

Stealth, Lies, and Cowbirds

One of the most despised birds in North America is puzzling researchers

By SUSAN MILIUS

"People hate cowbirds, yet people love hawks," observes Stephen I. Rothstein of the University of California, Santa Barbara. "Hawks catch adult birds and rip them to pieces. Maybe people hate cowbirds because they're tricky."

Cowbirds are the stealth bombers of the avian world, dark shapes that whip into another species' nest just before dawn, often while the owner is away. In less than a minute, the female cowbird lays an egg for the victims to tend and feed, commonly at the expense of the rightful nestlings' lives.

Concern that this behavior, unsporting from the human point of view, threatens beloved species has lured scientists to cowbirds in the last decade. The birds have been implicated in the decline of five rare species now on the brink of extinction.

In the course of checking the danger to other species, researchers are beginning to provide a more accurate picture of the cowbird itself. Studies are looking at its unexpectedly mainstream love life, its wiles in picking targets, its life as a commuter, and the evolutionary arms race it runs with victim species.

"Even people who really dislike cowbirds have said it's got to be the most, or certainly one of the most, interesting birds in North America," says Rothstein, whose articles crop up throughout the current flood of research on cowbirds.

The temptation to park the kids in another nest, at least occasionally, may be widespread in the animal kingdom, but few creatures routinely do

so. Some social insects parent by proxy, as does an African catfish. The female catfish releases her eggs when 1 of some 10 targeted species of cichlids is spawning. As the unwary cichlid mom gathers her own eggs into her mouth to brood, she scoops up catfish offspring too. The catfish develop faster, hatch earlier, and then eat their foster siblings.



A female brown-headed cowbird can dart into another bird's nest and lay an egg in less than a minute. Nature Conservancy researchers in Texas track females by radio to follow their stealthy strikes.

Some ornithologists have estimated that this practice, called brood parasitism, has evolved at least seven times in birds. Some parasites, like the common cuckoo, mimic the shading and speckling on the foster parents' eggs. Others, like the cowbird, get away with outrageous mismatches, leaving their cream eggs with black speckles even in nests of solid blue eggs.



Two cowbird nestlings, about 5 days old, have grown to nearly the size of the adult blue-gray gnatcatcher that's raising them. The gnatcatcher's own offspring have probably already starved from neglect. By the time the cowbirds fledge, they will weigh four times as much as their foster parent.

Parasitic nestlings range in behavior from piggish to truly murderous. Some of the cowbirds triumph over their nest mates by merely eating more than their share. Little cuckoos wriggle backwards against any not-yet-hatched eggs, eventually rolling all the nest's rightful inhabitants over the edge. Newly hatched honeyguides peck their nestling competition to death with heavy, hooked bills.

Not all of the five cowbird species are total deadbeats as parents. Bay-winged cowbirds in South America sometimes take over a nest built by another bird, but they do raise their own offspring. In turn, however, their nests can be parasitized by the screaming cowbird.

The cowbird species that rules North America is the brown-headed cowbird, which ranges from sea to shining sea in the United States and sweeps north through much

of Canada. Its eggs have been noted in nests of some 220 other bird species. A creature of forest edges, it thrived as development and agriculture chipped the continent's great woodlands into splinters during the last century. Since the 1960s, however, U.S. cowbird numbers seem to have been gently declining, except in a few hot spots, Rothstein says.



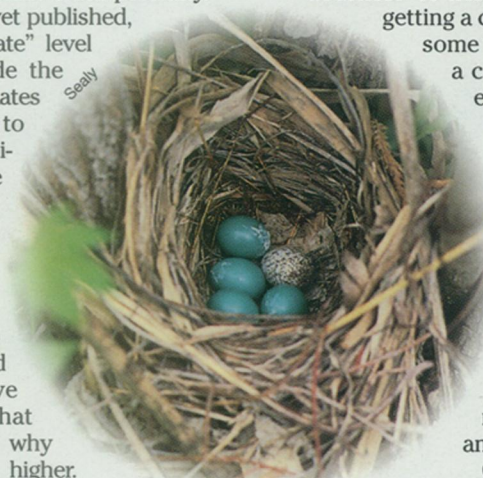
When researchers put a cowbird egg in a warbling vireo nest (above), the tiny vireo stabs the egg and wrestles it out of the nest. Observing nests in the wild, researchers report that the gray catbird usually ejects a lone egg inserted by a cowbird, and the yellow warbler often buries the whole clutch, including its own eggs along with the cowbird's, under a new nest. The veery, however, does not eject intruders, even when its nest holds five cowbirds eggs. Western tanagers accept a cowbird egg, even though it's the wrong color.

The mating habits of cowbirds have intrigued researchers since predictions early in this century that cowbirds would be examples of free love. With no need to stick together for the sake of the kids—that burden falls on a different species—why bother with mate fidelity?

That view got turned upside down early in the 1990s when David Yokel, now of the Bureau of Land Management in Fairbanks, Alaska, made unusually detailed observations. He concluded that the cowbirds he was watching in the wild were largely monogamous.

Observers can easily miss a liaison with another partner, so H. Lisle Gibbs of McMaster University in Hamilton, Ontario, and his colleagues are now checking DNA markers to determine chick paternity.

The results, not yet published, reveal a "moderate" level of mating outside the regular pairing. Rates vary from year to year, but he estimates that some 25 percent of cowbird females mate with more than one male. Such infidelity fits into the mainstream of bird species that have been studied. What puzzles Gibbs is why the number isn't higher. "We still have to explain the other 75 percent,"



Catbird nest with cowbird egg.

he says.

Comparison with other child-care moochers deepens the mystery. "Cuckoos seem to be wildly—I hate this terminology, but—promiscuous," Gibbs reports.

When pushed to speculate about cowbird moderation, Gibbs suggests some influence of their unusual sex ratio, about two males for every female.

How the ratio developed is a puzzle in itself. In the cowbird population that Gibbs has been analyzing, with data going back to 1992, males and females hatch and grow into nestlings in roughly equal numbers. Mortality of adults on the nesting ground, about equal for males and females, doesn't explain much either. Gibbs therefore assumes that something must be happening when the birds fly south from Canada and winter in the United States. Something? "We don't have a clue what it is," he says.

Just how a female cowbird chooses the nests she invades is another area of active research. "We don't really know what the female cowbirds are doing; they're sort of lurking in the background," observes Ethan D. Clotfelter of the University of Wisconsin-Madison.

He lurked in Diehls Prairie in southern Wisconsin, watching to see what factors predict which red-winged blackbird nests the cowbirds chose. His results appear in the May ANIMAL BEHAVIOUR.

One commonsense prediction didn't hold up on this prairie. Smack-in-the-eye obvious nests don't get more cowbird eggs than nests hidden in vegetation. Clotfelter found no link between conspicuousness of nests and the chance of getting a cowbird visit, although some nests are evident from

a car driving by and others remain invisible to a researcher a boot's length away.

Instead, he discovered that the noisier blackbird females were more likely to end up with a cowbird egg in their nests. "It may be that cowbirds are spending more time listening and less time looking.

Clotfelter monitored a slurred, descending trill that female black-

birds often make when leaving or returning to the nest. The eight blackbirds whose nests got hit by cowbirds tended to be chatty, making the call nearly 30 times in 30 minutes. The 20 females who escaped the cowbirds' intrusion called only half as often. "The cowbirds are eavesdropping," Clotfelter concludes.

A more visible nest has proved a drawback for other birds, reports wildlife ecologist Michael L. Morrison of California State University, Sacramento. He therefore favors protecting lush tangles of vegetation where desirable birds

might hide their nests. He points out that wildlife managers are beginning to recognize the limitations of anticowbird programs in reviving faltering species. Relieving pressure from cowbirds may not help a species that is limited by disappearing habitat. "How long can you keep treating the symptom?" he asks.

Making predictions about bird vulnerability won't win friends, points out Wisconsin's Christopher B. Goguen. In north-eastern New Mexico,

he and Wisconsin colleague David Curson are studying how far cowbirds commute to deposit their eggs. "The old dogma was about 7 kilometers," he says. Relying on this traditional wisdom, wildlife managers have discussed creating 7-kilometer buffer zones between grazing areas, where cowbirds feed, and the nesting areas of vulnerable birds.

Early results suggest that these buffer zones may be too narrow. The researchers are finding that cowbirds routinely fly 8 to 10 km to lay eggs and can even make a 12-kilometer commute.

"This finding has implications for managing wildlife. It also has implications for really annoying a lot of ranchers," Goguen observes regretfully.

Another ongoing research project suggests that cowbirds may be "farming" other species. A cowbird can only lay its eggs during a brief phase of a host's nesting cycle; otherwise, the eggs will lag too far behind the legitimate residents. If cowbirds were to disrupt the nest, however, the victims might lay eggs anew, reopening that window of opportunity.

Evidence is building that cowbirds routinely disrupt song sparrow nests, according to work by James N.M. Smith of the University of British Columbia in Vancouver and his colleagues. They presented data gathered in 1996 and 1997 to the North American Ornithological Confer-



Yellow warbler nest with cowbird egg.

ence in St. Louis this April. When trappers removed cowbirds, they found, failure rates of song sparrow nests fell by 60 to 100 percent and showed different patterns from times when cowbirds abounded.

Once a cowbird has chosen a nest, laying an egg takes only 10 to 30 seconds, reports another long-time cowbird researcher, Spencer G. Sealy of the University of Manitoba in Winnipeg. That's fast, he says. Although cuckoos have been reported to produce an egg in 3 seconds, other birds routinely spend 30 to 90 minutes laying an egg.

The nest owners frequently are not home in the near-dawn hour when a cowbird zips in and out, but even their presence doesn't seem to stop the invaders. Sealy has watched a cowbird dive into a Baltimore oriole's saclike nest, only to find the female oriole roosting. "There was a major tussle," he remembers. "The nest was bouncing." The struggle lasted 110 seconds before the cowbird flew away. Sealy later confirmed that the cowbird had managed to lay an egg during the fracas.

That incident brings up a perplexing issue. Baltimore orioles are among the bird species that remove cowbird eggs from their nests—no mean feat in a swinging sac. Hanging upside down, the oriole stabs a hole in the offending egg and tosses the pieces out of the nest. Some other birds pick up the whole egg in their beaks and fly away, dropping the egg as far as 50 meters from the nest.

Sealy is not surprised that hosts of birds have evolved defenses. "What is more puzzling is that so many species haven't," he says. Robins remove a pale cowbird egg when it shows up in their blue clutches, yet wood thrushes, who also lay solid blue eggs, just accept the anomaly.

Rothstein advocates one explanation—evolutionary lag. The birds that put up with cowbird eggs haven't had time to develop defenses, he argues. He points out how poorly tuned and full of disadvantageous quirks both the parasitism and the defenses are.

That's just the sort of sloppiness one



Veery nest with five cowbird eggs.

would expect from a work in progress, he says.

Sievert Rohwer of the University of Washington in Seattle adds to the explanation. As part of the overall picture of cowbird parasitism, he says, "evolutionary lag has to be true. Nothing evolves overnight." However, he proposes that other forces are also at work. Tiny birds may never evolve ejection behavior because they risk cracking their own eggs. Even orioles damage one of their own eggs, on average, for each five parasite eggs they eject.

Egg-tolerating species in the ancient heart of cowbird territory tend to be smaller than egg rejecters, he reports. Complicating the picture, Sealy reported in 1996, is the fact that the smallest egg ejector, the 15-gram Eastern warbling

vireo, routinely punctures cowbird eggs and heaves the pieces out of the nest, whereas warbling vireos west of the Great Plains generally do not.

Even though a number of birds fight back by throwing cowbird eggs out of the nest, none has been found to eject newly hatched cowbirds. Such a defense could be simple, Rothstein proposes. Flycatchers, for example, whose nestlings beg with gaping yellowish mouths, could simply eject all pink or red mouths. Why not?

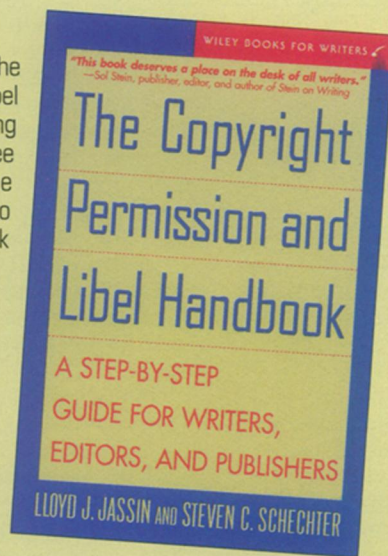
"No one has really come up with a satisfactory answer," Rothstein says, shrugging almost happily. A lot of people may hate cowbirds, but as far as scientific puzzles go, what's not to love? □



Western tanager nest with cowbird egg.

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