

 overstock.com Cameras & Photo Up to 70% Off & \$2.95 Shipping	 Nikon EN-EL3E Battery and Charger for... Only \$12.99	 CTA Replacement Battery for Nikon... Only \$16.99	 Battery for Nikon... Only \$20.49
--	--	--	--

Science News

[Share](#) [Blog](#) [Cite](#) [Print](#) [Email](#) [Bookmark](#)

Biologists Find Proof of First Confirmed Species of Monogamous Frog

ScienceDaily (Mar. 12, 2010) — Amphibians may be a love 'em and leave 'em class, but one frog species defies the norm, scientists have found.

See Also:

- Plants & Animals**
- [Frogs and Reptiles](#)
- [Mating and Breeding](#)
- [New Species](#)
- [Nature](#)
- [Evolutionary Biology](#)
- [Life Sciences](#)

A trio of biologists, including two from East Carolina University, have discovered in Peru the first confirmed species of monogamous amphibian, *Ranitomeya imitator*, better known as the mimic poison frog -- a finding that provides groundbreaking insight into the ecological factors that influence mating behavior.

The scientists' work, which is to be published in the April issue of *The American Naturalist*, may be the most solid evidence yet that monogamy can have a single ecological cause.

"We were able to tie the evolution of monogamy and the evolution of

biparental care to variation in a single ecological factor, and that's rare," said Kyle Summers, an ECU biology professor whose specialties include evolutionary ecology and evolutionary genetics. Summers authored the study with Jason L. Brown, a former ECU graduate student now a researcher at Duke University, and Victor Morales of Ricardo Palma University in Lima, Peru.

Analyzing data on 404 frog species, the biologists found a strong association between the use of small pools for breeding, and the evolution of parental care, including intensive parental care involving egg-feeding and the participation of both parents. The researchers then focused in on the mating and parenting habits of two similar frog species, the mimic poison frog and the *R. variabilis*, more commonly known as the variable poison frog, that differed mainly in the size of the breeding-pool.

They theorized that the differences in parental care and mating system between these otherwise similar species stemmed from the relative availability of resources in the breeding pools. The tadpole of the mimic poison frog grows up in much smaller, less nutrient-dense water pools that form in the folds of tree leaves. They are ferried there after hatching by males, who monitor them in the months following birth. About once a week, the male calls for his female partner, who lays non-fertile eggs for the tadpoles to eat.

The variable poison frog, however, raises its tadpoles in larger pools. Here, as with most amphibians, rearing of the young is handled mostly by the male.

To test their theory, scientists moved tadpoles from both species into differently sized pools. Tadpoles in larger pools thrived while tadpoles in smaller pools did not grow.

This, the scientists said, means that tadpoles living in the larger, more nutrient-rich pools don't need the work of two parents as much as their smaller-pond counterparts. Species that raised tadpoles in smaller ponds were more likely to require the skills of both parents. In turn, this likely favored parents who remained devoted only to the offspring that they had produced together.

The researchers used genetic analyses based on techniques similar to the DNA-based forensic methods used for paternity



This photo shows a "family" of *Ranitomeya imitator* amphibians, better known as mimic poison frogs. (Credit: Photo courtesy of Jason Brown)

Ads by Google

XALATAN® Side Effects
Access Interaction Info for XALATAN (latanoprost ophthalmic solution).
www.PfizerPro.com/XALATAN

Heart Attack Drug.
Learn More About A Treatment Option.
www.PlateletRxInfo.com

PerioFrogz
Impactful research and strategies for dental professionals.
www.periofrogz.com

Bugaboo Frog - \$759.00
Free Shipping On Bugaboo Frog Strollers.Great Selection & Prices!
AlbeeBaby.com/Bugaboo-Frog

Related Stories

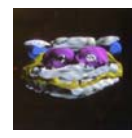
 **Poison Dart Frog Mimics Gain When Birds Learn To Stay Away** (Mar. 13, 2006) — Studying neotropical poison dart frogs, biologists at the University of Texas at Austin uncovered a new way that the frog species can evolve to look similar, and it hinges on the way predators learn ... > [read more](#)

 **New Species Of Frog Discovered: Smallest Indian Land Vertebrate** (Oct. 3, 2007) — The India's smallest land vertebrate, a 10-millimeter frog, has been discovered in a mountain range in Western India. Indian land vertebrates (all animals with backbone except fishes), comprises of ... > [read more](#)

 **New Golden Frog Discovered In Remote Region Of Colombia** (Aug. 29, 2007) — A new poisonous frog was recently discovered in a remote mountainous region in Colombia by a team of young scientists. The new frog, which is almost two


Just In:
[Psychopaths' Brains Wired to Seek Rewards](#)

Science Video News

 **MorphologyNet.org**
Frog biology is especially noteworthy because of the amphibians' sensitivity to pollution, which often flags previously unknown environmental. ... > [full story](#)

- ▶ [Zoo Focuses Efforts on Poison Dart Frog Breeding Program](#)
- ▶ [Microbiologists and Astrobiologists Help Kids Discover New Species](#)
- ▶ [Climatologists Forecast Completely New Climates](#)
- ▶ [more science videos](#)

Start seeing dogs. Behind the wheel.
[Watch the videos >](#)



Breaking News

... from NewsDaily.com

- ▶ [People leave unique trail of germs](#)
- ▶ [U.S. stem cell expert is "hottest" researcher](#)
- ▶ [SpaceX says Falcon 9 rocket test fire is a success](#)
- ▶ [Scientists find new way to help crops fight pests](#)
- ▶ [Calcium may help you live longer: study](#)
- ▶ [more science news](#)



In Other News ...

- ▶ [Record number of Chinese unhappy over inflation](#)
- ▶ [Aftershock hits off coast of Chile, no damage](#)
- ▶ [Fed seen renewing low rates, extended period vow](#)
- ▶ [Frustrated Thai "red shirts" press ahead](#)

[read more](#)

Colombian Frog Believed Extinct Found Alive (May 18, 2006)

extinct due to a killer fungus wiping out amphibian populations in Central and South ... > [read more](#)



Frog Legs Trade May Facilitate Spread of Pathogens (Nov. 20, 2009)

— Most countries throughout the world participate in the \$40-million-per-year culinary trade of frog legs in some way, with 75 percent of frog legs consumed in France, Belgium and the United ... > [read more](#)

Ads by Google

AMITIZA® (lubiprostone)
Official web site for AMITIZA.
Get the product profile and more...
www.amitiza.com/HCP

Covidien Healthcare
Covidien Is At The Forefront Of
Education & Research Worldwide.
www.Covidien.com

Bullfrogs for Sale
Commercially raised on prepared
Food from select Breeders
www.Bullfrogs-Louisiana.com

Number of stories in archives: 82,820

- with rally
- Netanyahu defies U.S. over Jerusalem settlement
- Toyota casts doubt on "runaway" Prius claim
- House heads toward close healthcare vote
- \$17.5 billion jobs bill nears final OK
- [more top news](#)

overstock.com
Cameras & Photo
Up to 70% Off & \$2.95 Shipping



Nikon EN-EL3E Battery and Charger for...
Only \$12.99



CTA Replacement Battery for...
Only \$16.99



Battery for Nikon...
Only \$20.49

Copyright Reuters 2008. See [Restrictions](#).

Free Subscriptions ... from ScienceDaily

Get the latest science news with our free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

- ▶ [Email Newsletters](#)
- ▶ [RSS Newsfeeds](#)

Feedback ... we want to hear from you!

Tell us what you think of the new ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

Your Name:

Your Email:

Comments:

Click button to submit feedback:

Send It

Summers said. "Finding a frog that has a monogamous mating system was pretty novel for us."

The biologists' work already has attracted attention from scientific and popular media, both international and national. While the idea that ecological factors -- say, scarcity of resources -- have contributed to monogamous behavior in humans and other animals is well accepted, Summers cautioned against drawing inferences about human behavior from the findings.

"People are interested in whether there are parallels between mating systems of other species and our own," he said. "Of course, the human situation is so different from other species. It's somewhat perilous to over interpret the similarities. You can't just translate it."

Email or share this story: [f](#) [e](#) [★](#) [📄](#) | [+ More](#)

Story Source:

Adapted from materials provided by [East Carolina University](#).

Journal Reference:

1. Jason L. Brown, Victor Morales, and Kyle Summers. **A Key Ecological Trait Drove the Evolution of Biparental Care and Monogamy in an Amphibian.** *The American Naturalist*, 2010; 175 (4): 436 DOI: [10.1086/650727](https://doi.org/10.1086/650727)

Need to cite this story in your essay, paper, or report? Use one of the following formats:

- APA East Carolina University (2010, March 12). Biologists find proof of first confirmed species of monogamous frog. *ScienceDaily*. Retrieved March 15, 2010, from <http://www.sciencedaily.com/releases/2010/03/100311192933.htm>
- MLA

Note: If no author is given, the source is cited instead.

Find with keyword(s):

Enter a keyword or phrase to search ScienceDaily's archives for related news topics, the latest news stories, reference articles, science videos, images, and books.