

Cheating birds mimic host nestlings to deceive foster parents

October 2 2020



A parasitic purple indigobird nestling (right) alongside two nestlings of its host, the Jameson's firefinch. Credit: Claire Spottiswoode

The common cuckoo is known for its deceitful nesting behavior—by laying eggs in the nests of other bird species, it fools host parents into

rearing cuckoo chicks alongside their own. While common cuckoos mimic their host's eggs, new research has revealed that a group of parasitic finch species in Africa have evolved to mimic their host's chicks—and with astonishing accuracy. The study is published in the journal *Evolution*.

Working in the savannahs of Zambia, a team of international researchers collected images, sounds and videos over four years to reveal a striking and highly specialized form of [mimicry](#). They focused on a group of finches occurring across much of Africa called the indigobirds and whydahs, of the genus *Vidua*.

Like cuckoos, the 19 different [species](#) within this group of finches forego their parental duties and instead lay their eggs in the nests of other birds. Each species of indigobird and whydah chooses to lay its eggs in the nests of a particular species of grassfinch. Their hosts then incubate the foreign eggs, and feed the young alongside their own when they hatch.

Grassfinches are unusual in having brightly colored and distinctively patterned nestlings, and nestlings of different grassfinch species have their own unique appearance, begging calls and begging movements. *Vidua* finches are extremely specialized parasites, with each species mostly exploiting a single [host](#) species.

Nestlings of these 'brood-parasitic' *Vidua* finches were found to mimic the appearance, sounds and movements of their grassfinch host's chicks, right down to the same elaborately colorful patterns on the inside of their mouths.

"The mimicry is astounding in its intricacy and is highly species-specific," said Dr. Gabriel Jamie, lead author on the paper and a research scientist in the University of Cambridge's Department of Zoology, and at

the FitzPatrick Institute of African Ornithology, University of Cape Town.

He added: "We were able to test for mimicry using statistical models that approximate the vision of birds. Birds process color and pattern differently to humans so it is important to analyze the mimicry from their perspective rather than just relying on human assessments."

While the mimicry is very precise, the researchers did find some minor imperfections. These may exist due to insufficient time for more precise mimicry to evolve, or because current levels of mimicry are already good enough to fool the host parents. The researchers think that some imperfections might actually be enhanced versions of the hosts' signal, forcing it to feed the parasite chick even more than it would its own.

The mimetic adaptations to different hosts identified in the study may also be critical in the formation of new species, and in preventing species collapse through hybridisation.

"The mimicry is not only amazing in its own right but may also have important implications for how new species of parasitic finches evolve," added Professor Claire Spottiswoode, an author of the paper and a research scientist at both the University of Cambridge and Cape Town.

Vidua nestlings imprint on their hosts, altering their mating and host preferences based on early life experiences. These preferences strongly influence the host environment in which their offspring grow up, and therefore the evolutionary selection pressures they experience from foster parents. When maintained over multiple generations, these selection pressures generate the astounding host-specific mimetic adaptations observed in the study.

More information: Gabriel A. Jamie et al, Multimodal mimicry of

hosts in a radiation of parasitic finches, *Evolution* (2020). [DOI: 10.1111/evo.14057](https://doi.org/10.1111/evo.14057)

Provided by University of Cambridge

Citation: Cheating birds mimic host nestlings to deceive foster parents (2020, October 2)
retrieved 27 April 2024 from
<https://phys.org/news/2020-10-birds-mimic-host-nestlings-foster.html>

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