

# Philandering fairywrens keep their species intact

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A male red-backed fairywren of the orange form at the study site in southeastern Queensland. Females chose these males as social mates, but preferred scarlet-backed form when mating outside the pair. Credit: Tom Tarrant

(Phys.org) —A common, chickadee-sized Australian bird is one of the most prolific cheaters in the avian world – and new research suggests that choices made by straying females may actually be keeping the species from diverging into two.

The research, by Ph.D. candidate Daniel Baldassarre and Michael

Webster, the Robert G. Engel Professor of Ornithology and director of the Macaulay Library at the Cornell Lab of Ornithology, was published online Oct. 2 in the journal *Proceedings of the Royal Society B*.

The researchers tested how female fairywrens responded to two different types of males – a scarlet-backed form that lives in northwestern Australia and a more flame-orange form in eastern Australia. The two forms were once geographically separated, but now are both present in northeastern Australia. The scarlet-backed form is steadily making inroads into the range of the orange-backed form, and the researchers wanted to learn why.

"They had all the building blocks to get going on the classic speciation process," said Baldassarre. "But then they came back into contact too early, and they're still able to mate with each other. Interestingly, we found that happens only when they're deciding who to cheat with."

Working in an area of Queensland where only orange-backed forms live, the researchers used nontoxic red markers to turn orange-backed males into scarlet-backed males. Then they watched as the birds paired off and nested.

They found that females chose to form social bonds with orange-backed and scarlet-backed males equally. But regardless of which form the females paired with, they overwhelmingly chose scarlet-backed males to cheat with. DNA tests revealed that because of these dalliances, scarlet-backed males fathered more than double the number of young than orange-backed males. And that level of gene flow is more than enough to keep the two forms from continuing on the path to becoming different [species](#), Baldassarre said.

Many birds cheat on their mates, but fairywrens display some of the highest rates of extrapair paternity in the bird world, he said. A typical

three-egg clutch has about a 75 percent chance of containing eggs from at least two different fathers. In some cases, a female's social mate fathers no eggs in his nest at all (though he may have young in other nests). Males even perform special displays for new females – carrying a bright-red flower petal in their bill – that they don't do for their social mates.

The finding points to the growing understanding that female animals, by choosing their mates, can exert a strong force on the evolution of a species. And in red-backed fairywrens, that force is strongest in extrapair matings.

"Some males will get 10 extrapair young and others will get zero, so the females' choices really matter there," Baldassarre said. "But they'll both probably have two within-pair young, so there's not as much at stake."

All that infidelity gives a female fairywren a second opportunity to make a choice, Baldassarre said. "With a social mate, a female is getting a territory and a mate that's going to preen her and help feed the babies. When she chooses an extrapair mate, she's going to see that guy for two seconds, get some genes from him, and that's it. So she chooses different qualities."

Results so far suggest that in situations where two closely related species appear to be diverging, a second look might be warranted. Even when birds behave socially as if they are reproductively isolated, there might be more going on than meets the eye. The study was funded in part by the National Science Foundation, Sigma Xi and Cornell's Department of Neurobiology and Behavior.

Provided by Cornell University

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