Images

Pristimantis educatoris

Credit: Andrew Crawford

New species: *Pristimantis educatoris*, collected in El Cope, in Panama's Omar Torrijos National Park, is about 2-4 centimeters long and has expanded, round and even finger disks and toes that distinguish it from other, closely related species. Its eye color varies from blood red to yellow-orange above and dark purple to dark grey below. The pupil is horizontal.

Pristimantis adnus

Credit: Andrew Crawford

New species: *Pristimantis adnus*, collected on Cerro Piña in the Serrania de Sapo, Pacific coast of Darien Province, Panama. Males are about 2 centimeters long. Length of females: unknown. The skin of the back is shagreen in color with scattered, enlarged granules. It has a small, supratympanic ridge, areolate venter and unconcealed tympanic membrane. Iris may be a rosy-gold color.