ORNITHOLOGY

High-Flying Science Seeks To Reduce Toll at Towers

After years of debate about how best to reduce massive bird kills, researchers are beginning to receive funding to investigate solutions

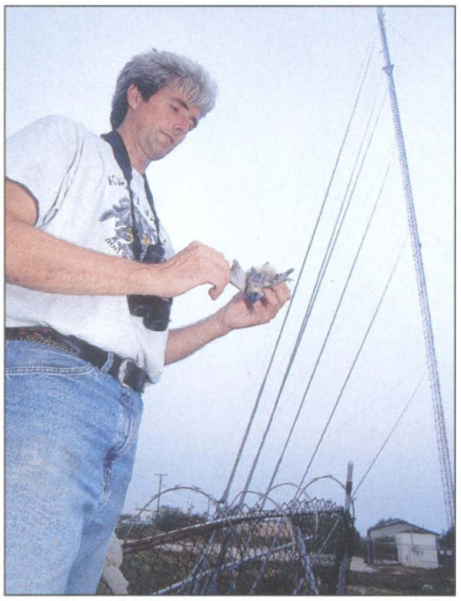
Next spring, if all goes as planned, Bill Evans will spend his nights chasing migrating birds under cloudy Midwestern skies. Using bright lights that normally warn pilots away from tall communication towers, the independent scientist hopes to understand why flocks are drawn to deadly encounters with the spires and discover lighting schemes with less allure. It's the first significant research project to be spawned by a recent debate over the threat to birds from a growing thicket of towers, and—if successful—it could help reduce a massive avian death toll.

Ornithologists estimate that at least 4 million birds—mostly night-migrating warblers, vireos, and other songbirds—die annually at about 140,000 existing U.S. towers (*Science*, 16 March 2001, p. 2081). Conservationists worry that the toll will rise under plans to add thousands more towers to the landscape. But their pleas for studies that might identify solutions have gone largely unanswered. "It's been a Catch-22," says Ellen Paul, executive director of the Ornithological Council, a Washington, D.C.–based group that represents 10 major bird science societies. "Industry and [tower regulators] say they need better science to justify taking action, but then they won't fund the necessary studies."

Industry officials say it's partly a matter of finding money in a depressed economy. The Bush Administration also hasn't made it a priority. And some question whether tower kills are really a major problem: A host of other factors, from cats to habitat loss, are believed to kill far more birds. But bird advocates say that's no reason for inaction.

Some creative financing is now helping tower research get off the ground. The Evans study, for instance, will receive $50,000 from the settlement of an environmental lawsuit in Florida. And conservation groups are lobbying Congress for more money. Environmental attorneys, meanwhile, are preparing a legal challenge that could force regulators to cough up more cash. The legal strategy has already prompted one state, Michigan, to mull funding research in order to settle one case.

Researchers say that there's no shortage of questions. Members of the Communications Towers Working Group, set up by the U.S. Fish and Wildlife Service (FWS) to bring government, industry, and academia together, have called for a nationwide survey to refine tower kill estimates, which range from 4 million to 40 million birds a year. They'd also like to examine the conventional wisdom that the kills are limited, occurring primarily in eastern North America during the fall migration, and that the worst episodes—up to 12,000 birds in one night at a single tower—occur during overcast weather at towers higher than 75 meters, often marked by red, blinking lights.



Towering idea. Bill Evans wants to see if lighting changes can reduce bird carnage.

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But answering such questions could cost millions of dollars and take years. So Evans decided to focus on a narrower issue: the impact of the red-and-white blinking lights that the Federal Aviation Administration requires on all towers over 65 meters. On misty nights, the warning lights attract birds, which often become confused and smash into tower girders and cables.

Evans, who runs Old Bird, a nonprofit research organization in Mecklenburg, New York, is working with a tower-lighting firm to build a rack of multicolored bulbs that blink at various rates and intensities. Instead of putting the lights on a tower and waiting for next fall's migration, Evans decided to "take the lights to the birds and the weather." He'll drive the light box into the northern Midwest, where he expects to find plenty of spring migrants and overcast nights. Then he will monitor how the birds react to different lighting schemes, hoping to find one that could reduce collisions—but also meet federal visibility requirements and be inexpensive to install.

Other researchers are probing the underlying neurological reasons why some birds become confused when exposed to colored light. Ornithologists believe that night migrants typically navigate using the stars, but rely on Earth's magnetic field on overcast nights. But colored light can cause birds to become disoriented, suggest laboratory experiments by Roswitha and Wolfgang Wiltschko at Goethe University in Frankfurt am Main, Germany, and others. Red wavelengths, in particular, may interfere with vision-related pigments that also play a role in magnetic navigation, says Bob Beason of the University of Louisiana, Monroe, who has conducted similar work. The findings may explain "why towers with red lights seem to be a bigger problem," he says.

Further research might depend on some help from Congress. Representatives John Dingell (D–MI) and Edward Markey (D–MA) have proposed giving FWS $350,000 for peer-reviewed studies already identified by the agency's working group. But budget squabbles in Congress may block that earmark.

Other groups are looking to regulators and the courts for help. They want FWS to prosecute the owners of especially deadly towers under migratory bird laws, and they are also pressuring the Federal Communications Commission (FCC), which licenses towers. Over the last few years, the American Bird Conservancy, Friends of the Earth, the National Wildlife Federation (NWF), and other groups have challenged FCC permits for thousands of towers. They want the agency to conduct better environmental studies and consider the cumulative impact of all towers on birds. FCC has so far rejected most challenges on technical grounds, setting the stage for a federal court battle. In the meantime, NWF is negotiating with Michigan officials over remedies for apparent legal violations in building 181 towers for emergency communications, including several sited squarely in migratory pathways.

Evans and other scientists would prefer to work voluntarily with tower owners and users to find acceptable solutions. But legal wrangling may be unavoidable, he adds, noting that it took the threat of court sanctions to convince the wind-power and power-line industries to pour millions of dollars into understanding how to make their facilities safer for birds.

—DAVID MALAKOFF