

Daddy daycare: Why some songbirds care for the wrong kids

October 3 2019, by Jeff Mulhollem



The researchers believe the male bluebird, because he had nested in the box earlier in the season, was confused. He made a "place-based decision" to care for the young tree swallows. He was duped because he was hearing begging calls and remembered the box. Credit: Julian Avery/Penn State

Interspecific feeding—when an adult of one species feeds the young of another—is rare among songbirds, and scientists could only speculate on

why it occurs, but now, Penn State researchers have new insight into this behavior.

Like many [scientific findings](#), this comes from pursuing a larger, unrelated question. In this case, whether noise pollution from Marcellus Shale natural gas development is disrupting songbird reproduction and behavior in Pennsylvania's forests. The researchers conducted this work at Penn State's Russell E. Larsen Agricultural Research Center.

"There are numerous hypotheses to explain why interspecific feeding behavior might occur, but in most cases observers can only speculate on the cause because they lack information on the nesting histories of the species involved," said Julian Avery, assistant research professor of wildlife ecology and conservation in the College of Agricultural Sciences. "But in this case, we had much more information."

For the industrial noise pollution study, researchers placed 80 [nest boxes](#) along gravel roads and fields in pairs, with paired boxes slightly more than three feet apart and about 100 yards between pairs. They paired the nest boxes to maximize settlement by Eastern bluebirds and tree swallows, which often are willing to nest in close proximity.

The researchers subjected 20 of the paired boxes to noise that played 24 hours a day from large speakers placed just behind the nest boxes. The sound was recordings of a shale-gas compressor that looped to create continuous noise, loud enough to simulate an active compressor station.

As part of the study, researchers recorded behavioral observations using cameras in the nest boxes. They observed each box once during incubation, once when the nestlings were young and a third time when nestlings were older.

"We crossed our fingers and hoped birds would move into the site to

occupy those boxes, and they did in [large numbers](#), so we had a nice experimental treatment between birds nesting in quiet boxes and birds nesting in very noisy boxes," Avery said. "We'll be reporting soon on how the industrial [noise pollution](#) affected the birds, but first this interspecific feeding component is fascinating."

Lead researcher Danielle Williams, who received a master's degree in wildlife and fisheries science in 2018, recorded the number of feeding events at the boxes by each parent in three-hour observations and analyzed the footage. That's how she learned about the male bluebird repeatedly feeding tree swallow nestlings in Box 34B. songbird in hand

This nest contained four 10-day-old tree-swallow nestlings. The second box in the pair, 34A, contained four Eastern bluebird eggs. The bluebird pair occupying box 34A had fledged young from box 34B more than a month before. The tree swallows then took over the box and laid their eggs, forcing the bluebirds to move to box 34A for their second brood.

"We inserted a camera into nest box 34B for an older nestling observation, and during the three-hour observation period, the male Eastern bluebird nesting in box 34A was shown providing food to the tree swallow nestlings 29 times," Williams said. "When I looked at the video, I realized that there was a bluebird male in there caring for the young."



Newly hatched treeswallow chicks. Many songbirds do not recognize the begging calls or the appearance of their own young. Credit: Julian Avery

The researchers, who noted that many songbirds do not recognize the begging calls or the appearance of their own young, believe the male bluebird, because he had nested in this box earlier in the season, was confused. He made a "place-based decision" to care for the young [tree swallows](#).

"In this case, we think the male—since he was primed to raise nestlings and respond to begging behavior—was duped because he was hearing all of these begging calls and remembered this box," Avery said. "It's especially cool because he is going in and out of the box as the female tree swallow does as well." songbird chicks

The bluebird even perched beside the female tree swallow on the box lid, Avery added.

"You'd think at that point the male bluebird would realize the gig was up," he said. "He is engaged in very detailed behavior, even picking up and removing the tree swallow chicks' waste. He doesn't seem to have a clue."

The findings, recently published in the *Wilson Journal of Ornithology*, are important in helping us understand animal behavior, according to Avery.

"With all the other random observations out there of interspecific feeding behavior, observers never had any indication what was driving it," he said. "With this we do, and we know to what degree the urge to care for young overrides other considerations."

More information: *Wilson Journal of Ornithology*, [DOI: 10.1676/18-127](https://doi.org/10.1676/18-127)

Provided by Pennsylvania State University

Citation: Daddy daycare: Why some songbirds care for the wrong kids (2019, October 3)
retrieved 2 May 2024 from
<https://phys.org/news/2019-10-daddy-daycare-songbirds-wrong-kids.html>

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