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The First Wisconsin Nesting Record of Kirtland's Warbler (*Dendroica kirtlandii*)

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Introduction

The Kirtland's Warbler (*Dendroica kirtlandii*) is a federally-endangered songbird that has been infrequently reported from Wisconsin. In 2007, Kirtland's Warblers nested in Adams County, Wisconsin, the first known nesting record of the species in the United States outside of the State of Michigan. Here we provide an overview of recent history and current status of the species, details of nesting activities in Wisconsin in 2007, and a

description of our plans for future Wisconsin monitoring and surveys.

Background

The Kirtland's Warbler has been considered rare ever since its discovery in 1851, and its breeding area in northern lower Michigan was not discovered until 1903 (Byelich et. al. 1985). The Kirtland's Warbler was one of the few species named under the Endangered Species Preservation Act of 1966, the precursor to the Endangered Species Act (ESA) of 1973. With passage of the ESA, the U.S. Fish and Wildlife Service (FWS) appointed a Kirtland's Warbler Recovery Team (Team), and the Team has since taken an active role in guiding the species' recovery.

The great majority of the population breeds within a small area of 6 counties in northern lower Michigan (Michigan Department of Natural Resources 2007), and all known wintering records are from the Bahamas and nearby islands (Radabaugh 1974). The Kirtland's Warbler nests on the ground and requires dense jack pine (*Pinus banksiana*) stands of approximately four to 20 years of age for nesting. Historically, these stands of young jack pine were created by natural wildfires, but modern fire suppression programs altered this natural process, reducing the amount of available habitat.

To mimic the effects of wildfire, State and Federal lands in Michigan are now managed through a combination of clearcutting, seeding, and replanting to promote warbler habitat. Currently, approximately 190,000 acres (77,000 ha) of State and Federal lands in Michigan are managed on a rotational basis to maintain a minimum of 38,000 acres (15,000 ha) in a condition suitable for occupation by the warbler (C. Mensing, pers. comm.). In addition to habitat management, a Brown-headed Cowbird (*Molothrus ater*) trapping program has been conducted on selected Kirtland's Warbler nesting areas since 1972. Prior to implementation of cowbird trapping, as much as 75 percent of nests were parasitized by cowbirds, resulting in low nest success and fledging rates. After initiation of the cowbird trapping program in 1972, the percentage of parasitized nests declined to less than 10 percent, and the number of young produced increased from less than one to nearly three per nest (Kelly and DeCapita 1982).

The Kirtland's Warbler population is monitored through an annual census coordinated by the Michigan Department of Natural Resources (MDNR). This census was conducted in 1951, 1961, and 1971, and has been conducted every year since (Probst et al. 2003). The population remained fairly stable for many years at approximately 200 birds, and then began a dramatic increase beginning in 1990, reaching a record total of 1697 birds in Michigan in 2007 (Michigan Department of Natural Resources 2007; Fig. 1). This total includes 32 males in the Upper Peninsula of Michigan, where breeding was first documented in 1995 (Probst et. al. 2003). An additional 10 birds were also documented outside of Michigan, including 8 males in Wisconsin and 2 males in Ontario, where nesting was also documented in 2007 (Canadian Forces Base Petawawa 2007). Kirtland's Warblers had previously been docu-

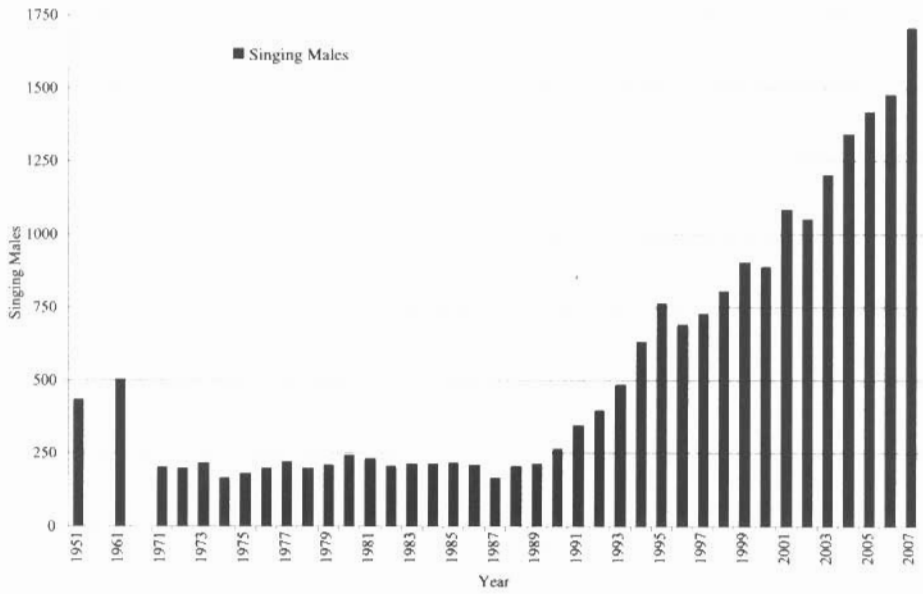

Figure 1: Kirtland's Warbler singing male census: 1951, 1961, 1971–2007 (Michigan DNR data; Graphic courtesy of Chris Mensing, FWS-East Lansing, MI).

mented to nest in Ontario in 1944 (Speirs 1984).

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Before 1978, there were fewer than 10 reports of Kirtland's Warbler in Wisconsin, all during migration periods (Hoy 1853; Kumlien and Hollister 1903; Taylor 1917; Tilghman 1979). A survey effort organized by Nancy Tilghman in 1978 resulted in the discovery of two males in Jackson County, and the species was reported in the same general area in 1979 and 1980. Between 1988 and 2006, Kirtland's Warblers were reported from the state in 11 separate years in Douglas, Jackson, Marinette, Vilas, and Washburn Counties, with the bulk of sightings during the month of June (Fig. 2). In spite of the species' more frequent occurrence in recent years, including multiple birds in both 2005 and 2006 in Jackson County (J. Polk, pers. comm.), no breeding had ever been documented and there had never been a report of a female. This increased incidence of Wisconsin sightings in recent years has occurred coincident with the increase of the species population, which has resulted from management actions conducted in Michigan.

On 19 May 2007, three male Kirtland's Warblers (Fig. 3) were discov-

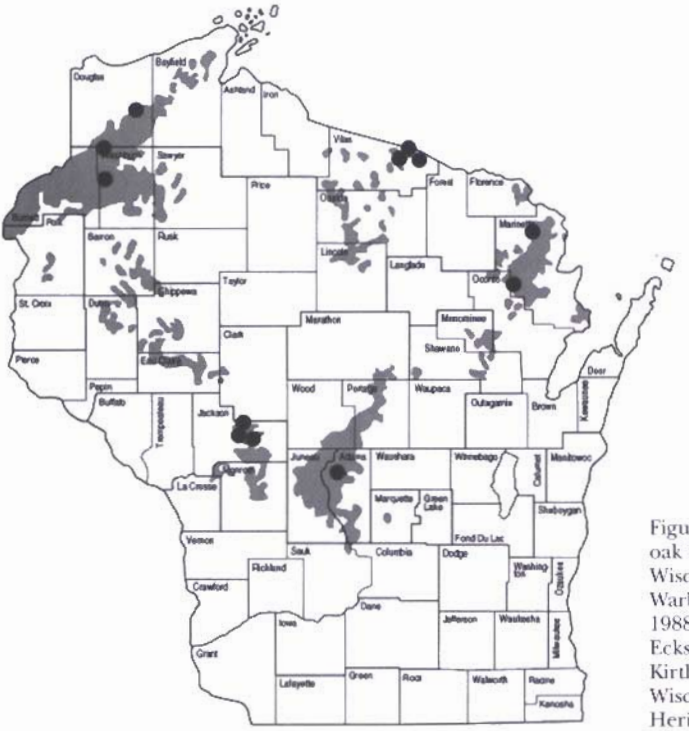

Figure 2. Jack pine and scrub oak forests and barrens in Wisconsin and Kirtland's Warbler observations, 1988–present. (Adapted from Eckstein and Moss, 1995; Kirtland's Warbler data from Wisconsin DNR Natural Heritage Inventory).

Figure 3. Male Kirtland's Warbler in Adams County, 9 June 2007. Photo by Joel Trick.

Figure 4. First female Kirtland's Warbler ever documented in Wisconsin. Photo taken 5 June 2007 by Dean DiTommaso.

ered in a young red pine (*Pinus resinosa*) plantation in Adams County by Dean DiTommaso, an environmental consultant and avid birder who was working in the area. DiTommaso reported this sighting to the Wisconsin Department of Natural Resources and then continued making careful observations at the site throughout the nesting season, under the guidance of the Wisconsin Department of Natural Resources and the FWS. On 26 May, he

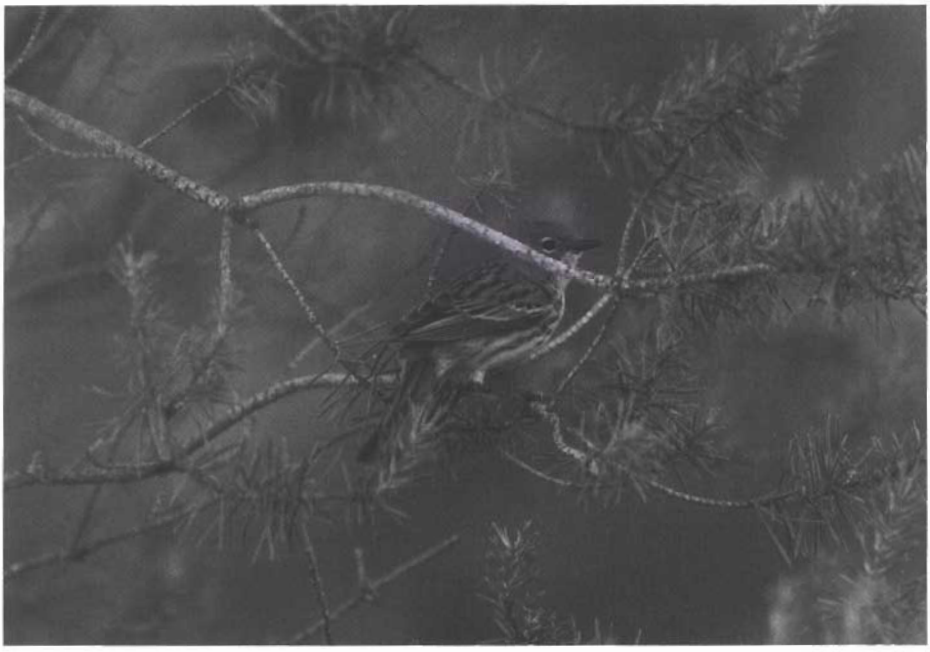

Figure 5. Another photo of first female Kirtland's Warbler ever documented in Wisconsin, 5 June 2007. Photo by Dean DiTommaso.

found three additional males at another site approximately one mile away from the original sighting, and on 2 June, made his first observation of a female (Fig. 4 & 5). On 5 June, a male was observed carrying food and subsequent observations led to the discovery of a nest containing five eggs (Fig. 6). Additional females were discovered on 6 and 9 June, which ultimately led to the discovery of a second nest on 15 June and a third nest on 16 June.

Through diligent observations, DiTommaso was able to document a total of at least eight singing males, in addition to the discovery of three separate nests. FWS and WDNR decided early on to avoid close approach of any of the nests, in an effort to preclude disturbance that may lead to abandonment or nest failure. At the time it was discovered, the first nest contained five Kirtland's Warbler eggs and no cowbird eggs. Photographs of the second nest indicated the presence of at least two cowbird eggs. Photos that were taken of the third nest appeared to indicate the presence of at least one cowbird nestling, but were inconclusive.

Between late June and mid-July, Kirtland's Warblers at the site were carefully monitored by WDNR biologist Jon Robaidek in an effort to determine nest success. Despite numerous

Figure 6. First Kirtland's Warbler nest ever found in Wisconsin, 5 June 2007. Photo by Dean DiTommaso.

hours spent at the site, no definitive evidence of Kirtland's Warbler fledglings was found. Robaidek did observe at least one young Brown-headed Cowbird being fed by an adult Kirtland's Warbler near the third nest on three occasions between 27 June and 4 July (Fig. 7). DiTommaso also observed a cowbird fledgling being fed by an adult male Kirtland's Warbler near the second nest on 4 July.

Habitat Relationships

The two sites where Kirtland's Warblers were found nesting in Wisconsin in 2007 were both planted red pine (*Pinus resinosa*) plantations, within a landscape of extensive pine plantations and mixed forests of oak and pine. Each of these stands had been planted on sites that originally were dominated by jack pine, and each had significant amounts of natural jack

Figure 7. Kirtland's Warbler male carrying food on 4 July 2007. Photo by Dean DiTommaso.

pine regeneration within the stand. Trees in both of these stands are approximately 10 years old and 3 to 4 meters in height. Associated plant species are quite variable both between and within these stands, but consist largely of typical species for jack pine barrens habitat, including American hazel (*Corylus americana*), choke cherry (*Prunus virginiana*), black cherry (*Prunus serotina*), Hills' oak (*Quercus ellipsoidalis*), June grass (*Koehleria macrantha*), poverty oats grass (*Danthonia spicata*), and little bluestem (*Schizachyrium scoparium*).

Some other bird species observed at the site which are typical of this habitat type include Nashville Warbler (*Vermivora ruficapilla*), Eastern Towhee (*Pipilo erythrophthalmus*), Clay-colored Sparrow (*Spizella pallida*) and Chipping Sparrow (*Spizella passerina*). Also seen here were a number of birds identified as Species of Greatest Conservation Need in the State Wildlife Action Plan (Wisconsin Department of Natural Resources 2005), including Black-billed Cuckoo (*Coccyzus erythropthalmus*), Vesper Sparrow (*Pooecetes gramineus*), Brown Thrasher (*Toxostoma rufum*), and Field Sparrow (*Spizella pusilla*).

Plans for 2008

WDNR and FWS are actively planning for the upcoming 2008 nesting season, with the hope and expectation that Kirtland's Warblers will return to

the location where they were found in 2007. Given the multiple singing males and females found at this site, it seems likely that Kirtland's Warblers may have been present at the site prior to 2007, yet were undetected. We plan to monitor the site closely in 2008, and document any nesting attempts and their outcome. We also plan to construct and operate several cowbird traps in the nesting area, to diminish the negative effects of this nest parasite and enhance the chances for reproductive success.

In addition to the possibility that Kirtland's Warblers have been present at the Adams County site for more than one year, it seems equally likely that birds may be discovered at other suitable sites in Wisconsin. We are currently organizing a survey effort designed to identify potentially suitable habitat throughout the state, and then conduct surveys at those sites at the appropriate time, in an attempt to detect additional singing male Kirtland's Warblers.

Wisconsin DNR and FWS are also working with other partners to encourage proactive management in jack pine ecosystems in Wisconsin that could benefit Kirtland's Warblers. We have already initiated discussions with a number of entities that manage jack pine habitats, including the U.S. Forest Service, Plum Creek Timber Company, the Wisconsin DNR, and multiple County Forest Administrators. These proactive management actions are likely to also benefit a number of rare and declining species found in this type of habitat such as Vesper Sparrow, Brown Thrasher, Black-billed Cuckoo, and the federally endangered Karner blue butterfly (*Lyaeides melissa samuelis*), to name but a few.

We are optimistic that Kirtland's Warblers can be encouraged to continue nesting in Wisconsin, and hopeful that we can establish a small and growing population of this rare species. The establishment of new breeding areas such as in Wisconsin could prove critical to ensuring the survival of the species, and may eventually contribute towards the species removal from the federal list of threatened and endangered species.

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Eastern Bluebird by John Krerowicz