Clarion Call

Today, thanks to the Endangered Species Act and a committed corps of professionals, the full-throated song of KIRTLAND'S WARBLER still echoes through the jack pine forests of Michigan. So why are scientists still concerned about the future of one of the world's rarest birds?

BY LES LINE

PHOTOGRAPHY BY RON AUSTING

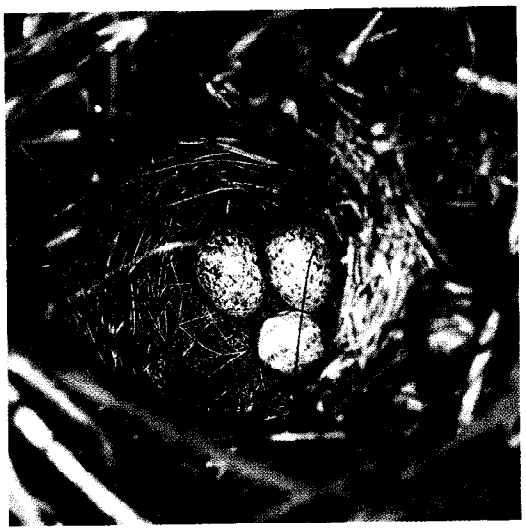
"I suddenly heard a new song, so rich, loud and clear, I knew it must be the one I was in search of....Its song is the most beautiful of any warbler, so wild and has such a ringing, liquid quality I feel well repaid for my trip by this one experience...."

NORMAN A. WOOD, A TAXIDERMIST AND LATER curator of birds at the University of Michigan's Museum of Zoology, penciled those words in his pocket notebook on the morning of July 2, 1903, and his excitement is palpable. Five days earlier, in Ann Arbor, he had boarded an overnight train for the logging town of Roscommon in the state's northern Lower Peninsula. There he hired a rowboat for a 60-mile float down the Au Sable River, a world-famous angling stream. And while he had brought along a fly rod and had lured "some fine rainbow trout," fish were not foremost on Wood's mind. Rather, he was intent on

Lack of habitat and parasitism by brown-headed cowbirds nearly silenced the exhilarating song of the male Kirtland's warbler. Its recovery is one of the great successes of the Endangered Species Act.

solving a mystery that had perplexed ornithologists since 1851. During spring migration that year, a new species of warbler was captured on the Ohio farm of naturalist Jared P. Kirtland and subsequently named for him. But half a century had passed, and the warbler's breeding grounds were still a secret, though the bird was known to winter in the Bahama Islands.

The catalyst for Wood's quest was the bedraggled carcass of a strange bird collected by two university students on an Au Sable fishing vacation—and almost thrown away. Fortunately, one of the young men worked as a museum assistant and brought the skin to Wood, who knew what he was holding in his hands. He promptly set off for the North Country and what is known today as Parmalee Bridge over the Au Sable, on the road between the communities of Luzerne and Red Oak.



Brown-headed cowbirds sometimes lay early hatching eggs in the nests of unsuspecting Kirtland's warblers.

"From the standpoint of habitat this is probably the most heavily managed bird on the Endangered Species List."

As luck would have it, Wood encountered a singing male Kirtland's warbler shortly after dawn on the first day of his search, while wandering a sandy plain covered with a low growth of jack pines—which would prove to be the species' exclusive and limited habitat. He described its song as *we-chee che-chee-r-r-r*, noting that "I was amazed at the volume of sound." He added, "Sorry to say I shot the beautiful singer and carried his body away—in the interest of science."

However, absolute proof that the bird's summer range had finally been found would elude the scientist for six frustrating days, until another male warbler, carrying a moth caterpillar in its mouth, led him to a nest tucked into low blueberry bushes at the base of a six-foot jack pine. It was a eureka moment that relatively few natural scientists experience.

ONE HUNDRED YEARS LATER, IN JUNE 2003, I STOOD beneath a fire-charred oak a few miles west of the site of Wood's discovery, watching a male Kirtland's warbler singing its heart out, and felt a similar thrill. It wasn't my first sighting, but it was surely the best. It was a perfect blue-sky day, and the sun highlighted every feature of the warbler's stunning plumage: bluish-gray back and wings boldly marked with black streaks; a black mask over a broken white eye ring; and a glowing lemon-yellow breast. Head tossed back, chest inflated, throat fluttering, and tail bobbing, he threw his clarion song—so unlike the faint buzzing and trills of most warblers—across the jack pines.

You'll have to forgive the anthropomorphism if I suggest he was joyously celebrating one of the great, if lesser-known, success stories in the history of the federal Endangered Species Act, the landmark but controversial law that recently saw its 30th anniversary. In 1987 the Kirtland's warbler population had reached an alarming low when the annual census of known and potential nesting habitat—all within an area a mere 100 miles by 75 miles—turned up just 167 singing males. (The total breeding population is estimated by doubling the number of males, since most of them will have mates and an established territory. Females do not sing.)

By 2003, however, the count stood at a record 1,202 singing males, including 14 birds across Lake Michigan in the central Upper Peninsula, most on state or national forestlands. Now there is talk of downlisting or even delisting the species, which the U.S. Fish and Wildlife Service declared endangered in 1967.

LIKE WOOD'S, MY FIRST DAY IN KIRTLAND'S WARBLER country began at dawn. On June 6, I joined Elaine Carlson, a wildlife biologist with the Michigan Department of Natural Resources, and several of her colleagues for the start of last year's census. When we met at the edge of an area east of Grayling called the Stephan Bridge burn, wisps of clouds had turned pink, and birdsong from brown thrashers, a hermit thrush, dark-eyed juncos, and sundry warblers—including, of course, a very loud Kirtland's—filled the air.

It was a morning that brought back a flood of memories. Beginning in 1951 volunteers from the Michigan Audubon Society counted singing males every 10 years, and I saw my first Kirtland's warbler—one of 502 tallied—during the 1961 survey in the company of Gene Kenaga, then the society's president and my mentor in all things avifaunal. At the time I was chief photographer and outdoor editor for the *Midland Daily News*, and Kenaga soon enlisted me as the society's newsletter editor and conservation chairman.

One of my first projects was to launch a publicity blitz for fledgling efforts to create new and critically needed Kirtland's habitat. My plans included a campaign to have the legislature anoint the warbler as the official state bird. It would replace the backyard robin, which Michigan shares as a feathered icon with Connecticut and Wisconsin. A bill was brought to a vote in the state's House of Representatives, but the gallery that morning was packed with schoolchildren supporting the familiar red-breasted thrush, and the then little-known jack pine warbler didn't stand a chance.

Forty years later Michigan Audubon, which is celebrating its centennial as the state's oldest conservation organization, is trying once more to dethrone the robin. "No one comes to

LES LINE, *a Michigan native and* Audubon *contributing editor, was the magazine's editor-in-chief from 1966 to 1991.*

Michigan to see a robin," said society president Loretta Gold, "but thousands come to see a Kirtland's warbler." This time Auduboners have wisely organized elementary classrooms—as "Kids for Kirt"—to lobby the legislature, and public hearings are scheduled. It's an idea whose time may have come.

I also wrote the cover story for the November-December 1964 *Audubon* on those early efforts to boost the Kirtland's warbler population—though they were too little and too late. The bird's numbers had plummeted to 201 in the 1971 count, and a crisis was clearly at hand. Thus in 1972 the census became a yearly undertaking organized by the Michigan Department of Natural Resources, the U.S. Forest Service, and the U.S. Fish and Wildlife Service.

A female Kirtland's warbler tends to nestlings, including a ravenous alien cowbird chick.

"How do we guarantee that support for state and federal warbler-management programs will continue if the species is delisted?"

For most participants it's a physically demanding outing—four or five hours of walking parallel transects through thick jack pines (and blackflies) in temperatures that can hit 85 degrees by midmorning. The warbler, fortunately, is a cooperative subject. On a calm day you can hear its song a quarter-mile away, and it is a persistent singer: Harold Mayfield, the businessman-ornithologist who wrote the definitive book on the species, counted 2,212 songs by one bird in a single day.

The Stephan Bridge burn is typical of the natural Kirtland's warbler habitat that Wood encountered in 1903: a young jack pine forest growing on a glacial outwash plain. Its origin was a wind-pushed wildfire that had erupted from a smoldering brush pile on the afternoon of May 8, 1990, swept across 5,916 acres, destroyed or heavily damaged 76 homes and 125 other buildings, and caused losses estimated at $6.2 million, including timber worth $700,000.

The jack pine, a small to medium-size tree that can reach a height of 90 feet in old age, depends on fire for renewal, since its cones pop open and release their seeds only in intense heat. Fire also kills competing plants and mineralizes the soil, helping the seeds grow. The Kirtland's warbler, meanwhile, is very finicky about its breeding sites. The birds nest in loose groups in young jack pine stands that are at least 80 acres and have scattered grassy openings. Moreover, the trees need to be between 5 and 16 feet high with enough space between them so that sunlight reaches the ground and keeps the lower branches, which help hide the nests, green and bushy. (Those branches die on larger trees.) A nesting area's useful span is about 10 years.

In historic times wildfires that were checked only by nature kept the Kirtland's warbler well supplied with nesting places. In 1925, for example, nearly 4,000 forest fires charred 733,000 acres in Michigan, much of that on the jack pine plains ("barrens" in the local vernacular). But modern fire-control measures changed the equation, and by the 1950s warbler habitat had become scarce.

Large wildfires, usually human caused, still occur in jack pine country; like the Stephan Bridge burn they can create significant new breeding areas before being suppressed. The Mack Lake fire of May 5, 1980—which exploded from a prescribed burn meant to remove logging debris on a Kirtland's warbler management area in the Huron-Manistee National Forest—scorched 24,000 acres and claimed the life of a Forest Service biologist. However, the fire also produced a wealth of high-quality warbler habitat—nearly 10,000 acres—that is widely credited for launching the Kirtland's remarkable comeback in the 1990s. In 1991, for instance, 60 percent of all singing males were counted on the Mack Lake burn.

But now those trees are too tall for Kirtland's use, and at least 85 percent of the population is found on jack pine plantations designed to mimic the effects of wildfire. As Carol Bocetti, a biologist with the U.S. Geological Survey's Patuxent Wildlife Research Center and a member of the Kirtland's Warbler Recovery Team, told me, "From the standpoint of habitat this is probably the most heavily managed bird on the Endangered Species List."

THE FIRST STEPS TO HELP THE BIRD WERE TAKEN IN 1957, when Michigan Audubon convinced the state Department of Conservation (now the Department of Natural Resources) to set aside three 2,500-acre tracts to be managed for warbler habitat. The U.S. Forest Service followed suit in 1960 with a 3,900-acre area. Today state and federal biologists and foresters use a cycle of clearcutting, seeding, and replanting on 150,000 acres to provide nesting places for a growing Kirtland's population. But scientists say that 38,000 acres of jack pines, of the right age and density, are required each year for breeding, and that still more management areas are needed if that goal is to be met.

"We've been working like crazy to replace the Mack Lake habitat," said Phil Huber, a wildlife biologist for the Huron-Manistee National Forest, as we toured future warbler breeding sites ranging from new clearcuts to trenched and freshly seeded tracts to an expanse of two-year-old, nursery-grown jack pines—about 1,100 to an acre—that he said will be ready for warblers in 2007.

Jack pines, Huber explained, are logged on a 50-year rotation before they become vulnerable to insects and disease. Some of the logs are used for pulp; others are chipped for particleboard or fuel for a cogeneration power plant. And the Kirtland's warbler, he emphasized, isn't the only species

that benefits from creating these young jack pine stands. The Kirtland's shares its home with eastern bluebirds, prairie warblers, upland sandpipers, wild turkeys, and many other birds.

Kirtland's warbler nests are tucked into grasses and other plants beneath young jack pines.

Head tossed back, chest inflated, throat fluttering, and tail bobbing, he threw his clarion song across the jack pines.

BUT HABITAT MANAGEMENT isn't the only hands-on activity to ensure the warbler's survival. Since 1972 the Fish and Wildlife Service has trapped and dispatched more than 130,311 brown-headed cowbirds from Kirtland's nesting areas. The cowbird is a notorious parasite that lays its eggs in the nests of other species; the young cowbirds hatch first, outcompeting the unsuspecting host bird's chicks for food.

Cowbirds followed agriculture into northern Michigan after loggers cleared the original forests; the birds were found parasitizing Kirtland's warblers soon after Wood discovered the first nest. In a 1966–71 study, 69 percent of Kirtland's nests were parasitized, and the warblers averaged less than one fledgling per nest. But after just one year of large-scale cowbird removal, the nest parasitism rate plunged to 6 percent, and the average number of fledglings per nest increased to nearly three. In the most recent study, none of the 51 Kirtland's warbler nests checked held cowbird eggs or chicks.

What, then, would happen if these management programs, which cost federal and state agencies more than $1.7 million a year, stopped? "It wouldn't take long to see a horrendous population crash," said Bocetti, "given that jack pine stands are used for only 10 years, and cowbird parasitism would soon return to original rates."

The question isn't an idle one. The goal of the species-recovery plan, last revised in 1985, was to reestablish a self-sustaining Kirtland's warbler population throughout the bird's known range at a minimum level of 1,000 pairs. And in a January 2002 memo to the Fish and Wildlife Service, the recovery team recommended reclassifying the warbler to threatened after the 1,000-pair target has been reached for five consecutive years—which could happen in 2005. But the memo also made it clear that "a true self-sustaining Kirtland's warbler population is not possible." Removing the bird from the Endangered Species List, the team said, should be considered only if there were a way to assure intensive management of the jack pine ecosystem in perpetuity.

"That's a huge concern," said Bocetti, remembering past budget struggles, including attempts to eliminate funding for the cowbird-control program. "How do we guarantee that support for state and federal warbler-management programs will continue if the species is delisted? Moreover, if problems then occur, we might not be able to get the warbler back on the list."

The issue is very real, given the open hostility of the Bush administration and some in Congress to the Endangered Species Act. The law is credited with saving the bald eagle, the peregrine, and many other species from going the way of the passenger pigeon. One spectacular example: In the early 1970s there was just one active bald eagle nest in all of New York State; today there are 75 nesting pairs. Despite the list's effectiveness, only 25 species have been added to it since 2001, all under court order. In sharp contrast, the Clinton administration listed an average of 65 species a year, and the first Bush administration, 58 a year.

Meanwhile, the Kirtland's warbler still keeps some secrets. Although this famous little bird spends more months of the year in the Bahamas than in Michigan, scientists know very little about its winter habitat or the environmental stresses that might adversely affect the population. Fieldwork has been hampered by the birds' inconspicuous behavior in winter and a small population scattered over an archipelago of 2,000 islands and cays. But a joint research project of The Nature Conservancy, the Bahamas National Trust, and the U.S. Forest Service may be close to a breakthrough.

The study is focused on the long, narrow island of Eleuthera, where a team of skilled birders from the Bahamas National Trust found 30 wintering Kirtland's warblers in the winter of 2003. Dave Ewert, director of conservation science for The Nature Conservancy, says the warbler's preferred habitat appears to be "low coppice" or shrublands with scattered openings and a few small trees. "If we can characterize the vegetation structure and the birds' food resources, then we can predict where they will be found on other islands and assess threats to their survival."

In short, the Kirtland's story today—40 years after my first *Audubon* article about the warbler, a real-life phoenix that thrives on fire or the roar of the chainsaw—is an upbeat one. For that we can thank a landmark law and the dedication of conservationists and wildlife professionals who have watched over the species for decades. But if the bird's song is to ring loud and clear over the jack pine barrens far into the future, a human helping hand can never be withdrawn. That defines a conundrum.

WHAT YOU CAN DO For information about efforts to save the Kirtland's warbler, go to www.michiganaudubon.org, click on MAS Projects, and pull down to State Bird Initiative. Kirtland's warbler's nesting areas can be visited only on guided tours. To learn more about tours run by the Forest Service, go to www.fs.fed.us/r9/hmnf/pages/kirtland.htm.