

Watch out! This colorful bird raises a nest of cannibals

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It might seem wasteful, but many birds lay more eggs than will successfully hatch. Scientists have long believed these extra eggs represent a form of insurance, ensuring that at least some offspring ultimately leave the nest. But for the Eurasian hoopoe—known for its showy orange crest and the whooping cry that gives the bird its name—a new study suggests these extra eggs exist for a gruesome reason: to feed the youngest nestlings to older chicks.

The “exceptional” study shows how sibling cannibalism can provide evolutionary benefits, says Michael Schaub, an ornithologist at the Swiss Ornithological Institute who wasn’t involved with the work.

Researchers have observed siblings killing each other—siblicide—in many kinds of birds, including Verreaux’s eagles, ospreys, and blue-footed boobies. But chicks *eating* their siblings is a different ball game altogether, says Juan José Soler, an author of the new study and an evolutionary ecologist at the Experimental Station of Arid Zones in Spain. “Sibling cannibalism occurs only sporadically in birds,” he says, and typically involves “nestlings that were dead from other causes.”

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In an earlier study, however, Soler had shown that hoopoe mothers frequently feed younger chicks to older chicks. And he suspected that hoopoe mothers laid extra eggs with the intention of using the hatchlings as food.

To explore that idea, María Dolores Barón, one of Soler's graduate students, and her colleagues studied hoopoes nesting in boxes in the open plains of Granada in southern Spain. The researchers first divided boxes holding four or fewer eggs into two groups. They then provided one group of nests with additional food—25 dead crickets a day until egg laying ceased—while the second group went unsupplemented. The team also kept track of when the eggs were due to hatch. That enabled them to move eggs from some nests to others, where the transferred eggs would be, by 1 day, the last to hatch. One goal of those egg transfers was to see whether adding an egg protected the next oldest chick from being cannibalized.

Overall, the team found that females receiving extra food laid, on average, one egg more than the females that didn't. In addition, the number of cannibalized chicks was higher in the nests that received an extra egg. In fact, all of the chicks that hatched from a transferred egg ended up getting cannibalized, and the next oldest chick was eaten as well. The nests with more incidences of cannibalism also fledged nearly two additional chicks compared with those from which eggs were removed.

Those findings indicate that when food is abundant during the egg-laying period, hoopoes intentionally lay extra eggs as a way to store and preserve that extra sustenance, the researchers reported last month in *The American Naturalist*. The eggs produce chicks that serve as a "larder" for older birds that hatch earlier, improving their odds of survival. In the study, nests with added eggs ended up providing at least two larder chicks that were consumed by older birds.

Among scientists, the idea that some animals will store abundant food in "extra" offspring is known as the larder hypothesis. Previous studies have shown that animals including ladybird beetles and sand tiger sharks practice such lardering behavior. But the hoopoe study offers the first evidence of lardering in a vertebrate that invests a substantial amount of energy in caring for its young, researchers say.

"What surprised me the most was the species practicing this aggressive parenting," says Vladimir Pravosudov, an ecologist at the University of Nevada, Reno. Hoopoes primarily eat insects, he notes, so their long, curved bills aren't ideal for killing and eating chicks. That might be why, Soler says, mother hoopoes often grab the unlucky chick and shove it into the mouth of an older chick, which swallows it whole.