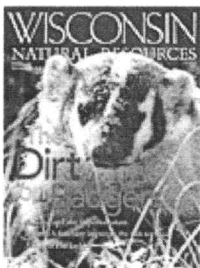


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This rarely seen mail Kirtland's warbler was spotted in 2008 at an Adams County pine barren.

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## April 2009

### A warble from the barrens

Kirtland's warblers are slowly gaining a foothold in scrubby jack pine country.

Kim M. Grveles

On a windless June morning in a dewy pine barren, a tiny, colorful bird adds its song to the typical chorus of Wisconsin's shrubland birds. Amid the melodious notes of vesper sparrows and bouncing calls of field sparrows, a distinctive chip chip che-way-o announces the presence of a rare, elusive species – the Kirtland's warbler. The male's song is followed by chipping calls from the female. She alights on a pine branch and is photographed, marking the first time a female of this species has been seen in Wisconsin. Careful scrutiny leads to another first discovery on this fine morning. Concealed among grasses under a pine branch is a Kirtland's warbler nest containing five eggs!

In recent years, many Wisconsin birders aspired to be the first to observe Kirtland's warblers breeding in the state. But it was New York environmental consultant Dean DiTomasso who was in the right place at the right time. His discovery, though historic, was not completely unexpected. Decades of conservation and management made conditions ripe for this rare warbler to expand its range from Michigan into neighboring areas in the upper Great Lakes.

### **Rarely seen in few places**

Affectionately known as the "jack pine warbler," the Kirtland's warbler (*Dendroica kirtlandii*) was first discovered in 1850 on a farm in Ohio during spring migration. A male bird was collected and sent to the Smithsonian Institute in Washington, D.C. for study and comparison to other specimens. Smithsonian bird curator, Spencer F. Baird, described the species the following year, declaring it distinct from previously known warbler species. It was later named after the property owner of the farm, Jared T. Kirtland, who was a naturalist and the first to develop a checklist of Ohio birds.

Over the next 50 years, Kirtland's warblers were observed on only a few occasions in states east of the Mississippi, and only during spring or fall migration. During that same time period, over 70 specimens were collected during winter from the Bahamas and nearby islands leading scientists to conclude that this bird has a small wintering range confined to the islands of Bahamas, Turks, Caicos and Hispaniola.

The Kirtland's warblers' breeding range remained a mystery until 1903 when a nest was found by Norman A. Woods in jack pine habitat near Oscoda, Mich. along the Lake Huron coast about midway between Saginaw and Alpena. By 1950, ornithologists believed the birds' entire breeding range was limited to a small area within 60 miles of the spot where that first nest was found. However, one other birder had observed adult Kirtland's warblers feeding immature birds in southern Ontario in 1940. Given that one record and reports of sightings during migrations, it's possible this species had nested in jack pine forests of Wisconsin and elsewhere in the Great Lakes region, though they had never been accounted for outside of their small breeding territory in Michigan.

### **Their breeding cycle habits**

Kirtland's is a wood warbler in the family Parulidae. The Kirtland's measures just 5 ½ inches long and weighs just under a half ounce. The male has a bluish-gray back with

strong black streaks that also flank the sides of its bright yellow breast. Black eye lines and a black patch between the eyes and bill form a thin horizontal mask on the face dividing prominent white eye-rings. Females are duller overall, sometimes appearing brownish rather than bluish, with faint streaking on the sides of a pale yellow breast. The black mask is absent on the female, but broken white eye-rings are visible.

On a calm day, the male Kirtland's warbler's loud and lively song carries about a quarter-mile and has been described as a combination of low, sharp notes followed by slurred whistles. Singing peaks in morning, wanes in afternoon and may pick up again in evening, but can cease altogether in hot weather or on cold, blustery days.

Male Kirtland's warblers arrive on the northern breeding grounds in mid-May and immediately begin territorial displays. Females arrive one to two days later and form pair bonds with males about a week later. Pairs are usually monogamous through the nesting season. Occasionally a male will mate with a second female after the first nest cycle.

Nesting begins as early as May 16 but more often occurs around the first of June. A nest of grasses, sedges, pine needles and leaf parts line a small depression in the ground. These tiny, open-cup structures are typically hidden among grasses in understory plants or are protected by a low-hanging branch of a young jack pine. Egg laying takes five to six days, usually during the first week in June. Only the female incubates, beginning the day before the last egg is laid and continuing for up to 14 days.

Crooked pine trunks with closely packed branches and short, green needles in groups of two define young jack pine forests that these warblers prefer. Jack pines are adapted to growing on these sandy outwash soils called pine barrens that depend on wildfires to regenerate. Heat from the fires opens their cones, releasing seeds to sprout on the fertile detritus. Suppression of wildfires in the last century took a toll on jack pine stands. In the absence of fire, cones don't sprout and as the trees age their lower branches self-prune opening up the protective cover under which Kirtland's warblers nest. By the 1960s, most of the jack pine stands in the upper Great Lakes aged beyond their usefulness for the bird's nesting, and new stands were not regenerating. To bolster the declining Kirtland's warbler population, humans needed to assist them.

### **A two-pronged approach to recovery**

A census of singing male Kirtland's warblers on their Michigan territories was repeated in 1961 and 1971 to estimate the population size. The 432 males counted in 1951 had declined to 167 birds by 1971. Since then, counts have been performed annually by volunteers coordinated by the U.S. Fish and Wildlife Service (USFWS) and the Michigan Department of Natural Resources. The tally provides a means of gauging the effectiveness of conservation and management activities during the last 48 years.

The Kirtland's warbler was listed as a federally endangered species shortly after such protection was signed into law in 1973. Three years later a recovery team formed and its

plan still serves as the blueprint for Kirtland's warbler conservation, management practices and restoration more than 30 years after its inception.

Two factors remain key in this species' decline: habitat loss due to suppressing wildfires in jack pines and parasitism of warbler nests by brown headed cowbirds. Over the course of 30 years, a public and private partnership now manages 134,000 acres of jack pine on a 50-year rotation. This long term rotation sustains at least 38,000 acres of young jack pines at appropriate stages for Kirtland's warbler nesting while still retaining the commercial value of older jack pines.

According to Christie Deloria, USFWS wildlife biologist and recovery team member, "Strides toward recovery of the Kirtland's warbler is testament to the decades of hard work and dedication of federal, state and private partners. Coordinated habitat management, cowbird control and research have been critical to increasing the species population and its subsequent dispersal into Wisconsin and Canada."

### **Brown-headed cowbirds**

Once known as the "buffalo bird," the brown-headed cowbird (*Molothrus ater*) followed buffalo herds on the Great Plains to forage insects kicked up by the buffalos' hooves. This nomadic lifestyle precluded spending time on a nest, so the cowbirds laid their eggs in the nests of other birds, leaving parental care to the host species.

Extensive logging in the late 1800s through early 1900s opened up the forested landscape east of the Mississippi River, and cowbirds migrated eastward taking advantage of new habitat. Unlike birds of the Great Plains, the eastern forest songbirds had not evolved with cowbirds and did not develop behaviors to recognize and remove the cowbird eggs from their nests.

Kirtland's warblers are especially vulnerable to cowbird parasitism. Their open-cup nests are easy targets for the sharp-eyed cowbird. Unable to recognize a cowbird egg or chick as foreign, the warbler incubates, feeds and protects the parasite as if it were its own offspring. Not only does the cowbird hatch a few days earlier than the warbler nestlings, it is larger in size, more aggressive and out-competes them for food, significantly lowering survival rates of the warblers.

We believe cowbird parasitism was one of the major factors contributing to the Kirtland's warbler population declines of the 1960s and '70s. Uncontrolled, cowbirds reduced Kirtland's warbler nesting success an average of 69 percent between 1966 and 1971.

Since cowbird trapping was instituted in 1972, parasitism rates have dropped to about five percent of nests while Kirtland's warbler singing male counts have increased dramatically due to higher clutch sizes and better survival rates.

### **Kirtland's warblers in Wisconsin**

As Kirtland's warbler territories reached capacity in the jack pines of Michigan's Lower Peninsula, it seemed reasonable that the birds might spread their range into nearby habitat in the Great Lakes. Though reports of singing males were infrequent in Wisconsin, a formal search through jack pine country began in the late 1980s in hope of finding nesting pairs. A few males were sighted, but no females or juveniles were recorded.

Hope renewed in 2006 when singing males appeared to be defending territory in the Black River Falls State Forest for a second consecutive year. No luck.

The following spring, Dean DiTomasso was birdwatching before heading to his work on a pipeline project in Adams County. He went to some private land during spring migration to photograph songbirds en route to northern breeding grounds. On the morning of May 19, his trained ear detected an unfamiliar song. The sound trail led to a male Kirtland's warbler, which he photographed. By the end of the morning, DiTomasso had identified three distinct singing males. He immediately reported his sightings to the Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service.

On the morning of June 2, he observed a male Kirtland's warbler in flight carrying nesting material. He followed the bird and came upon two other males in a territorial dispute. As he watched the sparring males, a third bird flew in and landed in a pine tree. It was a female and DiTomasso snapped a photograph to document this first occurrence in Wisconsin. His search for a nest in the immediate vicinity was fruitless, so he returned to where he had seen the male carrying grass. There he found and photographed a nest – five eggs with no signs of cowbird parasitism.

Four days later, he photographed a second female. Later that morning, DiTomasso determined that at least eight distinct males were defending territories at the site.

One of these males wore leg bands and tracing the color combination determined that warbler had been caught and banded on Eleuthera Island, Bahamas in November, 2003. The life expectancy of Kirtland's warblers is typically two years, but they can live much longer as evidenced by this four-year-old.

By June 19, 2007, a third female and a third nest were discovered. Each nest was observed and photographed once. The images revealed that nest #2 contained at least two cowbird eggs and nest #3 had at least one cowbird nestling in the brood. Jon Robaidek, a DNR wildlife biologist, joined DiTomasso for daily nest monitoring. Over the next several weeks, they were unable to determine an outcome of nest #1, the un-parasitized nest. Considering the likelihood of parasitism, successful fledging of Kirtland's warbler young was doubtful.

### **Wisconsin's conservation strategy**

The 2007 nesting season raised many questions. How many singing males would we find? If breeding occurred at one site, could there be additional nesting pairs in

Wisconsin? Would birds nest again at the Adams County site in 2008? What methods would limit cowbird parasitism and promote productivity?

To get answers, the Fish and Wildlife Service and Wisconsin Department of Natural Resources set a three-year strategy to determine what conservation steps should be taken to foster Kirtland's warblers. Strategies included:

- Taking an inventory of jack pine habitat on public lands statewide
- Monitoring nests near the breeding site
- Installing cowbird traps at the breeding site
- Banding male warblers to aid monitoring
- Identifying potential stakeholders with future management opportunities
- Considering guided tours of the breeding site to engage citizen support

Under the guidance of the Kirtland's Warbler Recovery Team, the strategies started in July 2007 after the breeding season. Skilled birders were recruited and trained to conduct a warbler census in June 2008. Observations at 89 sites in 11 counties resulted in nine confirmed singing males during the June 6 – 15 census period. Two males were found in Marinette County at two different sites. The remaining seven were located at the Adams County breeding site. In Marinette, Vilas and Jackson counties, bird songs were recorded in eight locations, but sightings were unconfirmed.

All nine confirmed males were captured and banded by Ron Refsnider, a retired Fish and Wildlife Service biologist, who had worked on Kirtland's warbler conservation in Michigan in the 1990s. He donated the equipment, his time and expertise to mark the birds for study. He was assisted by Joel Trick and by UW-Green Bay grad student Jennifer Goyette, who was hired as nest monitor at the Adams County site.

Confirmed sightings of three unbanded singing male warblers were reported at different locations during late June and early July, but all three sightings might have been the same bird. Therefore, the total 2008 count for Wisconsin was recorded as at least 10 singing males.

Goyette tracked the banded males throughout the breeding season and discovered that five had mates and were actively nesting. An early May nest fledged at least one cowbird chick, but nests built in June were not parasitized. From these later nests, a total of 10 Kirtland's warbler nestlings successfully fledged. The lack of parasitism and fledging success were attributed to aggressive cowbird control. At this one Adams County site, more than 300 cowbirds had been trapped and removed during the spring migration and breeding seasons.

Reduced cowbird numbers may have also fostered better fledging of other species using this pine stand whose populations have declined significantly in recent years including the brown thrasher, vesper sparrow and field sparrow.

"The habitat needed for the Kirtland's warbler is also needed by a variety of other songbirds, plants and wildlife," said Signe Holtz, director of DNR's Bureau of Endangered Resources. "Our work to save this species is multiplied many times, making wildlife habitat for a host of species possible."

### **A future for Kirtland's warblers in Wisconsin**

Census work will continue this June as more than 40 trained volunteers will survey jack pine stands in nine Wisconsin counties: Burnett, Douglas, Washburn, Bayfield, Vilas, Oneida, Marinette, Jackson and Adams, searching for singing male Kirtland's warblers. Their findings will help us hone in on possible new breeding sites where timely conservation measures can better protect these rare birds. Nest monitoring, banding and cowbird control will resume at the Adams County breeding site. After the breeding season ends, volunteers from the Wildlife Federation will analyze vegetation to learn what makes this area especially attractive to these warblers.

To breed successfully, Kirtland's warblers dispersing from the Adams County site will need to find other nearby stands of 5- to 20-year-old jack pine within a larger forest mix. The Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service are working with many partners to maintain and expand such a mix of trees and barrens to provide quality habitat for many species, like Kirtland's warblers, that rely on young jack pine forests.

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