

Plight of the Vanishing Songbirds

A new study looks at the decline of forest-dwelling neotropical migratory birds

by Maryalice Yakutchik

Thud! It's startling — but hardly surprising — that the sound happens while I am poring over a new study addressing big questions that have divided the scientific community: Are migratory songbirds declining in numbers and, if so, why?

The thud! jerks my attention away from work. I realize that a bird has just struck one of the two-story picture windows that are the front and back walls of my house.

I go outside in search of the fallen flyer and comb through rhododendrons and berry bushes flanking my house. Just caterpillars and crickets cling to the bristly branches — no fresh feathers. The windows are clean, relatively. There's no blood -- only nose prints from a German short-haired pointer whining for freedom.

Mercifully, this collision didn't prove fatal. Still, it pains me that birds hit my house and that they risk encounters with my husband's bird dog (soft-mouthed though he is) and my daughter's cat, a rescued stray. I lift my head out of the bushes and look around: not exactly hospitable terrain for birds. Only vestiges of woodland remain, surrounded by soy fields and trophy homes on quarter-acre tracts, brimming with exotic plantings. A communications tower hulks over a horse pasture in the distance, providing me with clear cell phone reception and a farmer with rent money to help make ends meet.



Mourning Warbler feeding its young

After observing all this bad news for birds from my own backyard, I return to my home-office with renewed interest in the study of forest-dwelling neotropical migratory birds — birds that breed in the United States and Canada and winter in Latin America and the Caribbean.

Clearly, populations of some individual species have fallen. Scientists have long stopped disputing this point. More than half of the 640 species of birds that occur regularly in the United States are migratory, and many of these have undergone spectacular, well-documented declines. Peregrine falcons, whooping cranes, piping plovers, black-capped vireos and Bachman's warblers are just some of the better known of these species. The U.S. Fish and Wildlife Service acknowledges that more than 200 species are declining. Ninety of these are protected under the Endangered Species Act.

But this ambitious new research — by David I. King of the USDA Forest Service Northeastern Research Station and John H. Rappole of the Smithsonian Conservation and Research Center — bucks conventional wisdom in two ways. First, it has found more evidence of bird population declines than previously detected and, second, it points scientists in a different direction in the search for the cause. While many scientists worry about loss of breeding habitat, the evidence gathered by King and Rappole indicates that the blame may rest more with destruction of the tropical habitat where the birds spend winters.

I tend to pay attention to, assign importance to, and attempt to control the threats in my own backyard — the ones that daily smack me in the face as birds smack into my glass house. Likewise, ornithologists studying neotropical migrant populations historically have focused much of their attention in the temperate zones. Here, they noted the fragmentation of

contiguous forests and the depletion of grasslands. Conventional wisdom holds that if there are declines in migratory birds, the logical place to start fixing things, of course, is right here.

But Rappole asks, "Why does the majority assume it's the breeding habitat? For the same reason that people once thought the sun was revolving around the earth — because that's how it appeared from where they were standing, in their own backyards."

With their study — published by Defenders of Wildlife and available on the web at www.defenders.org/wildlife/new/birds.html — King and Rappole risk raising some eyebrows if, thankfully, not the same ire incurred by Galileo. They say they are confident in their findings because their study relied not merely on the government's venerable North American Breeding Bird Survey, which annually dispatches teams of volunteers with binoculars to count singing birds throughout the continent, but on 36 more long-term surveys of migratory bird populations.

While the Breeding Bird Survey indicates that populations of most migrants are stable or increasing, King and Rappole found strong trends in 23 of these 36 studies, and 90 percent of those 23 studies reported declines in populations. In addition, eight out of the 10 most frequently encountered species were falling at more sites than they increased — a finding consistent with what would be predicted during an overall decline.

When they looked for causes in their data, King and Rappole noted that habitat at the study sites for these birds had generally remained intact throughout the surveys, some of which dated back 70 years. The winter habitat, on the other hand, had undergone widespread destruction.

While U.S. forests suffer from unsustainable logging and other threats, the breeding habitat for a large proportion of forest-dwelling North American migratory birds actually increased during the latter half of the 20th century, mainly because of the decline of farming, particularly in the eastern United States.



But current estimates of rates of deforestation in neotropical forests range from 2 to 4 percent a year. If that's not an alarming enough statistic, consider these: Eighty-four percent of the northern Sierra de los Tuxlas mountains in Veracruz, Mexico, were cleared between 1967 and 1986. As of 1983, 17 percent of Costa Rican primary forest remained, representing a loss of 50 percent between 1940 and 1983. Especially hard hit are the Pacific dry forests of Central America, which are nearly entirely destroyed. Of 178 terrestrial eco-regions identified for the neotropics in a World Bank study of their conservation status, 31 were identified as "critical" and 51 as "endangered."

American Redstart

Birds, of course, are dying from many other causes, including natural ones. The fact is, more than half the population of most bird species die every year. At least 100 million birds die every year from crashing into windows, scientists estimate. **But windows, cats, West Nile virus, wind turbines — all those specific causes of death that are apparent in people's backyards -- are not, at present, having any known effect on the population size of any continental bird species, Rappole says.** Numbers of individual birds killed simply do not constitute evidence of an overall population decline.

"Under most circumstances, the single factor that controls population size for most bird species is habitat," Rappole says. "[But] breeding habitat is not the only kind that can control population size in species like migrants that depend on several different, geographically separate environments over the course of the annual cycle. For a migratory species, transient and wintering habitat are also important, and, for many species, winter habitat is the apparent limiting factor controlling population size. Simply, there are no alternative explanations of our results that fit the data that we found.

"It's a critically important conservation issue," he adds, "because the declines are real, and they point to a very significant problem; namely, we can spend all we want on preserving birds locally and still watch them disappear."

The strength of King's and Rappole's analysis relates directly to the large data sets they used — all the major published studies of migrant bird populations — as well as the fact that the data spans a considerable time period, predating the Breeding Bird Survey by 30 years.

"The Breeding Bird Survey is large, but it's only been since 1966," Rappole explains. "Declines for a lot of species probably took place before they started measuring population changes."

"We didn't start out with a preconceived notion about what was happening," King adds. "If we had found 90 percent of the studies reviewed indicated increases in songbird populations, I would be a much happier person."

While not quite ornithological heresy, the researchers' position is hardly popular. Not yet, at least.

"There are some people in every discipline so dogmatically attached to a point of view; this study will make those people mad," King says. "Others will take pause, be receptive to the new information, and either agree with us, write nasty rebuttals, or do further studies and provide stronger tests.

"It's unlikely there's a simple explanation. It's a complex thing. However, we're saying the evidence is consistent with wintering habitat decline. This isn't going to be the last word, by any means."

The debate has already begun. At the U.S. Geological Survey Patuxent Wildlife Research Center in Laurel, Maryland, Chandler S. Robbins scans the summary of Rappole's and King's study. A renowned ornithologist, he developed the North American Breeding Bird Survey in 1966.

"The loss of habitat up here — the fragmentation of habitat — is probably the biggest problem facing migrants, is probably having the greater effect now," Robbins says. "Loss of habitat there (in the tropics) is going to have a greater effect in the future. I wish we had more long-term sample data from south of the border, from Latin America. The kinds of life-history studies done up here in the summer are not done in the tropics on wintering migrants. We don't know as much about birds as we think we do. You have to be a bird to know what they're up against."

Scott Sillet, a Smithsonian researcher, has studied birds in both places. His focus on black-throated blue warblers has yielded one of the longest, most comprehensive studies of any single species of migratory bird, worldwide.

Black-throated blue warblers are "very confiding," Sillet says, explaining that they're relatively easy birds to study. Their knee-high nests are in shrubs so scientists don't need to climb trees to find them. They're common in the right habitat — mature forest with good understory. And they're relatively tame, meaning they don't mind too much when he follows them.

He's watched them on their breeding grounds in the White Mountains of New Hampshire, and wintering grounds in the mountains of northwestern Jamaica. The main focuses of research: what limits this population and when, during their cycle, are they limited. For very few species, Sillet says, does the data exist that allows these questions to be answered.

Sillet has long-term survival rates of this species — 18 years' worth — and not just annual survival rates, but rates at various times of the year, during different seasons. What he found was that survival rates of this warbler are very high during summer and winter: essentially 99 percent of individuals survive from one month to the next during summer and winter. When the birds aren't moving, in breeding and winter territories, the survival rates are high. But annual survival rates, measured from May to May, are at about 50 percent. The fact that nearly all the deaths occur during the migratory period, in either spring or fall, doesn't necessarily mean they are most limited during migration, Sillet explains, it just means that's when they die.

"Certainly migration is a dangerous thing," he says. "A 10-gram songbird crossing inhospitable habitats such as deserts and oceans for thousands of kilometers, and then facing areas of human habitation where they can crash into buildings and cell phone towers. Physical condition affects how well it can survive migration. There are costs associated with breeding — expending energy to raise young, perhaps laying several clutches of eggs because of predation. That's a lot of energy for a little female bird. Then they need to molt and fly all the way back to the tropics.

"Winter is the dry season in tropics. That could leave birds at the end of the winter period in very poor physical condition, without fat or energy stores to make the journey. Habitat quality can affect their survival chances. And, another piece of the puzzle is stopover habitat during migration: the quality of the resting and foraging grounds where they stop overnight or for a week. Lots have been destroyed by human development.

"We need to know not only how survival rates differ in different seasons, but also habitat-specific survival rates. And during the breeding season, we need habitat-specific reproductive data. This is a massive job. Without that data, I would not go out on a limb and say it's got to be winter or summer in terms of what's limiting this population."

Author/ornithologist Scott Weidensaul, of Schuylkill Haven, Pennsylvania, cautions that the dispute over summer vs. winter habitat losses should not detract from attempts to protect migratory stopover habitats. "We can't forget that birds require, in some respects, even higher quality habitat in the mid-points, than on either end," he says. "For some of these neotropical migrants, that's where the real crunch is coming."

King and Rappole themselves are calling for aggressive actions to protect birds from all the many threats they confront. As for wintering habitat, they point out that important efforts are finally beginning to save it. International lending agencies now consider environmental impacts as criteria for development projects; a collaborative partnership promoting migratory bird conservation, Partners in Flight, has been created to raise the profile of migratory bird issues; coffee farmers are encouraged to maintain the natural forest canopy above their plants, and the National Fish and Wildlife Foundation is funding work on basic migratory bird research in the tropics.

But the momentum from these initiatives and others to protect birds has suffered from the lingering debate over the severity or even existence of declining populations, the researchers say.

"Our analysis shows that a larger proportion of migrant birds than previously thought are in fact declining, and indicate that the time for arguing about whether migrant bird declines are a cause for alarm has come to an end," King and Rappole write in the report on their study.

While there is much still to be debated, forest-dwelling migratory bird populations are indeed declining at an alarming rate. There are many reasons, but it's clear that Rappole and King are correct in saying that a significant part of the blame rests with a source previously given too little attention -- the loss of the birds' tropical winter habitat. Now that they've performed this valuable service, it's time for other serious scientists to speak up. Only by joining together can we hope to get the attention required to solve this problem.

Maryalice Yakutchik is a freelance writer living in Monkton, Maryland. This review addresses new research by David I. King of the USDA Forest Service Northeastern Research Station and John H. Rappole of the Smithsonian Conservation and Research Center and was made available at www.defenders.org/wildlife/new/birds.html in September 2005.