

Songbirds 'teach chicks before they hatch'

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Red-backed Fairy-wren females behave just like their relatives, the Superb Fairy-wren, ornithology experts at Flinders have found.

Many birds learn their songs from their parents, but what if they could get a head start? A new paper, published in *The Auk: Ornithological*

Advances, expands Flinders University research into how Australian fairy-wrens start learning to imitate their parents before they even hatch.

Vocal learning has many benefits for birds – it lets them signal their suitability as a potential mate, recognise their relatives, and enhance their social interactions.

Once Dr Diane Colombelli-Négrel and Professor Sonia Kleindorfer from Flinders University, Dr Mark Hauber of New York City's Hunter College, and their colleagues from Cornell University discovered that Superb Fairy-wren nestlings learn to imitate their mothers' calls while still in the egg, they wanted to see whether the behaviour extended to other species and to learn more about its ecological context.

So they turned to the related Red-backed Fairy-wren.

All Red-backed Fairy-wren females in this new study called to their eggs while incubating, and most continued to call to their nestlings for five to six days after they hatched.

As a result, mother and offspring calls were more similar than would be expected by chance.

Parents also put more effort into feeding nestlings with calls similar to their own.

"Fairy-wrens have become a new model system in which test new dimensions in the ontogeny of parent-offspring communication in vertebrates," says Dr Hauber.

Though the researchers had hypothesised that fairy-wren [parents](#) could use calls to identify alien nestlings, the result of eggs placed in their nests by parasitic cuckoos, the rate at which Red-backed Fairy-wren mothers

called to their eggs did not increase significantly when more cuckoos were present in the habitat.

Dr Colombelli-Negrel and her colleagues speculate that the similarity of nestlings' calls to their own could also tip parents off about which nestlings are the most vigorous and the best learners, so that they can invest more resources in the ones most likely to thrive.

The original discovery was a fortuitous accident.

"Because fairy-wrens have high predation rates, we originally placed microphones under Superb Fairy-wren nests to record alarm calls against predators twenty-four seven," says Dr Colombelli-Negrel.

"As a result, we discovered embryonic learning in Superb Fairy-wrens."

When they turned to Red-backed Fairy-wrens, they recorded vocalisations from 67 nests across four breeding seasons in Queensland, as well as playing recordings of begging [nestlings](#) to test parents' responses.

"Prenatal [vocal learning](#) has rarely been described in any animal, with the exception of humans and Australian Superb Fairy-wrens," says Dr William Feeney of the University of Queensland, an expert on the interactions between cuckoos and host birds.

"In this study, the authors present data suggesting that, like the Superb Fairy-wren, Red-backed Fairy-wrens also learn their begging calls from their mother.

"This result is exciting as it opens the door to investigating the taxonomic diversity of this ability, which could provide insights into why it evolves."

More information: Diane Colombelli-Négrel et al. Vocal imitation of mother's calls by begging Red-backed Fairywren nestlings increases parental provisioning, *The Auk* (2016). [DOI: 10.1642/AUK-15-162.1](https://doi.org/10.1642/AUK-15-162.1)

Provided by Flinders University

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