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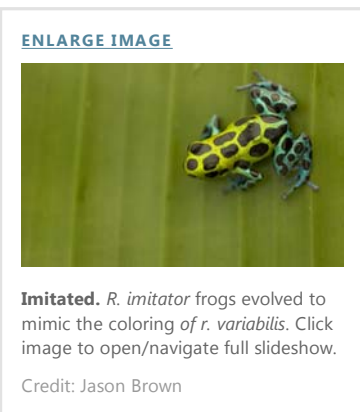
# Monogamy Seen in Amphibians for First Time

by [Lauren Schenkman](#) on February 23, 2010 5:24 PM | [Permanent Link](#)

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Frogs, salamanders, and other amphibians aren't known as faithful lovers. They mate, then they scam. But researchers have now identified one species of poisonous Peruvian frog—*Ranitomeya imitator*—that has given monogamy a shot, the first amphibian known to do so. What's more, the frogs seem to be doing it for the kids: Limited resources keep them close to their offspring—and to each other—a condition that may have influenced the evolution of parenting strategies in other species as well.



On the surface, *R. imitator* and its relative *R. variabilis*, are quite similar. They look alike, sharing the same poisonous skin, ostentatious coloring, and compact, 20-millimeter-long body. They mate alike, with a loud and elaborate courtship. And, at least at first, they treat their young alike: After the female deposits her eggs on a leaf, the male fertilizes them, and, when the eggs hatch, he coaxes each tadpole onto his back and ferries it to a nearby pool.

But then the two species' approaches to parenting diverge. *R. variabilis* moms hit the road immediately after mating, and while dads guard the territory around their young, they largely leave tadpoles to fend for themselves. In contrast, parent *R. imitator* frogs coddle their young. Once tadpoles are safe in individual leaf-pools, "the work has just started," says Kyle Summers, an evolutionary ecologist at East Carolina University in Greenville, North Carolina. About once a week for the next few months, the *R. imitator* dad calls the mother back to the pool so she can lay a nutritious egg for the tadpoles to eat.

Summers wondered whether the difference in parenting strategies had to do with resources. *R. variabilis* favors larger pools, whereas *R. imitator* frogs place their young in less than 2 tablespoons of nutrient-poor water, perhaps because *R. variabilis* as a species snagged the prime pools first. Summers and colleagues, including lead author Jason Brown, combed the literature, gathering data on 404 frog species whose parenting practices and pool size have been documented. Then the researchers used existing computer algorithms to sort the data. Species that raised their tadpoles in smaller pools were significantly more likely to be doting parents, with both parents sticking around and mom feeding tadpoles with her unfertilized eggs, the researchers report in the April issue of *The American Naturalist*.

The link between ecology and parenting style has been "hard to disentangle" in any animal species, Summers says. "It's unusual to find this clean of a connection."

To see if cooperative parenting translated to monogamy in *R. imitator*, the researchers compared DNA from the toes of the parent frogs and the tails of their tadpoles. They found that 11 out of the 12 seemingly monogamous couples they monitored over the mating season had been sexually faithful, making *R. variabilis* the first known monogamous amphibian. Whether there is an evolutionary progression from cooperative parenting to strict monogamy is still "a missing piece," Summers says.

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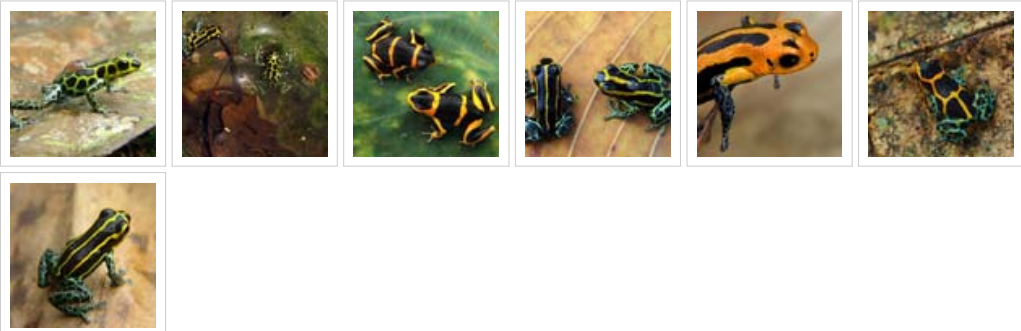


From the Journal Science 

The connection between pool size and attentive, cooperative parenting is "pretty convincing," says Kentwood Wells, a herpetologist at the University of Connecticut, Storrs. "It's difficult to single out one factor and say this is the key thing that causes [a species] to become cooperative breeders," he says. But in this "simpler system, they've identified ... an evolutionary force."

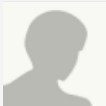
Summers says that ecology probably exerts evolutionary pressures on parenting in other species, including humans. Early hunter-gatherers who were strapped for food and warmth, for instance, were largely monogamous or only mildly polygamous.

More images (Credit: Jason Brown):



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