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Front Cover: Eric Preston shared with us his capture of two Long-eared Owlets peering down at him in June 2015 in Dane County.

Incoming President's Statement

It's truly an honor to be elected President of WSO. I've been associated with this fine organization for a long time. The challenge is a bit daunting, as there are some big shoes to fill given all that I've seen our recent past presidents accomplish. I'll give it my best shot.

I looked back to see how long I've been a WSO member. The first copy I received of *The Passenger Pigeon*, which I still have, was from Spring 1967. That's a 49 year run, and means I would have joined in 7th grade. Which makes sense, given that I was first exposed to birding in 5th and 6th grades by a truly wonderful mentor.

In my initial remarks as President at this year's Convention I talked about the people who touch our lives and introduce us to lasting experiences. I asked you to remember who first helped spark your interest in birds and the natural world. I also asked you to think about everyone that you have helped get interested in birds. Again, I think all WSO members should both applaud yourselves for sparking the birding interest in others and applaud those who encouraged your early interests in birding. That sharing is one of the reasons birding is such a wonderful endeavor.

I've been hanging around the edges of WSO for many years. Now that I'm in a more visible position, I thought I'd share a bit more about my background.

My first great birding influence was a wonderful young 5th and 6th grade teacher, Harriet Irwin. Harriet led a group of students during that time on numerous hikes, teaching us birds and flowers and communities and landscapes and soils and...just about anything that's cool about the natural world. This is my first memory of birding. What's even more amazing about Harriet is that she continued taking many of us out for years after that, even though she went back to college. I got nice note from her the other day. Thank you my good friend.

One of the other wonderful things Harriet did was to introduce me to many of the naturalists at Madison's School Forest, Cherokee Marsh, and the UW Arboretum. They did so much to encourage me and expand my understanding of the natural world through my junior high and high school years. Three wonderful women, Ev Werner, Lu Serverson, and Barb Vogelsang, deserve a special shout out from me. They let me tag along with them all over southern Wisconsin, visiting prairies, sand blows, forests, wetlands, and barrens. They added to the knowledge base that Harriet had started in me, continuing to expand my understanding of the entire landscape. When I was 17, these three fine folks made me finally get my drivers license. After all, if I they were putting up with me tagging along I should at least do the driving.

My high school in Madison had a very active student group, the Biology Honor Society. We went on field trips, had special programs, taught in grade and middle schools, and got involved in reasearch projects. Many of the students that Harriet inspired were also active in BHS. During this time I received a WSO Steenbock Scholarship to do research with Red-winged Blackbirds. While not setting the sci-

entific community on end, it was an important experience in my growth as a biologist.

Harriet did yet another great thing for me, this time when I entered the UW-Madison. She steered me to a still infant Environmental Studies Program, where I hung out during my college classes in addition to my formal coursework in Zoology. During these days I did extensive research for a multi-disciplinary project to study impacts of a new power plant along the Wisconsin River near Portage. My focus was the wetland birds, and I worked closely with botanists and hydrogeologists, trying to tease out how a large power plant cooling-lake affected adjacent wetlands. I am writing this column from the Union Terrace, where I also hung out more than I probably should've during my college days.

After college I found a real job, working for 33 years at the state Public Service Commission (PSC). I spent much of this time reviewing the environmental and siting implications of proposed power lines, gas lines, and power plants. While much of my work was not directly related to field biology, that background was critical for understanding the evaluations that were fundamental to my work.

Two years ago I retired from the PSC. Luckily, I never lost my love for birds, even though my field skills are sorely lacking (atlasing, however, is really helping me regain them). All my experiences, mentors, classes, research work, and job efforts seem to revolve around the theme of bird conservation. WSO has made significant contributions to bird conservation in the past and I'd like to help ensure that it continues to do so into the future. More about this in later columns.

—Michael John Jaeger

Every Ending is a New Beginning

In my second President's Statement I reflected on the extraordinary role that volunteers have played in our organization's success. Our publications, our website, our administration, our conservation projects, our education efforts, our research contributions—all performed by volunteers. In this, my final President's Statement, I would like to formally recognize those individuals that have dedicated their time and skills to furthering the mission of WSO. Without this committed core of people, our work would be greatly diminished and I believe Wisconsin's birds and birding community would be poorer as a result.

Before I acknowledge our wonderful volunteers, I would like to make one final appeal to you, our members and supporters. It has been an honor to serve as the President and Vice President of the Wisconsin Society for Ornithology over the last four years. There is an overwhelming need for organizations like WSO in Wisconsin. With the fate of our environment and natural resources being increasingly decided by those that are big on political agendas and small on scientific training, a non-partisan, nonprofit organization whose mission connects science and conservation is critical. WSO gives a voice to the wild creatures and places that cannot advocate for themselves. It is only with your support that we are able to play this important role. Thank you for continuing to support our efforts and please help to spread the word about our great organization!

During my tenure as President, WSO has continued to grow and evolve. Part of this evolution involved changes to the structure of our Board of Directors. Our strategic planning process in 2013 allowed us the opportunity to evaluate our board positions and make adjustments to better accomplish our goals. One of those goals is for WSO to increase its annual income through a combination of membership support, fundraising, bequests and grants. As a result, in 2014 the Board approved the creation of a Development position, and in 2015 **Mary Korkor** was recruited for the role. I am excited about this new position and thankful for the expertise that Mary brings.

In 2013 **Christine Reel** retired from her role as WSO Treasurer and moved into a new role of Treasurer Emeritus. She has continued to volunteer her time helping with Duck Stamp sales, acting as the treasurer for the convention and Atlas, helping with bylaws revisions and guiding our financial security. I am grateful for the tremendous work that Christine continues to do for WSO.

In 2015 the board approved the consolidation of the Education and Youth Education board positions. **Jim Knickelbine** and **Ed Hahn** now act as co-chairs of the combined Education Committee and are collaborating on some wonderful projects, including the Great Wisconsin Oriole Count, Bird Kits, and Youth Grants.

In April 2015 the Board voted to approve the nomination of our new legal counsel **Peter McKeever**, who is succeeding **David Kinnamon**. I would like to extend my gratitude to David for his years of service to WSO. In short time, Peter has be-

come an invaluable asset to our organization by helping us navigate the legalities of contracts related to the Atlas. Peter has also been instrumental in helping us pursue a possible land acquisition in the Baraboo Hills.

In 2015 **Joe Schaufenbuel** announced his desire to retire as Bird Reports Coordinator after having served in this position since 2011. Historically, this position was responsible for compiling the seasonal and rare bird documentation forms as well as Big Day and May Day count forms. Unfortunately, over the last decade, the submissions for Big Day and May Day counts have dwindled to only a few each year. At the same time, hardcopy submissions for seasonal and rare bird documentations have mostly been replaced by electronic submissions, mainly through eBird. The Records Committee and Field Notes Compilers now directly obtain the bird record data online.

Taking these recent evolutions into consideration, the Board voted unanimously in October 2015 to dissolve the Bird Reports Coordinator position and transfer the remaining responsibilities to the seasonal Field Notes Compilers. Many thanks to Joe for his years of service in this position and to the compilers **Sunil Gopalan**, **Alyssa DeRubeis**, **Bob Domagalski** and **Ted Keyel** for agreeing to absorb the additional tasks while continuing the tremendous work that they do!

At our January 2016 board meeting, **Paul Jakoubek** suggested that the time was right to fold his Website Administrator position into the Communications Committee and eliminate it as a WSO Board of Directors position. Since our website is such an integral part of how we communicate with both our membership and the general public, Paul has worked closely with the Communications Committee since it was established in 2013. The board voted unanimously to approve this change. Paul has become an official member of the Communications Committee and will continue to manage our website. WSO greatly appreciates his continued service!

Over the last two years, there have been other changes to the Board in the form of migrations. I would like to thank the following recently retired Board members for their service to WSO:

Michael John Jaeger in 2015 after serving as Scholarships and Grants Chair since 2010.

David Drake in 2015 after serving as Research Chair since 2013.

Pete Blank in 2014 after serving as Conservation Chair since 2014.

Penny Fish in 2014 after serving as Bookstore Manager since 2011.

Becca Setzer in 2014 after serving as Communications Chair since 2013.

An ending of service for some means a new beginning for others. I am grateful for our recent recruits who will be succeeding the aforementioned Board members. The energy and talent that each of them brings to our Board is inspiring.

Aaron Greene, Scholarships and Grants Chair

Matt Hayes, Research Chair

Andy Cassini, Conservation Chair

Dar Tiede, Bookstore

Erin Parker, Communications Chair

Amidst all of these changes to our Board, there are those constants that strengthen our organization by the experience that they bring. These individuals are the foundation of WSO and I am grateful for their insight and experience.

Jeff Baughman, served as Field Trips co-chair since 1987

Tom Schultz, served as Field Trips co-chair since 1987

Jesse Peterson, served as Membership Chair since 2002

Levi Wood, served as Honey Creek Chair since 2009

Quentin Yoerger, served as Records Committee Chair since 2013

Jenny Wenzel, served as Secretary since 2013

Mickey O'Connor, served as Treasurer since 2013

Christine Zimmerman, served as Annual Convention Chair since 2013

Nancy Nabak, served as Historian since 2014

Chuck Heikkinen, served as *Passenger Pigeon* Editor since 2014

Delia Unson, served as *Passenger Pigeon* Editor since 2014

Carl Schwartz, served as Badger Birder Editor since 2014

I would also like to give a very special thanks to Michael John Jaeger for his excellent work as Vice President over the last two years. Michael John has been involved with many aspects of the organization, particularly with one of our main organizational goals—to advance bird conservation. I believe WSO's future to be very bright under his leadership.

Finally, thanks to all of the other volunteers that help with our committees, field trips, convention, land management at Honey Creek and the myriad of other projects that we do. Your service is truly a gift and we very much appreciate the time that you dedicate on behalf of WSO.

As for me, although my term as an officer is coming to a close, I will continue to volunteer for WSO in a different capacity. After nearly 15 years in the position, Jesse Peterson has announced his retirement from the Membership Chair position and I have decided to be his successor. Many thanks to Jesse for his dedication to WSO and I look forward to working with him during this transition.

It has been a fascinating journey and such a privilege to have served as an officer of the Wisconsin Society for Ornithology. See you out on the trails!



Kim Kreitinger



Eric Preston caught this striking image of a Long-eared Owl stretched out in Dane County in June 2015.

From the Editors' Desk: The Future is Us

Summer is coming rapidly and with it, nesting. Year two of the Wisconsin Breeding Bird Atlas II has commenced, and late spring and summer bring an abundance of actively nesting species. Those of us engaged in atlasing, if not already hard at work, have a lot to look forward to. And we hope that more and more of you become involved in the incredibly educational and rewarding experience of watching different species prepare for and raise families.

But what happens if familiar species fail to arrive? Or, if their numbers seem to fall with each passing year? This, of course, can already be seen. The Gray Jay article by Menebroeker et al. lays out some of the probable causes for the decline in the Gray Jay population since the early 1990s, influenced by global warming. On top of that, Minnesota appears at the time of this writing to be on the cusp of allowing ATVs access to previously closed areas, including sensitive Gray Jay habitat. In the article by Thiel, even though it is not the focus of the article, it's clear that human encroachment negatively affects nesting by Belted Kingfishers. Rosenfield et al. also reiterate the negative consequences of uncontrolled human incursion on Cooper's Hawks. Fortunately in that case, the hawks have adapted even to urban environments, and the population appears stable. These are only examples of a much larger problem. There is an ongoing political and commercial eagerness to mine all our natural resources without concern for conservation or even sustaining what we have left. On top of that, our legislature has seen fit to pass legislation declaring that there is no global warming despite the growing, conclusive scientific evidence to the contrary. Make no mistake, things are not getting better fast enough to preserve the natural resources that are being eroded.

Our outgoing president, Kim Kreitinger, notes in her President's Statement in this issue that WSO and like organizations are vital to preserving and enhancing the health of our planet. She observes, "Without this committed core of people, our work would be greatly diminished and I believe Wisconsin's birds and birding community would be poorer as a result." With our participation in conservation, there is hope.

How can we do this? We can actively involve ourselves with research efforts, including the Breeding Bird Atlas II, through fieldwork and/or financial support. We can be more vocal in public meetings addressing issues jeopardizing our natural world, or we can support those with the ability to speak out. We can offer financial support to environmentally related organizations such as WSO - there is also a long list of other deserving organization efforts that one can quickly generate with a Google-search. Simply put, it is important that we all do something, no matter how small that something might seem, including submitting

our bird observations to eBird. We are, it's clear, all traveling in the same Noah's Ark—our planet.

Chuck Heikkinen & Delia Unson



Gray Jay photographed by Ryan Brady.

Peer-reviewed

Recent Declines in Gray Jays on Christmas Bird Counts in Northern Wisconsin

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ABSTRACT

Gray Jays (*Perisoreus canadensis*) are resident, boreal birds of northern Wisconsin, typically associated with Black Spruce (*Picea mariana*) bogs. Gray Jays cache perishable food items for over-winter consumption, and are therefore dependent on cold weather and the antibacterial and antifungal properties of the Black Spruce trees in which they store their food for cache-preservation. Warming climate trends and loss of Black Spruce habitat may adversely affect Gray Jay populations. In recent years, there have been anecdotal reports of declines on Gray Jays in northern Wisconsin. Here we investigate trends in Gray Jay abundance in Northern Wisconsin using Christmas Bird Count data from 1956 to 2013. After compiling data from five suitable locations across northern Wisconsin, we examined temporal trends in the relative abundance of

Gray Jays by fitting joinpoint regressions (segmented line regressions) to the data. Our resulting models show recent declines in Gray Jay abundance at all five locations (including locations where Gray Jay abundance had previously been increasing). All locations appear to have started their downward trends during the early 1990s. With a decline in Gray Jay abundance having been confirmed, further research may be able to determine if the decline can be directly linked to climate-driven habitat loss, loss of cached food due to spoiling from a warmer climate, direct human influences such as logging or habitat fragmentation, or a combination of these factors.

Keywords: abundance, Black Spruce, boreal, Christmas Bird Count, climate change, Gray Jay, joinpoint, segmented line regression, Wisconsin

INTRODUCTION

Gray Jays (*Perisoreus canadensis*) are resident birds of North American boreal forests that form life-long mated pairs, produce only one clutch per year, and occupy permanent territories of 25 to 100 hectares (about 60 to 250 acres) (Waite and Strickland 2006; Strickland and Ouellet 2011; Strickland 2014). They survive in the highly seasonal cold-climate forests of the boreal and sub-alpine zones by scatter-hoarding food caches, a behavior that maintains annual adult mortality rates as low as 20% (Strickland 2014). Gray Jays are omnivorous and opportunistic feeders that deposit saliva-coated food caches under the scales of tree bark (Waite and Strickland 2006; Strickland and Ouellet 2011). Unlike food stored by many other species (e.g., acorns and conifer seeds stored by Acorn Woodpeckers [*Melanerpes formicivorus*] and Clark's Nutcrackers [*Nucifraga columbiana*]), Gray Jay caches are perishable (e.g., animal tissue and berries) and are best preserved in cool weather or under spruce (*Picea* spp.) or pine (*Pinus* spp.) bark scales (Strickland et al. 2011). Strickland et al. (2011) concluded that food caches housed under spruce (*Picea*) or pine (*Pinus*) bark scales were better preserved than caches deposited under the bark of deciduous trees in Ontario, Canada. These caches provide a critical over-winter food source for adult Gray Jays, which begin nesting in February, and their young, which fledge weeks before leaf-out and the regeneration of many Gray Jay food sources (Waite and Strickland 2006; Strickland and Ouellet 2011; Strickland 2014). The dominant hatching will remain in its parents' territory and expel all other siblings. Up to 80%

of juvenile Gray Jays expelled from their parental territory may die in their hatch year, but surviving expelled juveniles may move into nearby territories held by failed breeding pairs (Strickland and Ouellet 2011).

Climate change projections for northern Wisconsin suggest that temperatures may be higher during autumn and winter months (Kucharik et al. 2010; Wisconsin's Changing Climate: Impacts and Adaptation 2011; Janowiak et al. 2014). These higher temperatures may lead to the spoiling of cached food, adversely affecting Gray Jay populations by reducing reproductive success, while seemingly having a minimal effect on the mortality rate of adults (Waite and Strickland 2006; Strickland 2014). A reduction in reproductive success leads to a juvenile shortage, and thus an emerging phenomenon of vacant territories going unfilled. This has been observed in Algonquin Park, Quebec, where currently less than half of territories occupied in 1970 remained occupied in 2014 (Strickland 2014).

Climate-related reductions in the extent of spruce-dominated forests (Prasad et al. 2007–ongoing; Janowiak et al. 2014) are expected to negatively affect Gray Jays, particularly at the southern edge of their range. For example, Gray Jay populations on the southern edge of the species' range in Ontario and Quebec, Canada, have declined in recent years (Waite and Strickland 2006; Strickland and Ouellet 2011; Strickland 2014). The Gray Jay population of Wisconsin is similarly on the southern edge of the species' range, and is restricted to the northern portion of the state (Fig. 1). In Wisconsin, Gray Jays are associated with Black Spruce (*Picea mariana*) bogs in the

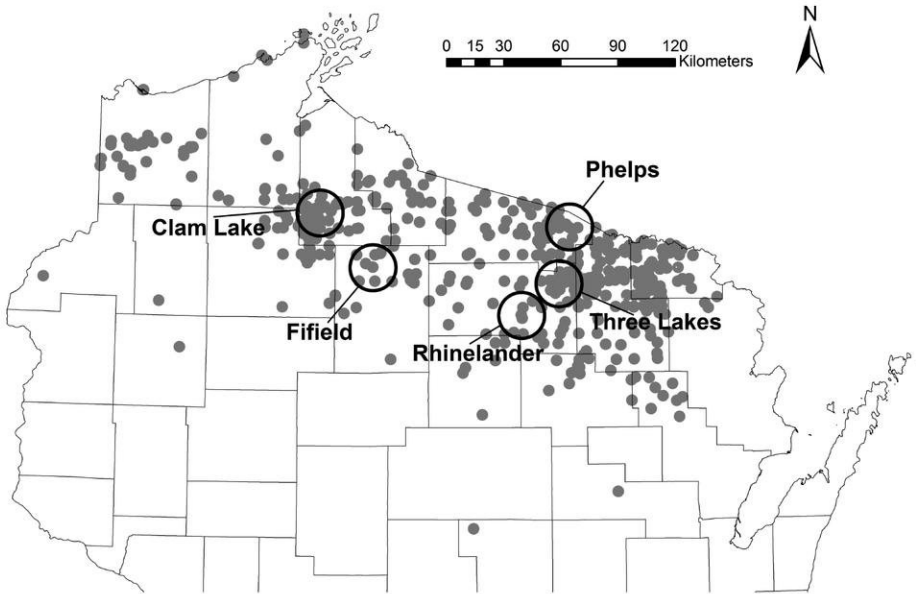


Figure 1. Black circles indicate the five 7.5-mile-radius Christmas Bird Count circles at which we analyzed Gray Jay data. Gray dots are data from eBird (2015), used here to illustrate typical Gray Jay range in northern Wisconsin.

northern two tiers of counties (Robbins 1991; Gregg 2006) and there is anecdotal evidence of a decline of Gray Jays in Wisconsin (T. Nicholls, personal communication). Gregg (2006) compared the Gray Jay's statewide range described in Robbins (1991) with the locations of breeding populations from the *Wisconsin Breeding Bird Atlas* and noted a possible range contraction along the species' southernmost border, though he could not rule out that this pattern may have been due to uneven sampling effort.

In the winter months, in suitable habitat, Gray Jays are often curious and can be easily observed during Christmas Bird Counts (Robbins 1991). Christmas Bird Counts (CBCs) are standardized, citizen-scientist surveys conducted once annually in late December or early January that can provide valu-

able information on the abundance of Gray Jays on their breeding grounds, which are occupied year-round as permanent territories. CBC records are a rich source of data that span decades in many locations across North America. Analyses of long-term CBC data have revealed patterns such as shifts in the distribution of wintering Western Grebes (*Aechmophorus occidentalis*; Wilson et al. 2013), declines in abundance of corvids due to West Nile Virus (Crosbie et al. 2008), and fluctuations in the abundance of boreal bird species with seed-crop size (Koenig and Knops 2001).

In this paper, we examine the hypothesis that the abundance of Gray Jays has declined in northern Wisconsin. We test this hypothesis by reporting changes in Gray Jay abundance from the late 20th and early 21st century

using CBC data for northern Wisconsin.

METHODS

We compiled a list of effort (party-hours) and Gray Jay abundance for CBC circles in Wisconsin from the CBC database (National Audubon Society 2014), CBC reports in *The Passenger Pigeon* from 1958–2013 (Appendix), and personal communication with CBC compilers. We attempted to resolve any data discrepancies between sources by contacting the compilers who oversaw field data collection. Circles with discrepancies that could not be resolved were excluded from further analysis. To rigorously examine temporal trends in Gray Jay abundance, we further limited our sample to five CBC circles (Clam Lake, Fifield, Phelps, Rhinelander, and Three Lakes; Fig. 1) within the Gray Jay range defined by Robbins (1991) where (1) recent (2000–present) observations existed, and (2) there were ≥ 20 years of observations with ≥ 8 party-hours of effort per year. To correct for varying effort, we calculated relative abundance of Gray Jays by dividing the number of Gray Jays observed during a count by the total number of party-hours of that count.

We examined temporal trends in the relative abundance of Gray Jays for each circle by fitting joinpoint or segmented line regressions (Brenden and Bence 2008) with the Joinpoint Regression Program, Version 4.1.1.1 (Statistical Research and Application Branch, National Cancer Institute 2014). For each circle, regressions with between 0 and 5 joinpoints (i.e., where two segments met) were fit to the relative abundance of Gray Jays across years (i.e., calendar year of start of CBC) and

the model with the lowest Bayesian Information Criterion (BIC; Schwarz 1978) was chosen as the best-fit model. Years that defined joinpoints and the slopes of each segment were compared within and among locations to describe regional trends in Gray Jay abundance at the five sample sites in northern Wisconsin over the sampling period.

RESULTS

The number of segments in the best-fit joinpoint models differed by circle (Fig. 2, Table 1). A linear model (i.e., no joinpoints) best described Gray Jay relative abundance at Clam Lake and Fifield. However, a model with three segments was chosen for Fifield when the abnormally large count of Gray Jays in 1972 was excluded from the analysis. Gray Jay relative abundance at Phelps, Three Lakes, and Rhinelander were each modeled with two, three, and four segments, respectively.

Gray Jay relative abundance has been in a state of decline since the mid to late 1990s for all circles (Fig. 2, Table 2). In every case, the slopes of the segment for the most recent observations (from the late 1990s to 2012) were negative, ranging from -0.013 to -0.074 (Table 2). Prior to the declines in the 1990s, Gray Jay relative abundance increased from the beginning of our time series for Fifield (if the larger 1972 observation was excluded), Phelps, and Three Lakes. Gray Jay relative abundance also increased at Rhinelander before the decline in the 1990s, except for a brief interruption in the 1980s. There was no evidence for an increase in relative abundance before the decline in the 1990s for Fifield when the large 1972 observation was included in the analy-

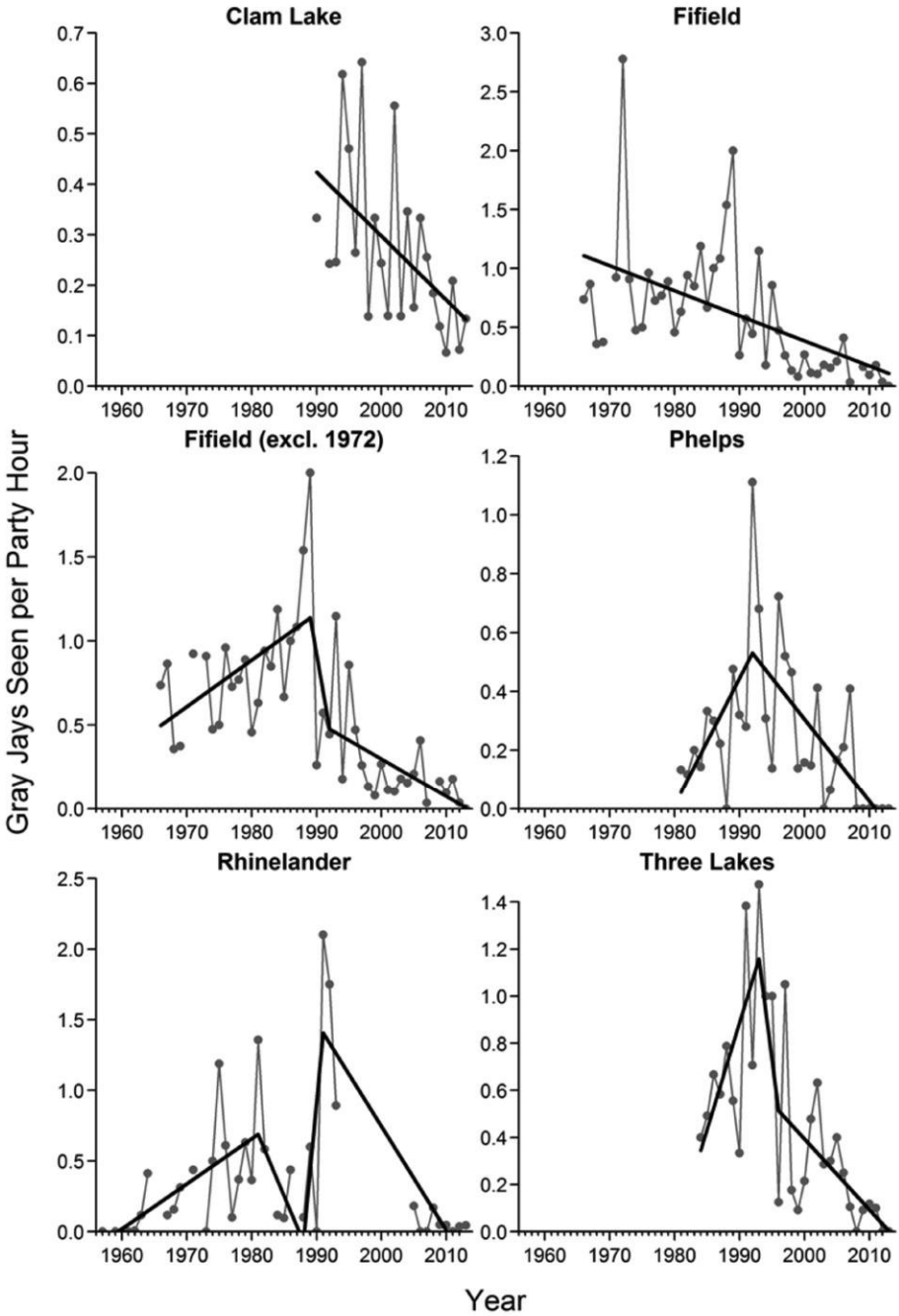


Figure 2. Best-fit joinpoint models (solid black line) for the relative abundance of Gray Jays by year at the Clam Lake, Fifield, Fifield (excluding 1972), Phelps, Rhinelander, and Three Lakes, Wisconsin Christmas Bird Count circles. Observed data are depicted with gray points connected with gray lines.

Table 1. Bayesian information criterion values (BIC) for joinpoint models with between 0 and 5 joinpoints fit to the number of observed Gray Jays per party hour over time at five Wisconsin Christmas Bird Count circles. Degrees of freedom are in parentheses. The best-fitting model (i.e., lowest BIC) for each location is identified with an asterisk.

Location	Number of Joinpoints					
	0	1	2	3	4	5
Clam Lake	-3.7007 (21)*	-3.5495 (19)	-3.2973 (17)	-3.0642 (15)	-2.8029 (13)	-2.5449 (11)
Fifield	-1.4161 (44)*	-1.3879 (42)	-1.3146 (40)	-1.2953 (38)	-1.3028 (36)	-1.3048 (34)
Fifielda	-1.8420 (43)	-2.0404 (41)	-2.0791 (39)*	-2.0787 (37)	-1.9512 (35)	-1.3048 (33)
Phelps	-2.6838 (31)	-2.9646 (29)*	-2.8415 (27)	-2.7611 (25)	-2.6089 (23)	-2.4048 (21)
Rhineland	-1.2368 (37)	-1.4911 (35)	-1.5223 (33)	-1.5960 (31)*	-1.4901 (29)	-1.3299 (27)
Three Lakes	-2.0556 (28)	-2.1637 (26)	-2.1763 (24) *	-2.0905 (22)	-1.9292 (20)	-1.7390 (18)

^a The count in 1972 was excluded from the analysis due to an outlying high number of Gray Jays.

Table 2. Number of segments (Segs), coefficient of determination (r^2), years (and 95% confidence interval) of significant joinpoints, and slopes (95% confidence interval in parentheses) for each segment of the joinpoint model that best fit the number of Gray Jays observed per party hour over time at five Wisconsin Christmas Bird Count circles.

Location	n	Segs	r^2	Year of Joinpoint			Segment Slope			
				First	Second	Third	First	Second	Third	Fourth
Clam Lake	23	1	0.278	–	–	–	-0.013 (-0.003, -0.022)	–	–	–
Fifield	46	1	0.289	–	–	–	-0.021 (-0.011, -0.031)	–	–	–
Fifielda	45	3	0.601	1989 (1985, 1994)	1992 (1990, 2009)	–	0.028 (0.044, 0.012)	-0.22 (0.469, -0.909)	-0.022 (-0.005, -0.040)	–
Phelps	33	2	0.449	1992 (1989, 1997)	–	–	0.043 (0.074, 0.013)	-0.028 (-0.016, -0.040)	–	–
Rhineland	39	4	0.603	1981 (1961, 1990)	1988 (1982, 1993)	1991 (1990, 2011)	0.032 (0.048, 0.016)	-0.109 (0.067, -0.284)	0.493 (1.226, -0.241)	-0.074 (-0.051, -0.097)
Three Lakes	30	3	0.636	1993 (1986, 1996)	1996 (1990, 2011)	–	0.09 (0.155, 0.026)	-0.215 (0.490, -0.920)	-0.03 (-0.005, -0.055)	–

^a The count in 1972 was excluded from the analysis.

sis. The Clam Lake CBC record does not extend back far enough to assess pre-1990s trends in the relative abundance of Gray Jays.

DISCUSSION

We used CBC data to statistically demonstrate an ongoing decline in

Gray Jay relative abundance in northern Wisconsin. All areas appear to have entered a decline around the early 1990s, while the abundance of Gray Jays in Fifield may have been decreasing since our earliest records of 1965 (when the count from 1972 is included in the analysis). Why are we seeing this declining trend in observed Gray Jays in Northern Wisconsin?

Errors or variability in the methodology of citizen scientists are potential concerns; but we do not think there is a systematic bias in the data that could result in the observed pattern, nor do we feel that Gray Jays are likely to be improperly identified or go undetected, given their distinct appearance and inquisitive, trusting disposition. While low numbers of birds recorded in the beginning years of counts could be due to observers being unfamiliar with the count circle, this explanation would not account for declines observed after 1990. Our circle with the longest record, Fifield, has been compiled by the same individual since 1965 and we believe this represents exceptionally reliable data. Fifield's trends in abundance closely resemble the recent trends we observed at all other locations. This becomes more apparent if the 1972 count for Fifield is excluded from the analysis, as this count was far enough removed from the other observed values that the best fit model failed to detect the pre-1990 population increase. The value of long-term data sets created by citizen scientists cannot be overstated. In our review of the CBC database, we encountered several count circles that were active (and recorded Gray Jays) in the middle of the 20th century but were discontinued prior to the 1990s (e.g., the Oxbo CBC)

and thus were not included in our analysis.

The well-documented increase in winter temperatures across our study area and concurrent with our study period (Wisconsin's Changing Climate: Impacts and Adaptation 2011) may have triggered the downward trend in Gray Jay abundance we observed. Our study sites are located in a part of Wisconsin that has also experienced a delay in the first fall freeze (0.0°C) of between three and twelve days and a lengthening of the growing season by up to two weeks (Kucharik et al. 2010). This warming trend may be having a direct, adverse impact on the preservation of cached food that is critical to raising young (Waite and Strickland 2006; Strickland and Ouellet 2011; Strickland 2014). In addition, the observed Gray Jay declines could be indicative of the initial effects of predicted poleward shifts in Wisconsin's boreal conifer tree species, including Black Spruce, related to climate change (Prasad et al. 2007-ongoing; Wisconsin's Changing Climate: Impacts and Adaptation 2011).

Black Spruce is typically harvested in the United States for the manufacture of paper and, to a lesser extent, for lumber and for Christmas trees (Viereck and Johnston 1990). However, in Wisconsin, White Spruce [*Picea glauca*] represents approximately 90% of all spruce harvested, despite only representing 55% of in-state spruce, indicating Black Spruce is not of great economic value. The USFS Forest Inventory and Analysis (2014) estimated that the number of Black Spruce trees in Wisconsin increased from about 181,000,000 in 1968 to about 347,000,000 in 2014. Despite this increase in numbers, the mortality rate of

spruce has also increased, having quadrupled between 1983 and 2013, with the ratio of mortality to gross growth currently at 45.5% (Wisconsin Department of Natural Resources 2014, 2015). This increase in mortality may indicate a decline in the health, condition, and age structure of Wisconsin's spruce stock, and the initiation of Black Spruce's poleward range contraction anticipated by Prasad et al. (2007–ongoing) and Janowiak et al. (2014).

The decline we have observed in the relative abundance of Gray Jays is concordant with projections of significant reductions in abundance of nearly two-thirds of boreal bird species (Virkkala et al. 2008). Regardless of whether the decline in Gray Jays over the last several decades arose from a reduction in conifer quality or by a more direct warming period in recent years affecting cache preservation, climate effects on conifers pose a major threat to Gray Jays in Wisconsin in the years to come. Northern Wisconsin's lowland conifer forests hold rich and diverse bird populations (Hoffman and Mossman 1993). As the regional climate changes, these areas may be the last refuge in Wisconsin for boreal species like the Gray Jay. Increased conservation attention to protecting remaining intact boreal conifer forests is necessary for the persistence of these species in the state.

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APPENDIX

Appendix. Records of Gray Jays observed on Christmas Bird Counts in Wisconsin from 1956 to 2012 were taken from the following articles in *The Passenger Pigeon*.

Publication Year	Author (s)	Title	Volume (pages)
1957	M. Lound & R. Lound	The 1956 Christmas Bird Count	19: 16–24
1958	M. Lound & R. Lound	The 1957 Christmas Bird Count	20: 9–20
1959	H. A. Winkler	The 1958 Christmas Bird Count	21: 3–14
1960	H. A. Winkler	The 1959 Christmas Bird Count	22: 3–17
1960	H. A. Winkler	The 1960 Christmas Bird Count	22: 163–180
1961	H. A. Bauers	The 1961 Christmas Bird Count	23: 123–137
1963	H. A. Bauers	The 1962 Christmas Bird Count	25: 3–17
1964	H. A. Bauers	The 1963 Christmas Bird Count	26: 118–137

Publication Year	Author (s)	Title	Volume (pages)
1965	H. A. Bauers	The 1964 Christmas Bird Count	27: 91–110
1966	W. L. Hilsenhoff	The 1965 Christmas Bird Count	28: 87–102
1967	W. L. Hilsenhoff	The 1966 Wisconsin Christmas Bird Counts	29: 120–133
1968	W. L. Hilsenhoff	The 1967 Wisconsin Christmas Bird Counts	30: 151–163
1969	W. L. Hilsenhoff	The 1968 Wisconsin Christmas Bird Counts	31: 161–172
1970	W. L. Hilsenhoff	The 1979 Wisconsin Christmas Bird Counts	32: 3–16
1971	W. L. Hilsenhoff	The 1970 Wisconsin Christmas Bird Counts	33: 4–17
1972	W. L. Hilsenhoff	The 1971 Wisconsin Christmas Bird Counts	34: 3–17
1973	W. L. Hilsenhoff	The 1972 Wisconsin Christmas Bird Counts	35: 3–13
1974	W. L. Hilsenhoff	The 1973 Wisconsin Christmas Bird Counts	36: 3–15
1975	W. L. Hilsenhoff	The 1974 Wisconsin Christmas Bird Counts	37: 3–19
1976	W. L. Hilsenhoff	The 1975 Wisconsin Christmas Bird Counts	38: 4–18
1977	W. L. Hilsenhoff	The 1976 Wisconsin Christmas Bird Counts	39: 173–187
1978	W. L. Hilsenhoff	The 1977 Wisconsin Christmas Bird Count	40: 358–370
1979	W. L. Hilsenhoff	The 1978 Wisconsin Christmas Bird Counts	41: 1–15
1980	W. L. Hilsenhoff	The 1979 Wisconsin Christmas Bird Counts	42: 9–22
1981	W. L. Hilsenhoff	The 1980 Wisconsin Christmas Bird Count	43: 5–17
1982	W. L. Hilsenhoff	The 1981 Wisconsin Christmas Bird Count	44: 1–15
1983	W. L. Hilsenhoff	The 1982 Wisconsin Christmas Bird Count	45: 1–16
1984	W. L. Hilsenhoff	The 1983 Wisconsin Christmas Bird Count	46: 1–16
1985	W. L. Hilsenhoff	The 1984 Wisconsin Christmas Bird Count	47: 1–16
1986	W. L. Hilsenhoff	The 1985 Wisconsin Christmas Bird Count	48: 2–16
1987	W. L. Hilsenhoff	The 1986 Wisconsin Christmas Bird Count	49: 2–17
1988	W. L. Hilsenhoff	The 1987 Wisconsin Christmas Bird Count	50: 21–36
1989	W. L. Hilsenhoff	The 1988 Wisconsin Christmas Bird Count	51: 67–82
1990	W. L. Hilsenhoff	The 1989 Wisconsin Christmas Bird Counts	52: 3–18
1991	W. L. Hilsenhoff	The 1990 Wisconsin Christmas Bird Counts	53: 3–20
1992	W. L. Hilsenhoff	The 1991 Wisconsin Christmas Bird Counts	54: 34–18
1993	W. L. Hilsenhoff	The 1992 Wisconsin Christmas Bird Counts	55: 3–20
1994	W. L. Hilsenhoff	The 1993 Wisconsin Christmas Bird Counts	56: 3–20
1995	W. L. Hilsenhoff	The 1994 Wisconsin Christmas Bird Counts	57: 3–22
1996	W. L. Hilsenhoff	The 1995 Wisconsin Christmas Bird Counts	58: 3–22
1997	W. L. Hilsenhoff	The 1996 Wisconsin Christmas Bird Counts	59: 3–20
1998	W. L. Hilsenhoff	The 1997 Wisconsin Christmas Bird Counts	60: 45–76
1999	W. L. Hilsenhoff	The 1998 Wisconsin Christmas Bird Counts	61: 71–100
2000	W. L. Hilsenhoff	The 1999 Wisconsin Christmas Bird Counts	62: 21–50
2000	R. C. Domagalski	The 2000 Wisconsin Christmas Bird Counts	62: 251–282
2001	R. C. Domagalski	The 2001 Wisconsin Christmas Bird Counts	63: 265–298
2003	R. C. Domagalski	The 2002 Wisconsin Christmas Bird Counts	65: 5–38
2004	R. C. Domagalski	The 2003 Wisconsin Christmas Bird Counts	66: 3–35
2005	R. C. Domagalski	The 2004 Wisconsin Christmas Bird Counts	67: 195–230
2006	R. C. Domagalski	The 2005 Wisconsin Christmas Bird Counts	68: 87–122
2007	R. C. Domagalski	The 2006 Wisconsin Christmas Bird Counts	69: 291–326
2008	R. C. Domagalski	The 2007 Wisconsin Christmas Bird Counts	70: 237–274
2009	R. C. Domagalski	The 2008 Wisconsin Christmas Bird Counts	71: 203–237
2010	R. C. Domagalski	The 2009 Wisconsin Christmas Bird Counts	72: 231–266
2011	R. C. Domagalski	The 2010 Wisconsin Christmas Bird Counts	73: 195–228
2012	R. C. Domagalski	The 2011 Wisconsin Christmas Bird Counts	74: 207–243
2013	R. C. Domagalski	The 2012 Wisconsin Christmas Bird Counts	75: 235–275

Wisconsin Endangered Resources Report 8: Status of the Cooper's Hawk in Wisconsin

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FINAL REPORT

State: Wisconsin Project Title: Wisconsin Endangered and
Project No.: E-1-5 Threatened Species Investigation
Cooperators: UW-Stevens Point Study Title: Status of the Cooper's Hawk
Study No.: 208
Period Covered: October 1, 1980 to January 31, 1983

CONTENTS

- Job 208.1: Delineate the distribution of breeding Cooper's hawks in Wisconsin.
- Job 208.2: Describe Cooper's hawk nesting habitat.
- Job 208.3: Determine Cooper's hawk nesting density and the spatial distribution of nests.
- Job 208.4: Determine productivity of Wisconsin Cooper's hawks.
- Job 208.5: Describe the consistency of use of nesting areas and the fidelity of individual hawks to a nest area in successive years.
- Job 208.6: Determine the importance of toxic chemical levels in eggs.
- Conclusion.

ABSTRACT

Aspects of the breeding ecology of the Cooper's hawk (Accipiter cooperii) were investigated in Wisconsin from 1980 through 1982. Eighty-five nests were found statewide: 11 (13%) and 74 (87%) were in the northern and southern half of Wisconsin, respectively. Habitat sampling at 60 nest sites indicated that Cooper's hawks nest relatively close ($x = 66.1$ m) to forest openings; far ($x = 497.4$ m) from water, and on sites with high overstory tree density ($x = 556.7$ trees/ha). Nesting density on 4 intensive study areas ranged from no nests to 1 nest per 734 ha. Mean distances between nests on 3 intensive study areas ranged from 1.3 to 2.5 km. A mean of 4.4 eggs laid, 4.1 hatched, and 3.6 bandable young per successful nest was found for 40, 26, and 48 nests, respectively. Thirteen of 23 (56.5%) nests failed during incubation and 10 (43.5%) failed during the nestling stage. Fifty-seven of 83 (68.6%) nests successfully produced young to a bandable age. A reoccupancy of 46% was found for 33 nesting areas. Capture of adult female Cooper's hawks at 7 reoccupied nesting areas resulted in 5 return birds. Previously successful adult females returned to the same nesting area. Twelve Cooper's hawk eggs were analyzed for organochlorines, PCB's, heavy metals and eggshell thickness. A mean eggshell thickness of 0.348 mm and low level of environmental contaminants indicated that they probably were not a limiting factor to Wisconsin Cooper's hawks. It was recommended that the Cooper's hawk be removed from its Threatened status in Wisconsin.

STUDY OBJECTIVE

The objective of this study was to determine the status of breeding Cooper's hawks in Wisconsin.

JOB 208.1: DELINEATE THE DISTRIBUTION OF BREEDING COOPER'S HAWKS IN WISCONSIN

OBJECTIVE

The objective of this job was to determine the breeding distribution of Cooper's hawks in Wisconsin.

PROCEDURE

Queries (70-80) were mailed to Wisconsin falconers, WDNR personnel, and other likely knowledgeable persons in February or March of 1980 through 1982 regarding Cooper's hawk nests or activity. Ten nesting areas that were active throughout the 1970's and 33 found during this study were checked for reoccupancy in 1980 and 1981-82, respectively. Intensive ground searches were also conducted on 3 intensive study areas in Waukesha, Portage, and Lincoln Counties (Job 208.3 this report). J. A. Mosher and M. R. Fuller (pers. comm.) provided Cooper's hawk nest locations on an intensive study area in Oconto County (Job 208.3 this report).

FINDINGS

Eighty-five Cooper's hawk nests were found statewide (1980: 25, 1981: 30, 1982: 30); 83 of these were active (a nest in which eggs were laid) and 2 were occupied (a nest in which 2 adults were present near a recently constructed nest with bark chips on top; no eggs laid)—(Figures 1-3).

Exact nest locations were not disclosed for 11 active nests found by various cooperators.

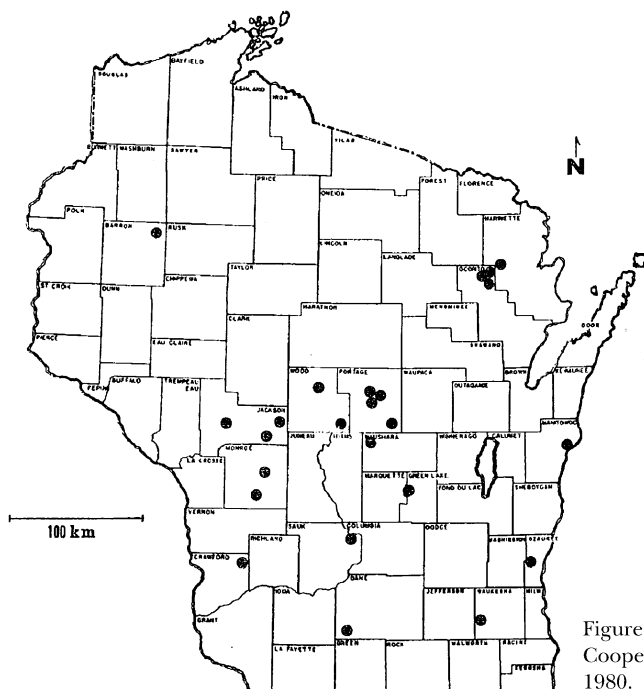


Figure 1. The distribution of Cooper's hawk nests in Wisconsin in 1980.

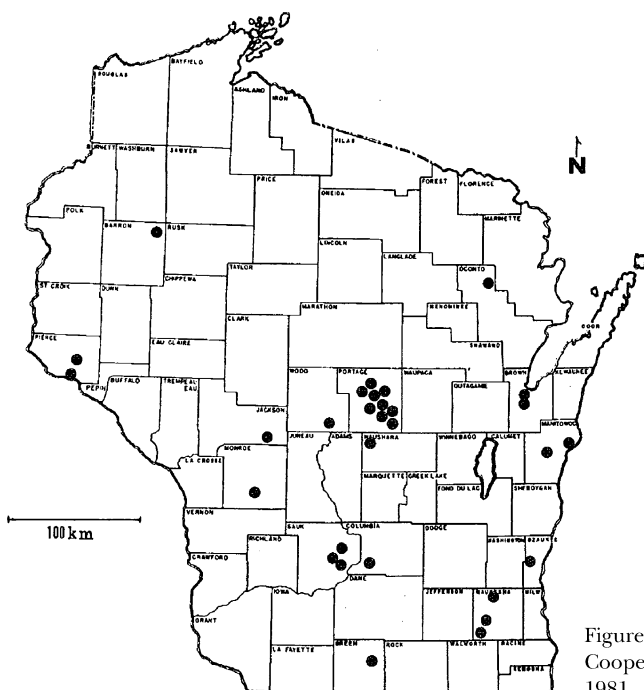


Figure 2. The distribution of Cooper's hawk nests in Wisconsin in 1981.

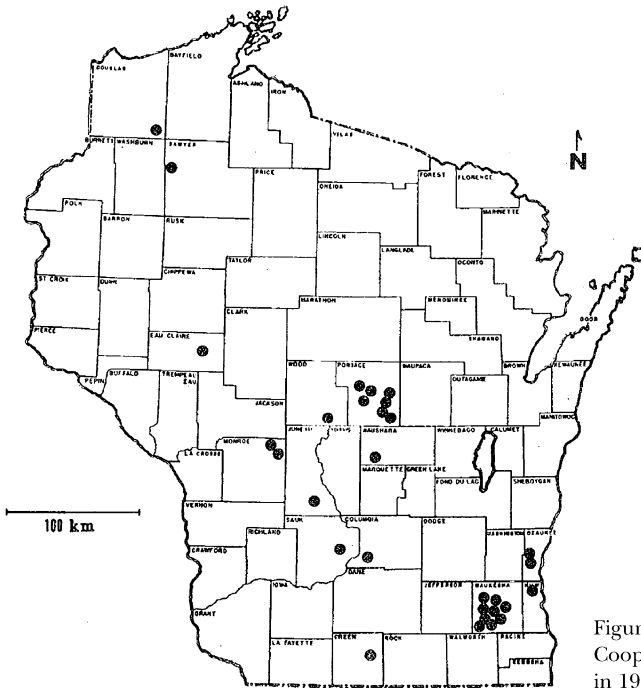


Figure 3. The distribution of Cooper's hawk nests in Wisconsin in 1982.

Table 1 lists the number of nests found by type of search effort.

Eleven (13%) of all Cooper's hawk nests were in the northern half (N of Portage County) of Wisconsin, while

the majority, 74 (87%) were found in the southern half (S of Marathon County). The paucity of nests found in the northern half of Wisconsin was probably due to the difficulty of locat-

Table 1. The number of Cooper's hawk nests found by type of search effort

Search Effort	1980	1981	1982	Total
Query response (nest location or vicinity provided)	10	11	10	31(36) ¹
Nesting area revisits	—	9	7	16(19)
Intensive study areas (density plots)	4	5	4	13(15)
Query response (nest location not provided)	6	5	—	11(13)
Incidental finds	1	2	7	10(12)
Nesting area revisits (historical)	4	—	—	4(5)
Total	25	32	28	85(100)

¹Percent of total

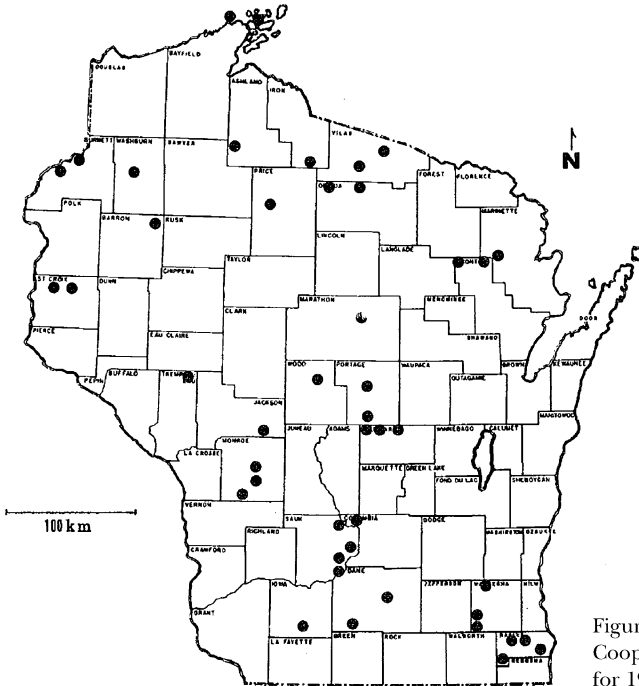


Figure 4. The distribution of Cooper's hawk nests in Wisconsin for 1935–1979.

ing Cooper's hawk nests in the extensive northern forests. Also, only 5 query response regarding Cooper's hawk activity or nests were received for the northern half of Wisconsin. Historical records of nesting Cooper's hawks in Wisconsin for the period of from 1935 through 1979 indicate a uniform distribution of nests (WDNR Files 1979) (Figure 4).

RECOMMENDATIONS

Job 208.1 should be discontinued since historical records and this study indicate that Cooper's hawks nest statewide.

JOB 208.2: DESCRIBE COOPER'S HAWK NESTING HABITAT

OBJECTIVE

The objective of this job was to describe Cooper's hawk nesting habitat in Wisconsin.

PROCEDURE

Nest site habitat data were collected in August of 1981 and 1982. A nest site was defined as the nest tree and a 0.04-ha circular plot (11.3 m radius) centered on the nest tree. Table 2 lists the 19 quantitative habitat variables that were either measured directly or cre-

Table 2. Description of quantitative habitat variables measured at Cooper's hawk nest sites. Description of field procedures are in James and Shugart (1970) and Titus and Mosher (1981).

Mnemonic	Description
1. PERSLOP	Percentage slope of plot
2. CANHT	Average canopy height of the plot in meters; the mean five measurements taken to the top of the canopy
3. WATER	Distance to water in meters
4. DISFOROP	Distance to nearest forest opening in meters; measured to the nearest break in the forest continuity, such as created by a trail, road, field, etc.
5. CANEVER	Percentage of evergreen canopy cover
6. CANTOT	Percentage total canopy cover
7. UNDEVER	Percentage evergreen understory cover
8. UNDTOT	Percentage total understory cover
9. GRNDEVER	Percentage evergreen ground cover
10. GRNDTOT	Percentage total ground cover
11. SHRUBDEN	Shrub density (stems per ha)
12. NOTREES	Number of overstory trees per ha
13. DBHLT25	Number of overstory trees ≤ 25 cm dbh per ha
14. DBH2650	Number of overstory trees 26–50 cm dbh per ha
15. DBH6T50	Number of overstory trees > 50 cm dbh per ha
16. DBH	Diameter of breast height of the nest tree
17. NESTHT	Height of nest in meters
18. PNSTHT	Percentage nest height: (NESTHT/HTNSTTRE) (100)
19. HTTNNSTRE	Height of the nest tree in meters

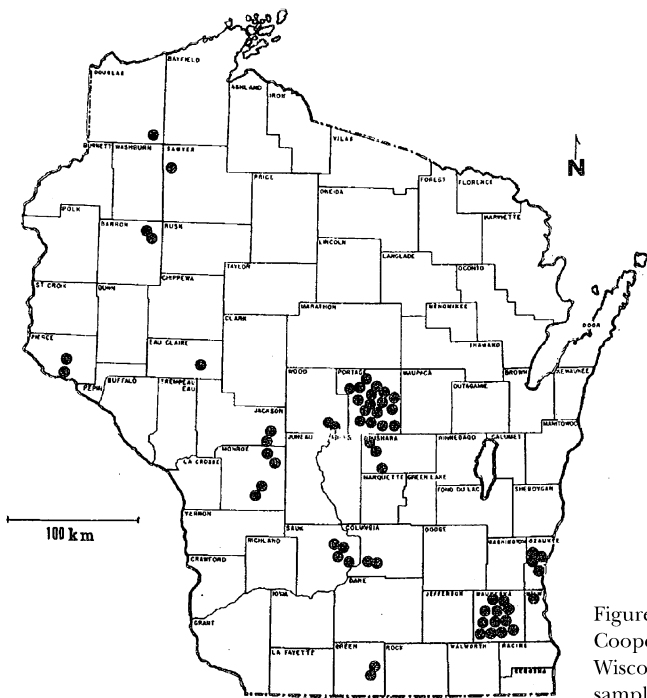


Figure 5. The distribution of Cooper's hawk nest sites in Wisconsin from which habitat was sampled.

ated by aggregation. A description of the sampling procedures can be found in James and Shugart (1970) and Titus and Mosher (1981).

Cooperators usually provided the species of nest tree.

FINDINGS

Nest site habitat data were collected at 60 nests (Figure 5). Table 3 lists the means of the 19 habitat variables. Forty-five of 81 (56%) Cooper's hawk nests were in deciduous tree species (cf 36, 44% in conifers), especially oaks (*Quercus* spp.) (Table 4). White pine (*Pinus strobus*) was the most common nesting tree (Table 4).

In general Cooper's hawks nested relatively close (avg. = 66.1 m) to forest openings, far (avg. = 497.4 m) from water, and in sites with high overstory tree density (avg. = 556.7 trees/ha) comprised of mostly 25.0 cm dbh trees (avg. = 377.9 trees/ha) (Table 3).

Cooper's hawks in this study nested on sites with relatively closed canopies, avg. = 82.8 percentage total canopy cover (CANTOT Table 3). Titus and Mosher (1981) and Reynolds et al. (1982) also reported Cooper's hawks nesting in mostly closed canopies. A relatively dense vegetation cover probably provides protection to a nest from adverse weather and predators as suggested by Titus and Mosher (1981) and Reynolds et al. (1982). Fourteen Cooper's hawk nests in the Kettle Moraine State Forest—South Unit in this study were in pine plantations. J. Bielefeldt (pers. comm.) has found that Cooper's hawks in that State Forest may prefer pine plantations over hardwood stands for nesting. This could be attributed to the nest protection that conifers provide especially early in the nesting season when hardwoods have not yet leafed-out. An alternative explanation, however, is that *Accipiter*, having evolved in shaded forest or woody

Table 3. Means, standard deviations, and ranges of habitat variables for 60 Cooper's hawk nest sites in Wisconsin.

Variable	Avg.	SD	Range
PERSLOP	3.2	5.4	0.0–33.0
CANHT	20.5	4.4	12.4–33.4
WATER	497.4	605.0	12.0–3700.0
DISFOROP	66.1	111.0	2.0–805.0
CANEVER	23.5	30.7	0.0–90.0
CANTOT	82.8	10.1	55.0–100.0
UNDEVER	5.7	12.7	0.0–57.5
UNDTOT	38.2	25.1	0.0–95.0
GRNDEVER	0.5	1.9	0.0–10.0
GRNDTOT	45.1	20.9	5.0–90.0
SHRUBDEN	2743.8	3171.8	0.0–14375.0
NOTREES	556.7	343.0	150.0–2050.0
DBHLT5	377.9	378.0	0.0–2050.0
DBH65	174.2	106.0	0.0–400.0
DBH6T5	5.4	15.3	0.0–75.0
DBH	33.2	9.6	12.6–60.1
NESTHT	12.8	3.2	7.2–20.8
PNSTHT	63.7	11.1	52.1–88.9
HTTNNSTTRE	20.4	5.3	12.0–34.5



Cooper's Hawk Male—photo courtesy of the authors.



Bob Trapping Cooper's Hawks in North Dakota—photo courtesy of the authors.

Table 4. The number and species of nest trees (n = 81) used by Cooper's hawks in Wisconsin.

Tree Species	n	Percent Occurrence
White pine (<i>Pinus strobus</i>)	29	35.8
Red oak (<i>Quercus rubra</i>)	15	18.5
Hill's oak (<i>Quercus ellipsoidalls</i>)	11	13.5
Red maple (<i>Acer rubrum</i>)	5	6.2
Jack pine (<i>Pinus banksiana</i>)	3	3.7
Unidentified oak (<i>Quercus</i> spp.)	3	3.7
Sugar maple (<i>Acer saccharum</i>)	2	2.5
Black oak (<i>Quercus velutina</i>)	2	2.5
White oak (<i>Quercus alba</i>)	2	2.5
Red pine (<i>Pinus resinosa</i>)	2	2.5
American elm (<i>Ulmus americana</i>)	1	1.2
Bigtooth aspen (<i>Populus grandidentata</i>)	1	1.2
Black cherry (<i>Prunus serotina</i>)	1	1.2
Eastern hemlock (<i>Tsuga canadensis</i>)	1	1.2
Trembling aspen (<i>Populus tremuloides</i>)	1	1.2
Scotch pine (<i>Pinus sylvestris</i>)	1	1.2
White ash (<i>Fraxinus americana</i>)	1	1.2

habitat may have low tolerances of higher temperatures and direct sunlight as suggested by Reynolds et al. (1982).

Most Cooper's hawk nest sites in this study had relatively open understories, as evidenced by a mean of 38.2 percentage total understory cover (UND-TOT Table 3) This openness may facilitate nest approach and departure by adult Cooper's hawks that probably avoid flying through the dense canopy branches as suggested by Meng (1951).

The close proximity of Cooper's hawk nest sites to forest openings is unclear. However, such openings have been suggested as being primary hunting sites for 2 other woodland nesting raptors, the broad-winged hawk (*Buteo platypterus*) (Keran 1978) and goshawk (*A. gentilis*) (Shuster 1980).

Water, used for both bathing and drinking by nesting Cooper's hawks, does not appear to be required near nest sites (mean distance of 497.4 m; Table 3). Titus and Mosher (1981) reported a mean distance of 193 m to

water for a small number (n = 6) of Cooper's hawk nests. Reynolds et al. (1982), with a larger sample (n = 26), suggested that Cooper's hawks prefer nesting near water.

RECOMMENDATIONS

Job 208.2 should be continued. These data will be compared with Cooper's hawk nest site habitat data from other eastern states and since the number of variables gathered at each site is considerable, a larger sample size will more likely yield statistically valid inferences.

JOB 208.3: DETERMINE COOPER'S HAWK NESTING DENSITY AND SPATIAL DISTRIBUTION OF NESTS

OBJECTIVE

The objective of this job was to determine nesting density and the spatial distribution of Cooper's hawk nests.



Climbing to the Nest—photo courtesy of the authors.

PROCEDURE

Intensive ground searches for Cooper's hawk nests were conducted throughout the breeding season (May through mid-July) on 3 intensive study areas: Kettle Moraine study area (KMA), T6N R73, Waukesha County; Blaine study area (BSA), T21 and 22N R10E, Portage County; and the Merrill study area (MSA), T31 and 32N R6E, Lincoln County (Figure 6).

J. A. Mosher and M. R. Fuller (pers. comm.) also provided Cooper's hawk nest density and spacing data for the

Lakewood study area (LSA), another intensive search area in Oconto County, T33N R17E (Figure 6).

The 2539-ha KMSA, searched in 1982, ranges from 259 to 335 m in elevation above sea level. Its cover types include: 44% farmland, 20% upland hardwoods, 11% marsh/shrub carr, 12% residential, 6% swamp, 4% pine plantations, 2% permanent water, and 1% bog. Tree species composition of the upland hardwoods consists of red (*Q. rubra*) and white oak (*Q. alba*); white and red pine (*P. resinosa*) in the pine plantations. The southeast $\frac{1}{4}$ of

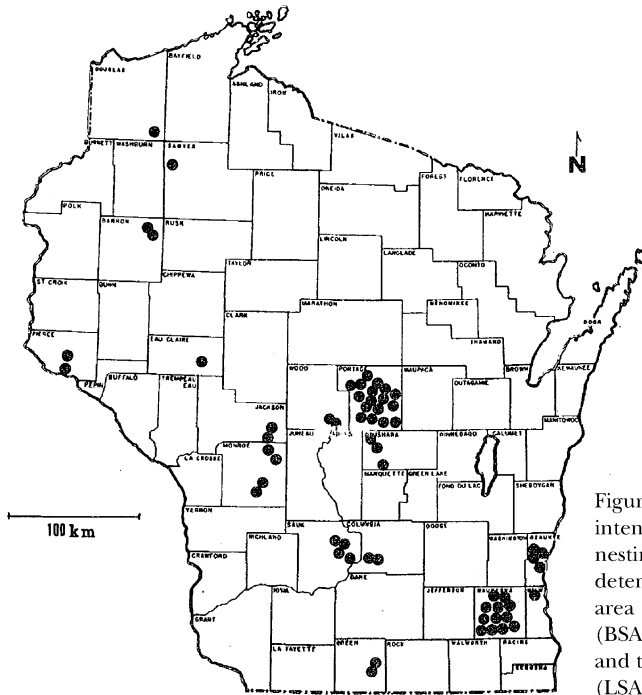


Figure 6. The distribution of the intensive study areas at which nesting density (1 nest per ha) was determined; Kettle Moraine study area (KMSA), Blaine study area (BSA), Merrill study area (MSA), and the Lakewood study area (LSA).

the KMSA includes part of the Kettle Moraine State Forest – South Unit.

The 2937-ha BSA, searched in 1980 through 1982, ranges from 314 to 360 m in elevation above sea level. Its cover types consist of 67% farmland, 27% upland hardwoods, 5% pine plantation, 0.7% permanent water, and 0.3% marsh/shrub carr. Tree species composition of upland hardwoods is Hill's (*Q. elipploldalis*), red and white oak; white and red pine in the pine plantations.

The 2370-ha MSA, searched in 1981 and 1982, ranges from 399 to 412 m in elevation above sea level. Its cover types include 39% upland hardwoods, 36% farmland, 10% marsh/shrub carr, 2.5% residential, 1.2% swampland, and 0.7% pine plantation. Upland tree species are trembling aspen (*Populus tremu-*

loides), white birch (*Betula papyrifera*), and balsam fir (*Abies balsamea*); white and red pine in the pine plantations.

The 2900-ha LSA, searched in 1980 through 1982, ranges from 314 to 380 m in elevation above sea level. This study area is over 90% forested, with trembling aspen and white birch as typical tree species. Approximately 20 to 30% of the LSA is bog and swampland.

All nests were plotted on 7.5-min USGS topographic maps. Nesting density is defined as the number of active or occupied nests found per area searched and is reported as 1 nest per number of hectares. Mean distances between nests on the intensive study areas were measured in the manner reported by Reynolds and Wight (1978).

FINDINGS

Cooper's hawk nesting density ranged from no nests to 1 nest per 734 ha (Table 5). Cooper's hawks were found nesting on all study areas except, for reasons unclear, the MSA (Table 5).

Few nesting density data exist for the Cooper's hawk. Reynolds and Wight (1978) reported 1 nest per 1857, 2200 and 2321 ha for Cooper's hawks in Oregon, and Craighead and Craighead (1956) found 1 nest per 1198 and 1597 ha in Michigan. Nesting density in the LSA (1980) and BSA (1981) were higher than both of the above studies. Mean distances between nests ranged from 1.3 to 2.5 km (Table 6). These distances are less than the range of from

3.5 to 5.5 km reported by Reynolds and Wight (1978).

RECOMMENDATIONS

Job 208.3 should be discontinued; data collection and analysis have been completed.

JOB 208.4: DETERMINE
PRODUCTIVITY OF WISCONSIN
COOPER'S HAWKS

OBJECTIVE

The objective of this job was to determine the productivity of Wisconsin Cooper's hawks.

PROCEDURE

Productivity was determined by climbing to each active nest once in mid-late incubation and again about 2-3 weeks later to record the clutch size and the number of nestlings, respectively. Nests were revisited to band nestlings when they were estimated to be 14+ days old.

Hatching success is the ratio between the number of eggs hatched and the number of eggs laid (hatch/egg); hatching success was not determined for the 10 nests in 1980 which had fresh eggs collected for chemical analyses. Nesting success is the ratio between the number of successful nests and the number of nest attempts (success/attempt). A successful nest was 1 in which young reached bandable age. A nest attempt occurred when eggs were laid. Cooperators usually reported the number of bandable or fledged young per nest but these tallies were not used in productivity analyses presented here;

Table 5. Nesting densities (1 nest per ha) of Cooper's hawks on four intensive study areas in Wisconsin.

Year	Study Areas			
	LSA (2900 ha)	BSA (2937 ha)	MSA (2370 ha)	KMSA (2539 ha)
1980	967 (3) ¹	2937(1)	—	—
1981	2900 (1)	734 (4)	0	—
1982	0	1469 (2)	0	1270 (2)

¹Number of nests

Table 6. Mean distance (km) between Cooper's hawk nests on three intensive study areas in Wisconsin.

Year	Study Areas		
	LSA	BSA	KMSA
1980	2.5 (3) ¹ (2.1-2.9) ²	—	—
1981	—	1.6 (4) (1.3-1.9)	—
1982	—	2.3 (2)	1.3 (2)

¹Number of nests

²Range

Table 7. Mean number of eggs laid, hatched, and bandable young per successful nest for Cooper's hawks in Wisconsin from 1980 through 1982. These data are exclusively from nests visited by the authors.

Year	Eggs Laid	Eggs Hatched	Bandable Young
1980	4.6 (11) ¹	5.0 (2)	3.3 (9)
1981	4.7 (11)	4.7 (9)	4.1 (18)
1982	3.9 (17)	3.7 (15)	3.3 (21)
Total	4.4 (39)	4.1 (26)	3.6 (48)

¹Number of nests

we did use cooperator reports for calculating nesting success.

FINDINGS

A mean of 4.4 (n=39) eggs laid per nest, 4.1 (n=26) hatched, and 3.6 (n=48) bandable young per successful nest was found for all years (Table 7). Averages of clutch size and number of bandable young in this study were higher than those reported in all other Cooper's hawk productivity data of other populations (Table 8). However,

the average number of bandable young per successful nest in this study is probably an overestimate of actual productivity since there certainly is mortality between the time of banding and fledging.

Overall nest success was 68.6% (Table 9). Factors that reduced nest success usually occurred during incubation. The causes or time of all 26 nest failures could not be determined since nest visits were infrequent. And some cooperators failed to report such data for 3 nests. Of the remaining 23, 13 (56.5%) failed during the egg stage.

Table 9. The number of nest attempts, successful nests, and percentage nest success of Cooper's hawks in Wisconsin. These tallies include observations at nests visited by the authors and data from nests reported by collaborators but not visited by the authors.

Year	Nest Attempts	Successful Nests	Percent Nest Success
1980	25	16	64.0
1981	29	18	62.1
1982	29	23	79.3
Total	83	57	68.6

Table 8. Mean clutch size and number of bandable young per successful nest of Cooper's hawks in this study compared to others.

Source	Location	Year	Clutch Size	Number Banded/ Successful Nest
This study	Wisconsin	1980–82	4.4 (39) ¹	3.6 (48)
Craighead and Craighead, 1956	Michigan	1942	4.3 (6)	2.0 ² (6)
Craighead and Craighead, 1956	Michigan	1948	4.0 (7)	2.3 ³ (7)
Meng, 1951	New York	1948–50	4.2 (36)	—
Henny and Northeast U.S. Wight, 1972	1929–45	1949–67	3.53 (118)	2.67 (54)
Janik and Mosher, 1982	Maryland	1978–80	3.6 (8)	2.0 ⁴ (11)

¹Number of nests

²Number of fledged young per nest attempt

³Number of fledged young per nest attempt

⁴Number of fledged young per nest attempt

Table 10. Hatching success of Cooper’s hawks in Wisconsin. These data exclusively from nests visited by the authors.

Year	Number of Eggs Laid	Number of Eggs Hatched	% Hatching Success
1980	10 (2) ¹	10	100.0
1981	45 (9)	42	93.3
1982	58 (15)	55	94.8
Total	113 (26)	107	94.6

¹Number of nests with complete clutches

Of these 13, 10 failed for unknown reasons and 2 probably due to the death of adult females by avian predators (the remains of 2 birds were found on the nests). A third adult female was found dead in a leg-hold trap at about the same time a nearby (500+m) nest failed (D Gawlick pers. comm.). Ten of the 23 (43.5%) nest failures occurred during the nestling stage; 5 due to unknown causes, 4 probably due to predation, and 1 because a nest tree was cut down. Suspected predators of Cooper’s hawk nests were the common crow (*Corvus brachyrhynchos*), great horned owl (*Bubo virginianus*), and raccoon (*Procyon lotor*).

Hatching success for all study years was 94.6% (Table 10). This is much higher than the 74.0% found for Cooper’s hawks by both Reynolds and Wight (1978) in Oregon and Craighead and Craighead (1956) in Michigan.

RECOMMENDATIONS

Job 208.4 should be discontinued; data collection and analysis have been completed.

JOB 208.5: DESCRIBE THE CONSISTENCY OF USE OF NESTING AREAS AND THE FIDELITY OF INDIVIDUAL HAWKS TO A NEST AREA IN SUCCESSIVE YEARS

OBJECTIVE

The objective of this job was to determine the reoccupancy rate of nest areas and the fidelity of individual hawks to a nest area.

PROCEDURE

Previously occupied nest areas were revisited in subsequent years to determine reoccupancy. A nest area was considered to be rechecked when an arbitrarily assigned radius of 300 m around an old nest tree was intensively searched. This search area was enlarged if a continuum of suitable nesting habitat (based on learning to recognize structural characteristics of forest stands selected for nesting) did not exist, or if Cooper’s hawk activity was observed beyond the recheck area. A nesting area was considered to be reoccupied if a new nest was within the 300-m (or enlarged area) area, or if Cooper’s hawks reoccupied a previously used nest.

Fidelity of individual adults to a nest area was determined by capturing nesting birds in a nest area in a subsequent year. Adults were captured with a mist net placed within approximately 3 m of a nest tree and 1 m of a live great horned owl (Hamerstrom 1963). Trapping was usually conducted when young were banded. All captured adults were measured, weighed, and

marked with U. S. Fish and Wildlife Service leg bands.

FINDINGS

Thirty-three Cooper's hawk nesting areas were revisited 46 times in subsequent years and were reoccupied on 21 occasions, resulting in a 46% reoccupancy rate (Table 11). One nest was reused in the second year. Most (17 of 21; 81%) reoccupied nesting areas had produced young to a bandable age the previous year.

Sixty-four percent of the 1980 nest areas were reoccupied in 1981, and 8% in 1982 (Table 11). Similarly, most (53%) of the newly found 1981 nesting areas were reoccupied in 1982. These results are similar to those found for Cooper's hawks nesting in Oregon by Reynolds and Wight (1978); they also reported no reoccupancy in the fourth

through sixth year. The reason for this phenomenon is unclear.

The mean distance between 20 old and new nests (excluding 1 reused nest) was 226 m (range = 33-575 m). Most (14 of 20; 70%) new nests were within 300 m (avg. = 143 m; range = 33-229 m) of an old nest.

Forty-six nesting adult Cooper's hawks were captured (15 males, 31 females), measured, and weighed (Table 12). Females were present on nest areas more often than males at trapping time, thus a larger number of females were caught. No males, and only 5 females were recaptured in a subsequent year.

It appears that successful nesting female Cooper's hawks return to the same nest area. Captures of 7 adult female Cooper's hawks at reoccupied nesting areas resulted in 5 returns (2 were new breeders); all 5 had successfully raised young to a bandable age in

Table 11. Nesting area tenacity of Cooper's hawks in Wisconsin, 1980-1982.

Area and Year Revisited	No. Nesting Areas Revisited	No. Nesting Areas Reoccupied	Percent Reoccupancy
1980 nesting areas revisited in 1981	14	9	64
1980 nesting areas revisited in 1982	15	3	2
1981 (new) nesting areas revisited in 1982	17	9	53
Total	46	21	46

Table 12. Wing chord, tail length, and weight measurements of breeding Cooper's hawks in Wisconsin.

Sex	n	Wing Chord (mm)	Tail Length (mm)	Weight (g)
Male	15	234±5.3 (229.0-246.0) ¹	184.5±4.6 (175.0-194.0)	338.5±19.6 (307.0-393.0)
Female	31	266.2±5.2 (256.0-276.0)	208.3±5.9 (199.0-219.0)	565.7±40.3 (472.5-663.0)

¹Mean±SD (range)

the previous year. On the other 2 reoccupied areas, only 1 had been successful.

Return birds nested closer to their old nests than new breeders did to the previous year's nest. The mean distance between new and old nests of return females was 161 m (range = 107–229 m) (cf 375 m for the new breeders; range = 215–536 m).

RECOMMENDATIONS

Job 208.5 should be continued; results and analyses were based on a small sample of years.

JOB 208.6: DETERMINE THE IMPORTANCE OF TOXIC CHEMICAL LEVELS IN EGGS

OBJECTIVE

The objective of this job was to determine the level of environmental contaminants in Wisconsin Cooper's hawk eggs.

PROCEDURE

One fresh and 1 salvaged egg from each of 10 and 2 nests, respectively, was collected and sent to the Patuxent Wildlife Research Center (USFWS), Laurel, Maryland for chemical analyses. Figure 7 indicates the egg collection sites. This job is in conjunction with M. R Fuller's (Research Biologist—USFWS Migratory Bird and Habitat Research Laboratory, Laurel, Maryland) efforts to determine the status of the Cooper's hawk in the northeastern U.S.

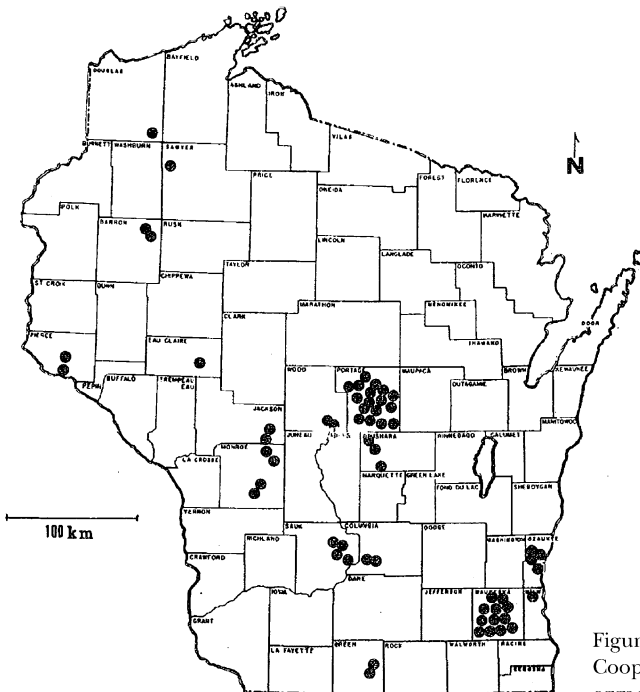


Figure 7. The distribution of Cooper's hawk nests from which eggs were collected in 1980.

Eggs were analyzed for p,p'-DDE, p,p'-DDD, p,p'-DDT, dieldrin, heptachlor epoxide, oxychlordane, *cis*-chlordane, *trans*-nonachlor, *cis*-nonachlor, endrin, toxaphene, hexachlorobenzene (HCB), mirex, PCB, lead, cadmium, and mercury. Physical dimensions of the eggs were measured. Sample preparation and analytical procedures are described in Haseltine et al. (1981). Residue levels were in ppm and reported on a wet weight basis.

FINDINGS

DDE, dieldrin, heptachlor epoxide, oxychlordane, and PCB were present in all of the eggs (Table 13). However all organochlorine (excluding DDE) and PCB residue were below those believed to be harmful to Cooper's hawks (O. H. Pattee pers. comm.). DDE levels of above about 3–4 ppm have been associated with egg breakage, nest desertion, or disturbed parental behavior in the Cooper's hawk (Snyder et al. 1973).

Ten of the 12 Cooper's hawk eggs in this study had DDE levels below 3 ppm; the other 2 with the highest contaminant levels (3.7 and 4.5 ppm DDE) were from successful nests at which no egg breakage nor aberrant adult behavior was observed.

Low levels of mercury were detected in all but 1 egg; all other heavy metal residue levels were low or not detected (Table 14).

Mean eggshell thickness in this study was 0.348 mm (range = 0.313–0.395 mm) (Table 15). This is greater than the 0.318 mm and 0.343 mm mean eggshell thickness for pre-1947 (Pre-DDT years) Wisconsin and Arizona-New Mexico Cooper's hawks' eggs reported by W. Smith (pers. comm.) and Snyder et al. (1973), respectively. The thinnest eggshell in this study (0.313 mm) is 10% thicker than the threshold (ca 0.285 mm) at which breakage occurred in Cooper's hawk eggs in Arizona-New Mexico (Snyder et al. 1973).

Table 13. Organochlorine compounds and PCB levels in 12 Cooper's hawk eggs collected in Wisconsin in 1980.

Compound	n	Frequency (%)	Mean (ppm, w.w.)	Range
p,p'-DDE	12	100.0	2.25	1.0–4.5
p,p'-DDD	4	33.3	0.22	ND ² –0.7
p,p'-DDT	1	8.3	0.05	ND–0.05
Dieldrin	12	100.0	0.16	0.05–0.48
Heptachlor epoxide	12	100.0	0.19	0.04–0.34
Oxychlordane	12	100.0	0.15	0.04–0.35
<i>cis</i> -Chlordane	0	0.0	ND	ND
<i>trans</i> -Nonachlor	11	91.7	0.23	ND–0.34
<i>cis</i> -Nonachlor	2	16.7	0.09	ND–0.13
Endrin	0	0.0	ND	ND
Toxaphene (est.)	1	8.3	0.04	ND–0.04
HCB	0	0.0	ND	ND
Mirex	9	75.0	0.43	ND–0.64
PCB	12	100.0	0.91	0.14–2.9

¹Lower limit of reportable residues before correction for water loss = 0.05 ppm for organochlorines.

²ND = none detected

Table 14. Lead, cadmium, and mercury levels¹ in 12 Cooper's hawk eggs collected in Wisconsin in 1980.

Compound	n	Frequency (%)	Mean (ppm, w.w.)	Range
Lead	3	25.0	0.2	0.1–0.4
Cadmium	0	0.0	ND ²	ND
Mercury	11	91.7	0.04	ND–0.07

¹Lower limit of reportable residues before correction for water loss = 0.01 ppm for lead and cadmium, and 0.02 for mercury.

²ND = none detected

RECOMMENDATIONS

Job 208.6 should be discontinued until such time that environmental contaminants are suspected to be at harm-

ful levels in Wisconsin Cooper's hawks' eggs.

CONCLUSION

The decline of Cooper's hawk populations in North America since 1947 have been associated with organochlorine contamination, especially DDE (Hickey and Anderson 1968, Snyder et al. 1973). Data from this study indicates that these contaminants are not adversely affecting Cooper's hawk productivity in Wisconsin. Further, no significant limiting factor was identified by

Table 15. Measurements of 12 Cooper's hawk eggs collected in Wisconsin in 1980.

	Egg dimensions (mm)		
	Length	Breadth	Shell Thickness
avg.	49.26	38.94	0.348
SD	1.30	0.92	0.023
Range	47.40–51.71	37.56–41.01	0.313–0.395



Cooper's Hawk young in nest - photo courtesy of the authors.

this study. Thus, it is recommended that the Cooper's hawk be removed from its Threatened status in Wisconsin.

ACKNOWLEDGEMENTS

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Prepared by: Robert N. Rosenfield and Raymond K. Anderson

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Jeff Galligan imaged a Western Grebe resting in Dane County in June 2015.

Status of the Cooper's Hawk in Wisconsin, Wisconsin Endangered Resources Report Number 8: With Selective Retrospective and Interpretation

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both Deceased

The Cooper's Hawk (*Accipiter cooperii*) was apparently a common breeder throughout many eastern and Midwestern states, including Wisconsin, in the late 1800s and early 1900s (Bent 1937, Robbins 1991). But multiple factors, such as deforestation, persecution through illegal hunting and the ill effects of eggshell thinning and aberrant adult courtship behavior due to ingestion of DDE (a primary breakdown product of DDT) in songbird prey, likely caused declines of Cooper's Hawk populations during the late 1940s thru the mid-1960s. While some western states, such as Arizona and New Mexico, also experienced local declines, most of these declines occurred in populations in eastern North America (Rosenfield and Bielefeldt 1993) leading Snyder (1974) to tout that "eastern Cooper's Hawks have been declining toward extinction." Perhaps the best evidence of these declines was reduced long-term autumnal migrant

counts at Hawk Mountain in Pennsylvania (e.g., Bednarz et al. 1990). Reduced counts at Hawk Mountain were concurrent with reduced reproductive success in some eastern states (Henny and Wight 1972).

Locally, Fran Hamerstrom stated, "from 1962 through 1970 I knew of no Cooper's Hawk breeding territories in central Wisconsin" (Hamerstrom 1972). In fact, statewide breeding population data were scant and essentially non-existent during that time period. Moreover, there was no credible baseline, scientific information to assess temporally conventional species' status metrics such as nesting densities, productivity, nest success, nesting habitat use, and presence of contaminants in Wisconsin Cooper's Hawks (sensu Andersen et al. 2004, WDNR file notes 1979). Complicating the issue of few historical data, Breeding Bird Survey data from Wisconsin were unrevealing because of sampling problems in detecting this



Cooper's Hawk on basketball hoop - photo courtesy of the authors.

(then) oft inconspicuous woodland hawk in roadside surveys (Fuller and Mosher 1981, Rosenfield et al. 1991). We highlight that Cooper's Hawks, like the other accipiters (Sharp-shinned Hawk [*A. striatus*] and Northern Goshawk [*A. gentilis*]) are very difficult to identify to species, and because less was known of the anatomical and identification differences between accipiter species up to the mid-1900s, Mueller et al. (2001) suggested that some migratory counts at Cedar Grove were "greatly overestimated" during the 1930s due to misidentification of Cooper's Hawks. That said, we did receive anecdotes and opinions from many birders and several avian ecologists in 1980 (e.g., J.J. Hickey and F. N. and F. Hamerstrom) supporting the

premise that in the 1960s and 1970s the Wisconsin population of breeding Cooper's Hawks had declined, was low, or was extirpated (Rosenfield et al. 2013). However a synopsis by the Wisconsin Department of Natural Resources (WDNR 1979) suggested that "signs of severe pesticide poisoning, i.e., eggshell thinning and reduced numbers of fledglings, are no longer present" (i. e., in the 1970s), but that "data on the nesting density and percentage of the population nesting successfully are required before the status of Wisconsin's Cooper's Hawk population can be understood." Nevertheless, in 1979 the WDNR deemed it prudent to designate this raptor as a threatened species in the state of Wisconsin. By doing so, primary resources in the form



Cooper's Hawk male with young - photo courtesy of the authors.

of WDNR monies and professional agency counsel and various other ilks of WDNR support were released and aligned with the University of Wisconsin at Stevens Point (via RNR as an M.S. candidate under the supervision of RKA in the College of Natural Resources) to determine the status of the Cooper's Hawk in Wisconsin. The Hamerstoms were quick to suggest to RNR in 1980 that "you may find no nests." Fortunately they and many others were wrong about the status of Wisconsin Cooper's Hawks and we, with the help of numerous collaborators, were able to locate many Cooper's Hawk nests (Rosenfield and Bielefeldt 2006). In fact, 85 nests were found in our three-year study (1980-1982) that provided the data in an unpublished report (Rosenfield and Anderson 1983) used as the primary basis for removal of

the Cooper's Hawk in 1989 from the formal list of threatened species in the state of Wisconsin (Bielefeldt et al. 1998).

We deem those data of historical interest to Wisconsin ornithology and to the state's conservation efforts of birds and herein, with permission of the WDNR, publish in its original form, with some corrections, Endangered Resources Report Number 8 (hereafter ERR8), Status of the Cooper's Hawk in Wisconsin. We provided a broader scope in Bielefeldt et al. (1998) to all our original findings in ERR8 with results from further sampling of breeding Cooper's Hawks through 1996. Here we selectively highlight other long-term data, especially regarding habitat, that we used to strengthen our afore-suggestion of the suitability of various types of nesting habitat. Lastly, using tempo-

ral variation in the age structure of breeding adult male Cooper's Hawks, we also render tenable exception to our earlier conclusion that "we therefore lack unambiguous evidence of a recent increase . . . in the breeding population of the Cooper's Hawk in Wisconsin" (Bielefeldt et al. 1998).

DISCUSSION

Suitability of habitat is generally considered to be the primary overall factor influencing the viability of breeding populations of birds (Cody 1985, Andersen et al. 2004). Complemented with findings from Wisconsin breeding bird Atlas workers, we have demonstrated with multi-decadal data that Cooper's Hawks nest statewide in a variety of habitats, from sparsely wooded tracts to large continuous forests, including urban and suburban settings; and this hawk does so at the highest reproductive indices and nesting densities for the species in North America (Rosenfield and Bielefeldt 2006, Rosenfield et al. 1995, Trexel et al. 1999, Rosenfield et al. 2000). But perhaps the most surprising finding since our initial work began in 1980 was that some of the highest densities of breeding Cooper's Hawks in Wisconsin occurs in highly fragmented urban landscapes, including Stevens Point and metropolitan Milwaukee where breeding success in both cities is among the highest ever recorded for Cooper's Hawks across its broad continental distribution (Stout et al. 2007, Stout and Rosenfield 2010). Our suggestion in ERR8 that ". . . Accipiter, having evolved in shaded forest or woody habitat may have low tolerances for higher temperatures and direct sunlight . . ." seems unlikely. This latter conclusion is further supported

by the high breeding densities of successfully nesting Cooper's Hawks in the grasslands of the Northern Great Plains of North Dakota (Nenneman et al. 2002, Rosenfield et al. 2007), along with records of breeding Cooper's Hawks in many cities throughout North America (Stout et al. 2007, Mannan et al. 2008).

Urban habitats are relatively new for Cooper's Hawks and other raptors and their populations are generally poorly studied, especially on a long-term basis (Love and Bird 2000, Stout et al. 2007, Rutz 2008). Some researchers have suggested that raptors in urban landscapes may have increased mortality rates because of collisions with anthropogenic obstacles (e.g., Sweeney et al. 1997) or diseases (Mannan et al. 2008). We published the first analyses of relative survivorship of breeding Cooper's Hawks in urban vs. rural habitats. Our 26-year data set (1980–2005) on mark-recaptures of adult males on our original ERR8 study sites showed that they exhibit lifetime nesting area fidelity (Rosenfield and Bielefeldt 1996, Rosenfield et al. 2009, 2013), and new males in nesting areas indicate deaths of previous occupants, in turn allowing for accurate estimates of male survivorship (Rosenfield et al. 2009). Survivorship was relatively high at 81% and similar to other annual survivorship estimates for nesting Cooper's Hawks in both urban and rural landscapes in North America (summarized in Millsap et al. 2013). Survivorship was not statistically different between urban and rural landscapes, or temporally statistically different across the 26 study years. Annual survivorship of 75% for breeding females is similar to that of males, but we estimate annually that 23% of breeding females move among nesting

areas for reasons unclear to us (Rosenfield et al. 2016).

Our evidence does not indicate that females attain higher productivity after dispersal to a different site in another year. Indeed, regarding 14 females in which we detected such dispersal during 1980–2007 (Rosenfield et al. 2016), means (and medians) of 3.9 (4.0) and 3.5 (4.0) bandable-aged young per nest at initial nesting area vs. dispersal site, respectively, were not statistically different (paired *t*-test, $t = 0.21$, $df = 13$, $P = 0.21$; RNR unpubl.). We note that these productivity metrics are similar to overall means of 3.6 (median = 4) bandable-aged young for 594 other nests during those years (RNR unpubl.). And it does not appear, unlike other raptor species studied (e.g., Newton 1986, Gutiérrez et al. 2011), that these females move to find higher quality nesting habitat (we reiterate that adult males exhibit career decisions and choose but once a breeding site for their entire lives on our study sites throughout Wisconsin including Milwaukee [RNR and W.E. Stout, unpubl.]; thus variation in habitat per se does not appear to prompt males and most females to move among breeding sites). Moreover, we have been unable to demonstrate with our long-term, cross-generational studies that habitat (urban vs. rural, conifer plantation vs. non-conifer plantation, presumptive site quality as indexed by consistency of nesting area use and high breeding density) is related to indices of reproductive success (Rosenfield and Bielefeldt 1999, Rosenfield et al. 1995, 2000, 2015b). Instead reproductive success is related to intrinsic qualities of birds. For example, body mass (i.e., size) of Cooper's Hawks ≥ 2 years of age of both sexes, which is unrelated to habitat, is

positively related to brood size and number of detected recruits, and larger birds tend to breed earlier in a given year (Rosenfield and Bielefeldt 1999, Rosenfield et al. 2013).

We also demonstrated that body mass was subordinate to longevity as a factor in lifetime reproduction in our ERR8 study areas (Rosenfield et al. 2009). Our study has also shown disproportionate reproduction by a minority of birds that exhibit the greatest longevity (Rosenfield et al. 2009, 2013, RNR, unpubl. data). For example, among 66 males with documented lifetime production, 15 (23%) produced most (53%) of 562 total nestlings from 1980–2005 (Rosenfield et al. 2009). But unlike some other studies on accipiters (e.g., Newton 1986, Kenward 2006), longevity in both sexes and breeding dispersal to a different nesting area in another year by an experienced female is unrelated to body size (Rosenfield et al. 2009, Rosenfield et al. 2016). Preliminary analyses indicate that longevity may be unrelated to nesting area habitat for Cooper's Hawks in Wisconsin. For example, numerous avian studies have shown that higher quality nesting areas (habitats) tend to be reoccupied more consistently vs. poorer nesting areas (e.g., Newton 1986, Forero et al. 1999, Gutiérrez et al. 2011, Blakesley et al. 2006), and that higher quality nesting areas may impart greater longevity as in the congeneric Eurasian Sparrowhawk (*Accipiter nisus*; Newton 1986). Annual reoccupancy of Cooper's Hawk nesting areas in Wisconsin is about 70% during the 1990s and 2000s (Stout et al. 2007; RNR, unpubl.). However, during that same time period, and following deaths of our 8 oldest males (who reached at least 7–10 years of age and which cohort represents about 10% of

breeding males in any given year [Rosenfield et al. 2016]), we found re-occupancy in only three of the their eight nesting areas, and a reoccupancy rate of only 8 (16%) times in 49 search-years among the 8 total nesting areas (median = 6 search-years/site; RNR unpubl.). The non-concordance between greater longevity and comparatively lower reoccupancy on these 8 nesting areas that did not attract many other Cooper's Hawks may suggest that nesting area quality is not the primary factor determining longevity and that perhaps intrinsic qualities of the birds (and how their individual abilities manifest use of nesting area habitat) may explain their longevity. We also note that the afore-stated 70% reoccupancy rate is higher than the 46% reoccupancy rate reported in ERR8, 1980-82. It is conceivable that the lower metric of 46% is related to our suggestion that the population was increasing in the 1980s and thus there were not enough males to occupy sites (and attract females) after male deaths (see below).

It is possible that factors unrelated to nesting area quality that may influence site reoccupancy in Cooper's Hawks are different than those in other raptor species (Rosenfield et al. 2016). For example, we have incomplete documentation and understanding of the factors, including apparently complex pre-incubation social dynamics within and between the sexes that seemingly would influence breeding dispersal and nesting area fidelity (Rosenfield et al. 2016). Unlike several other studies we have documented non-random mating by size on our study sites with females and males exhibiting choice of social partners (Rosenfield and Bielefeldt 1999), but we do not know the behavioral dynamics of these phenomena.

We also do not know the behavioral details involved with extra-pair copulations or the behaviors leading to the high rate of extra-pair paternity we recently documented in Wisconsin Cooper's Hawks. In fact the high rate of extra-pair paternity per nest (34%), which is unrelated to body size in either sex, is about four times higher than any other found in birds of prey (Rosenfield et al. 2015a). We highlight that copulations are associated with food provisioning in Cooper's Hawks to a greater degree than in other raptors (Rosenfield et al. 2015a), and some of this food presumably from extra-pair males (offered in trades for copulations) may stem from prey captured in other territories or by floater males who are sexually mature but do not have breeding territories (Rosenfield et al. 2015a, 2016).

Our long-term mark-recapture data also revealed age-structure of breeding males, that is annual proportions of one-year-old, brown birds in their second year of life (SY birds) vs. males at least two years old in gray plumage (ASY males). This information in turn allowed us to provide tenable conjecture on population trajectory of Cooper's Hawks in Wisconsin (Rosenfield et al. 2013). Male raptors, unlike females, generally do not begin breeding at an age of 1 year because it likely takes them more time to acquire the skills needed to obtain a territory and become the principal provider of food to himself, his mate, and his young. Indeed most studies of Cooper's Hawks across North America rarely or never detected SY breeding males (Rosenfield et al. 2013). Over 32 years (1980 – 2011) on our ERR8 study sites we found a very low frequency of breeding SY males, that is 13 (2%) SY and 719

(98%) ASY males among 732 aged breeding males across all study years. The maximum percentage of SY males of all aged males within a year when at least one SY male was detected was 13% (mean = 6%). The frequency of occurrence of SY birds differed markedly and statistically during the study, as 12 (92%) and one (8%) of the total 13 SY males were detected in the first and second 16 years of our study, respectively. Further, breeding by SY males was relatively consistent early in our investigation, as we did not detect it in only three (1983, 1984, and 1988) of the first 12 years of the study (Rosenfield et al. 2013). To our knowledge ours was the first study to report a statistically temporal trend in the frequency of breeding by SY male Cooper's Hawks.

Generally, investigators have reported a disproportionately greater number of SY individuals breeding initially in colonizing and/or recolonizing (and growing) populations. When populations increased, the proportion of inexperienced breeders declined as more experienced birds became more prevalent. It is believed that inexperienced birds cannot successfully compete for nesting areas with older, more experienced birds when they become more prevalent. SY males may however become relaxed from this constraint when in an area lacking breeders because of lower frequency of territorial contests with presumably older and competitively experienced breeders (e.g., Tordoff and Redig 1997).

We recently suggested that the higher prevalence of SY males in earlier than in later years of the study reflected temporarily reduced costs for breeding one-year-old males, which could more likely obtain unoccupied nesting places in a then smaller breeding population

(Rosenfield et al. 2013). The Wisconsin population was likely growing during the 1980s on the basis of significantly increasing counts of migratory Cooper's Hawks at Great Lakes and Wisconsin watch sites (Farmer et al. 2008, Mueller et al 2001), high indices of annual productivity statewide, and high rates of annual survival of breeding males and females (Bielefeldt et al. 1998, Rosenfield et al. 2009, 2016, RNR unpubl.). Interestingly, the only detection at our nesting areas of Cooper's Hawks that were banded while on migration were of two females marked on the birds' first fall migrations along the Wisconsin shoreline of Lake Michigan; both birds subsequently nested in Portage County (RNR, unpubl. data). The increase in Great Lakes and Wisconsin migration counts began to slow and/or had stabilized from the 1990s through 2010 (Mueller et al. 2001). We believe these stabilized counts reflected a larger population of probably older breeding males in Wisconsin since the 1990s, which we suggested could explain why we detected so few breeding SY males since the 1990s (Rosenfield et al. 2013). We note that from 1986 through 1992 the density of Cooper's Hawks (all breeding birds were marked ASY birds) at our southeastern study intensive study site was stable (Rosenfield et al. 1995, RNR and JB unpubl.). We thus suggested that contra to the aforementioned conclusion in Bielefeldt et al. (1998) that we lacked data to show population trajectory, that breeding populations of Cooper's Hawks in Wisconsin in fact were likely increasing when we began our work in 1980 and that such populations likely reached stability on our original ERR8 study areas in the early to mid-1990s (Rosenfield et al. 2013).

We highlight that at the time we were finalizing our study objectives for determining the status of Cooper's Hawks, Fran Hamerstrom strongly suggested we trap, band, and track breeding adults. It is a fitting tribute to her, one of the first biologists to systematically trap and mark nesting adult raptors, that we have been able to task data from marked individuals across almost seven consecutive breeding generations over three decades to reveal habitat relations and elucidate the population dynamics of nesting populations of Cooper's Hawks in Wisconsin. We too recognize that data from marked adults has generated exciting new questions about the breeding biology of the Cooper's Hawk.

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Hope Landgraf created the image of this perched American Kestrel.

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Nest Site Selection and Breeding Survey of Belted Kingfishers in Wisconsin

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ABSTRACT

I studied nesting Belted Kingfishers (Megaceryle alcyon) between 1981 and 1985 in an anthropogenically-modified landscape in west-central Wisconsin where streams had been channelized and marshes had been converted to flowages. Dealing with little to no human activity, kingfishers selected excavation pits composed of sand soils and with at least 30 cm of vertical structure beneath burrow entrances. A density of about 0.1 breeding pairs per km² in this human-modified landscape contrasted to a density of 0.2 breeding pairs per km² in a nearby naturally meandering riparian drainage basin. Distances between nest sites and foraging areas may explain the observed difference in breeding densities.

INTRODUCTION

The Belted Kingfisher (*Megaceryle alcyon*) is the only species of kingfisher occupying eastern North America and is considered common in Wisconsin (Bent 1964, Robbins 1991, Cutright et al. 2006). Kingfishers' second and third digits are partially fused and adapted to

digging nest burrows. Each mated pair excavates its nest over a period of three days to two weeks along stream embankments. Kingfishers also use railroad and road cuts, gravel and sand pits, and a wide variety of other structures such as dredge spoil piles (Bent 1964, Kiviat et al. 1985). Breeding occurs in April and May across their range and clutch sizes range from four to seven eggs (Bent 1964, Kelly et al. 2009).

Few studies have examined Belted Kingfisher nesting behavior and selection of nest sites related to human activities and human-modified environments (Kelly et al. 2009). Likewise few studies have been conducted on nesting densities of Belted Kingfishers, especially in human-altered riparian environments and in lake country regions. Human-altered habitats likely typify landscapes inhabited by Belted Kingfishers today. Territory sizes have only rarely been reported in the context of exploring theoretical evolutionary origins of territoriality, and these have been limited to riparian-based breeders (Davis 1982, Sullivan et al. 2006). Results of these studies suggest that food abundance and distance to

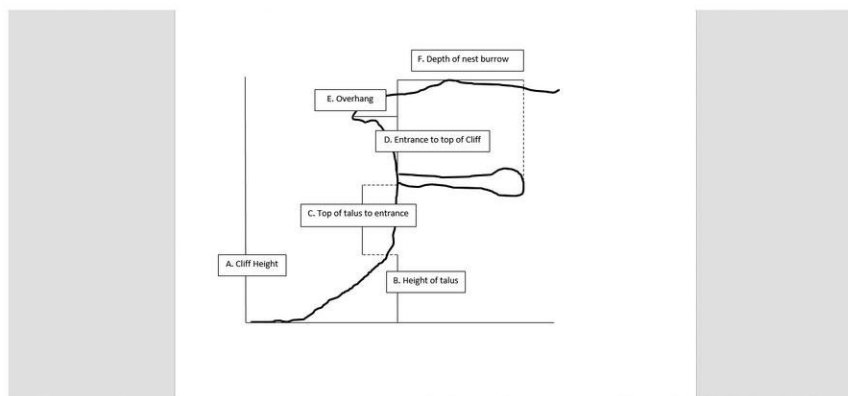


Figure 1. Schematic of kingfisher nest measurements (meters) including (a) total cliff face height, (b) height of talus, (c) distance from top of talus to entrance hole, (d) distance from entrance to top of cliff, (e) cliff overhang (if any), and (f) depth of burrow from cliff face to back of nest chamber.

foraging sites influence the size of breeding pair territories along riparian systems (Davis 1982, Brooks and Davis 1987, Sullivan et al. 2006).

I studied and banded Belted Kingfishers primarily in west-central Wisconsin during the summers of 1981, 1982, 1984 and 1985. I was interested in nest-site selection from potential excavation pits, brood size variations between years and the size of kingfisher territories during the brood-stage of their reproductive cycle. I summarize results of this work as gleaned from field notes and files recorded over thirty years ago.

METHODS

Each June during sample years I inspected sand, gravel and borrow pits to determine whether kingfishers were occupants. Pits where adult kingfishers were seen, or a kingfisher burrow was detected, were visited thereafter at infrequent intervals to assess development of chicks. I verified active nests by

observing: (a) adults as they approached and entered burrows with food, (b) smelling foul fish odors emanating from burrows and/or (c) detecting flies (order Diptera) entering / exiting burrow entrances attracted by such attractive tidbits.

In 1981 and 1982 I measured physical characteristics of pits at active nests scattered in various Wisconsin sites located in Monroe, Jackson, Juneau, Lincoln, Waukesha and Wood Counties. In each pit I assessed ownership, type of pit (sand, gravel, landfill, borrow pit), and embankment stability. Level of human disturbance of pits (extraction of materials) was subjectively recorded as (a) none (abandoned), (b) occasional (a few tire tracks and little sign of subsoil removal during the previous few weeks) or (c) frequent (heavy equipment present, extraction activity evident). Nest measurements included (a) total cliff face height, (b) height of talus, (c) distance from top of talus to entrance hole, (d) distance from entrance to top of cliff, (e) cliff overhang

(if any), and (f) depth of burrow from cliff face to back of nest chamber (Figure 1). These parameters were useful in predicting occupancy at pit sites during future investigations.

Brood size per active nest was determined in 1981, 1982 and 1984. Chicks that were large enough were banded with aluminum U.S. Geological Survey bands (then administered by the U. S. Fish & Wildlife Service) under my Master-personal banding permit. To extract young I measured the length and depth of burrows below the surface of the nesting chamber, and then dug a shaft immediately posterior to the chamber. Sex was determined by rufous coloration on breasts (Pyle 1997) and chicks were then returned, sod plugs were placed at the back of the chamber to discourage predation, and the shaft was filled. Some nests were revisited to determine fledging success and to document whether predators had gained access to nestlings via the filled-in access shafts.

Davis (1982) and Brooks and Davis (1987) observed that distance between nests and prime foraging sites affects the size of Belted Kingfisher territories. To test whether Belted Kingfisher breeding densities may be affected by stream channelization and concurrent elimination of embankments and replacement by sand pits I compared breeding pair densities within two study areas: the North Tomah Study Area in 1984 and 1985, and the South Tomah Study Area in 1985.

The 87 km² North Tomah Study Area (NT), roughly 1.6 to 5 km x 21 km extending north from the City of Tomah, Monroe County, consists of flat, marsh, and forest lands and lies within the Central Sand Plain Province near the southwest edge of Glacial Lake Wisconsin (Martin 1965). Between the

1890s and 1920s streams were converted to dikes and shallow-basin flowages that replaced many area marshes that now service the extensive cranberry agriculture industry (Grange 1948, Martin 1965).

I surveyed 15.4 km of streams in the 23 km² South Tomah Study Area (ST) encompassing the meandering Lemon-weir River headwaters drainage south of Tomah in April, 1985. This site is in the Western Uplands Province and consists of steep coulees with wooded slopes where cattle and dairy farming dominate among hilltops and within valleys (Martin 1965). Marshes are nearly non-existent, and the stream contains an abundance of vertical embankments in which Belted Kingfishers may nest.

To census the number of NT breeding pairs I (a) visited all pits with potential as nest sites (based on parameters identified in 1981 and 1982, above) (b) determined the number of pits with an active nest, and (c) recorded the number of active nests that successfully fledged young. For each of these three parameters I calculated densities to determine reproductive output.

Surveys in ST were run via automobile on roads adjacent to the Lemon-weir River in search of kingfishers. When located I determined sex (Pyle 1997), monitored behavior, searched vertical embankments visible along the stream for the presence of nest burrows, and plotted sightings and nests on a map. From this I calculated the linear length of breeding pair territories (Davis 1982, Brooks and Davis 1987) and the density of breeding kingfishers within this drainage system.

To further elucidate the relationship between breeding pair foraging areas in NT, I captured three breeding adults using a snare placed at the burrow en-

trance (Thiel 1985) and individually marked them with spray-paint (left or right wing; yellow or orange color combinations), and on a fourth I placed a backpack harness radio transmitter. Locations of sightings of color-marked kingfishers and triangulation of the radioed bird were plotted on maps to determine relationships between the nest site location and foraging areas.

RESULTS

Parameters were obtained from 11 active nests scattered throughout the state in 1981 and 1982. Three nests each were located in sandpits, in borrow pits, and in gravel pits, respectively, and one each in a streamside cut bank and a soil pile. Seven were on government lands, three on private lands, and one in a commercial excavation pit. Pits at seven nest sites were considered structurally unstable, while pits at four sites were in the process of stabilizing. No nests were located in pits where talus slopes met the top of the embankment and/or vegetation was reclaiming the slope. At two sites no human disturbance was noted (pits had been abandoned) while at eight sites disturbance was occasional. No nests were found in pits with frequent extraction activities. Soil types of seven nests were sand, one was composed of sandy loam, and two consisted of sand and gravel. One burrow in an active Waukesha County gravel pit was constructed in a thin layer of sand wedged between thick layers of gravel.

Measurements were obtained at 10 nests. Cliff height averaged 3.2 m: range 2 to 6 m); talus averaged 1.7 m (range 1 to 4 m); talus to cliff top averaged 1.4 m (range 0.3 to 3 m); distance from talus top to entrance averaged 0.9 m (range 0

to 2.3 m); entrance to cliff top averaged 0.6 m (range 0.3 to 0.6 m); overhang averaged 0.1 m (range 0 to 0.3 m); and the length of the burrow from cliff face to the back of the nest chamber averaged 1.4 m (range 1 to 2.4 m).

Copulation was observed once, on 14 April 1985. Three days earlier, two additional sites with incomplete nest burrow excavations of 10 and 18 cm, respectively, were observed; one was completed no later than 18 April. Chicks from all nests fledged 25–30 June each year.

An average of 5.6 chicks (range: 4 to 7) occupied 16 nests excavated between 15–30 June (1981, 1982, 1984). Yearly average number of chicks varied from 4.9 in 1982 (6 nests) to 6 in both 1981 (4 nests) and 1984 (6 nests). Observed sex ratios of 46 chicks from eight nests excavated between 16 and 30 June were 11 males: 26 females: nine unknown.

A total of 82 hatch-year and seven adult kingfishers were banded during the study. None of these birds was ever recaptured or re-encountered.

Color-marked kingfishers in NT were rarely observed; distances from their respective nesting pits were 0.4, 1.6 and 4.6 km. Like its color-marked counterparts, the radio-tagged kingfisher primarily foraged along a channelized stream 1.3 km from its nest site. Unfortunately it was found dead four days after release and the necropsy was inconclusive. Its stomach contained at least six fish and a crayfish indicating that foraging was not impaired. The harness may have prevented it from expelling pellets, but this is speculative.

Within NT, 23 pit sites were inspected in 1984 and 29 in 1985. Active nest sites were found in eight and 10 pits, respectively. Six nests fledged young in each year. Humans extracting

subsoil materials and dogs (*Canis familiaris*) each destroyed two nests. Within NT a density of 0.3 potential nesting pits existed per km², while 0.1 active nests were detected per km², and 0.07 nests fledged young per km².

At least five territorial pairs of kingfishers resided in ST along the 15.4 km Lemonweir River drainage (0.3 breeding pairs/ km). The calculated ST breeding density within the drainage area was 0.22 kingfisher pairs/km². Two nest burrows were found on stream embankments. Five man-made pits were located in ST; one of these contained a kingfisher nest. A nest hole at a second pit resembled a kingfisher nest but could not be closely inspected, as it was located on private property.

DISCUSSION

Belted kingfishers in this study selected nest sites within vertical structures composed primarily of sand, as also observed by Brooks and Davis (1987). With one exception the distance from the top of the talus to the lip of the burrow entrance exceeded 30 cm and averaged nearly one meter. Nesting kingfishers were not found in pits where the cliff face had stabilized from sloughing, the talus spoil had breached the crest of the (former) cliff face, or vegetation had reclaimed the slopes. As evidence of their unsuitability, I recorded several instances where pairs did not return to pits that had "stabilized" over the four-year interval of this study. Embankments with little vertical structure in the process of stabilizing invite direct access from riparian predators such as mink (*Neovison vison*) and snakes (Brooks and Davis 1987).

In selecting vertical embankments kingfishers also increase the risk of nest destruction due to random collapse or

sloughing of cliff faces. This likely explains why kingfishers do not typically reuse nest burrows since these are often destroyed through erosion or collapse in the interval between breeding seasons. None of the nests in this study was reused in successive years, although in many instances kingfishers used the same pits from year to year.

Kingfisher use of human-created sand pits, spoil piles, etc., invites the added risk associated with extraction of the very materials in which the nest chamber is located. Kingfishers in this study avoided pits where human extraction activities were regular, suggesting they assessed human activity levels at excavation pits prior to investing in construction of a nest burrow. Nonetheless, two of 18 nests were destroyed by extraction activities.

Davis (1982) determined that kingfisher territory size was a function of food abundance, but during the breeding season the availability of nest sites was more important in determining territory size in a population studied along a stream. The number of breeding pairs in the ST Lemonweir River headwaters (0.3 breeding pairs per km of stream) was within the range of 0.11 to 0.54 breeding kingfishers per linear km of stream reported by Brooks and Davis (1987).

A two-fold difference existed between breeding pair densities in NT and ST (0.1 vs. 0.2 pairs/km²). Davis (1982) noted that the availability of suitable perches may impact breeding pair densities along streams. I did not investigate perch sites along the shores of the many flowages within NT. However, the lower densities observed in NT were more likely associated with the distances between nest sites and foraging areas. Brooks and Davis (1987) noted that

length of kingfisher breeding territories in a riparian system was inversely related to the nest site's proximity to highly productive foraging sites. Marked kingfishers in NT were observed 0.4–4.6 km from nest sites. Although similar measurements were not taken in ST, nests were located directly on streams or pits within tens of meters of the stream and presumably distances traveled between nests and foraging areas were insignificant by comparison. That only 35 percent of potential pits within NT had active nests suggests breeding densities there were limited by proximity to productive foraging areas. Further studies comparing lake country or highly modified riparian systems to naturally occurring riparian systems would provide much meaningful data on kingfisher breeding abundance.

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The Summer Season: 2015

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CLIMATE

The climate this summer was average compared to normal temperature and precipitation measurements from 1981-2010 (long-term). In comparison to 2013 and 2014, the summer of 2015 was drier and cooler in the first half, then wetter and warmer in the second half. The average temperature across all regions ranged from approximately 60 °F to 66 °F in June and from 66 °F to 69°F in July. The coolest region in June was the north-central (minimum average of 56°F) and the warmest region in July was the southwest (maximum average of 70°F). Statewide rainfall in June averaged 4.40 inches, being less than 5% above the long-term average. Precipitation dropped to an average of 3.40 inches in July which is nearly 13% below the long-term average. The regions that received the most and least precipitation for the entire season were west-central (10.7 inches) and east-central (5.6 inches). Weather data were gleaned from the Wisconsin State Climatology Office (WSCO).

OVERVIEW

In total, 276 established species, two European species becoming estab-

lished (Great Tit and European Goldfinch), and five hybrids were observed this summer in all 72 counties (compare to 280 species, European Goldfinch, and two hybrids in 2014 and 271 species and one hybrid in 2013). Please note the following: All species observed—common, rare, and established exotic—are listed. The total number of reporting counties for a species is always stated and general distribution across the state are noted for widespread species. The map (Figure 1) shows the breakdown of nine regions at the county level; these delineations were adopted from WSCO's climate delineations. They are nearly identical to the arbitrary boundaries used in last year's summer report. To avoid repetition, the county is not stated in an observation if the county name is in the location name (i.e. Manitowoc Impoundment, not Manitowoc Impoundment in Manitowoc County).

RARITIES

A number of rare birds were seen this summer, albeit not as impressively as 2014. The rarest of them all was a young male Common Eider, a sixth state record and second summer record. Other rarities whose official

documentation was accepted include Yellow-crowned Night Heron, Little Gull, Arctic Tern, Band-tailed Pigeon, White-winged Dove (two locations), returning Chuck-will's-widow, Scissor-tailed Flycatcher, and Western Tanager. To view the list of species that requires documentation, visit www.wsobirds.org/wso-review-list. The documentation form is also available on the website.

Unusual bird sightings include Tundra Swan, Snow Goose, Bufflehead, Horned and Western Grebes, Snowy and Cattle Egrets, Rough-legged Hawk, Yellow Rail, returning Black-necked Stilt, Whimbrel, Hudsonian and Marbled Godwits, Buff-breasted Sandpiper, Red-necked Phalarope, Laughing, Franklin's, Iceland, Lesser Black-backed, Glaucous, and Great Black-backed Gulls, Snowy Owl, Loggerhead Shrike, White-eyed Vireo, Northern Mockingbird, Yellow-throated and Prairie Warblers, Yellow-breasted Chat, Nelson's and White-crowned Sparrows, and White-winged Crossbill.

As per usual, three federally threatened or endangered species nested in the state: Whooping Crane, Piping Plover, and Kirtland's Warbler. But not as usual was the high number of hybrids reported: American Black Duck \times Mallard, Hooded \times Common Merganser, Sandhill \times Whooping Crane, Herring Gull \times Lesser Black-backed Gull, and Brewster's Warbler (Golden-winged \times Blue-winged Warbler).

RECORD HIGHS AND BIG INCREASES

A percentage comparison above (+) or below (–) the average number of reporting counties to eBird.org (eBird) and other sources over the past six years—including 2015—is noted at the

end of each regular species, unless the percent change is less than 5% or if the species is recorded in an average of seven or fewer counties. Record high numbers of reporting counties were achieved for numerous species this past summer, with “record high” referring solely to eBird reports over the past 11 years. In fact, 56% of all species fell in this category. It does not mean that all these species are increasing in population size or distribution in Wisconsin; what is more at play here is increased effort through the second Wisconsin Breeding Bird Atlas (see following section) and the resultant expanded eBird use. The map (Figure 1) shows the number of species tallied on a county basis, which is largely determined by effort exerted by local birders (especially in populated areas) as well as WBBA II volunteers.

Although longer term data would be more ideal, eBird wasn't launched until 2002. It took several years for it to become popular, meaning that there are significant gaps in data within the past decade. Data from the past six years are more accurate. The six-year average number of reporting counties will be slightly different each year due to tardy eBird submissions. For example, Summer 2015 data will be more accurate when the 2016 summer report is written. Thank you to Sunil Gopalan for collecting and compiling these eBird data.

BREEDING BIRDS

The second Wisconsin Breeding Bird Atlas (WBBA II; 2015–2019) is a follow-up to WBBA I (1995–2000) being a multi-year statewide survey to document as many breeding species as possible. It will be interesting to see if

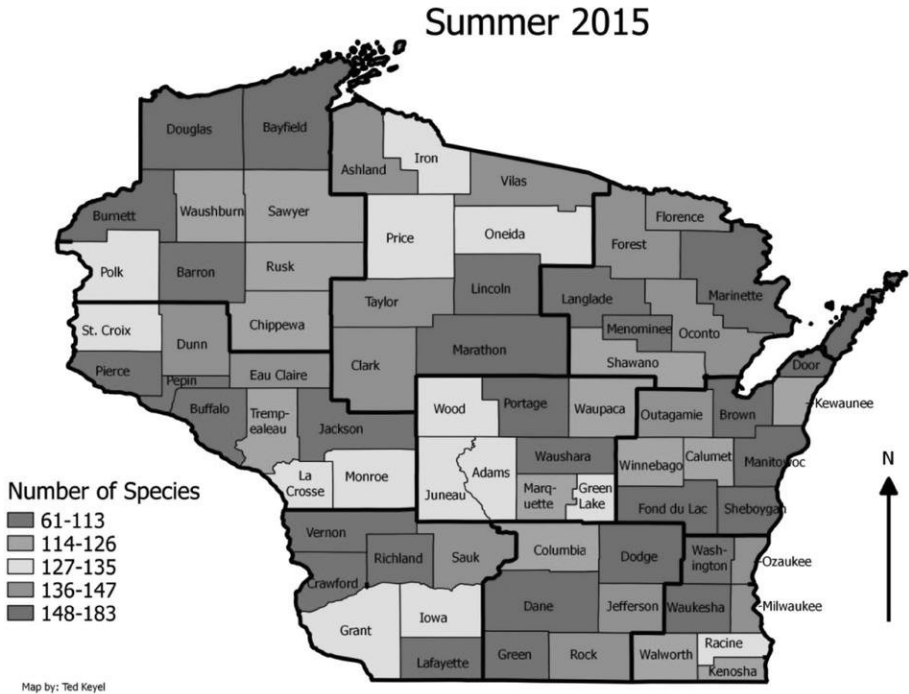


Figure 1. The number of species detected by county in the Summer 2015 season. Region delineations are shown with thick borders.

the percentage increases change after the WBBA II is complete in 2019.

Like last year, breeding records are highlighted in this report, but unlike last year, breeding status is determined by the WBBA II protocol and not the eBird protocol. It is imperative that eBird users are submitting their breeding observations under the WBBA II eBird Portal: ebird.org/content/atlaswi. Due to differences in defining breeding status between WBBA II and eBird proper, entering data into the portal ensures that WBBA II can use the data in analyses.

According to WBBA II, probable breeding indicates that the observer saw one or more of the following: A singing male present for 7+ days, seven or more singing males present, pair in

suitable habitat, territory defense (often chasing other birds of same species), courtship/display, copulation, visiting probable nest site, agitated behavior, or nest-building by wrens or woodpeckers. Confirmed breeding indicates that a birder witnessed one or more of the following: Brood patch or other physiological evidence, adult carrying food, fecal sac, or nesting material, nest building at nest site (excluding wrens and woodpeckers), distraction display, used nest/eggshells, occupied nest, recently fledged young, adult feeding young, or nest with eggs or young. More details on the codes can be found here: wsobirds.org/images/atlas/WBBA_II_Handbook.pdf.

All 72 counties collectively reported a total of 210 species nesting (con-

firmed breeding), which is 32 more species than last year. An additional 10 species were only noted as probable nesters. Keep in mind that these classifications are exclusive of each other; for example, if a species was recorded as having both probable and confirmed breeding, it is reported here as only confirmed breeding, as only the highest breeding classification is recorded for each species. Probable breeding was only listed under species that confirmed breeding in fewer than 25 counties. It should be noted that eBird *breeding* reports were extracted from May and August 2015 in addition to the normal summer months. The first WBBA (1995-2000) was consulted to determine documented breeding ranges.

USING RESOURCES

In an effort to be as all-inclusive as possible, other resources were utilized for this report, such as personal contacts, government agencies, and the Wisconsin Birding Network list-serve. Although Facebook pages provide a wealth of information (as it did last year), the two busiest pages were not thoroughly searched this year due to the high volume of daily posts, most containing photos of common birds that would add little if any information to the report. However, the Wisconsin Rare Bird Alert Facebook page was fully searched. A thank you is extended to all eBird users, documentation providers, and other resources for their contributions for the Summer Report 2015. If you know of people who have significant bird observation data but do not enter them on eBird, please relay these data to a seasonal report compiler or enter them on behalf of the original observer on eBird.

CORRECTIONS:

Two known mistakes were made in the Summer Report 2014:

Although Daryl Tessen was referenced as “Tessen” in the actual report, he was never officially acknowledged in the Contributors’ list.

For the White-crowned Sparrow account, the Door County records should read “These two sightings represent only two of *eleven* July records.”

CODES:

* = rare species that requires documentation OR new county breeding record (according to WBBA I and limited information between the two atlases)

BRAW = Bluebird Restoration Association of Wisconsin

CIWB = Cat Island Wave Barrier

et al. = “and others” (i.e. Last Name et al. means found by Last Name and observed by others)

fide = second hand report to observer

FR = US Forest Service Road/National Forest Road

mob = multiple (three or more) observers

NC = Nature Center

NF = National Forest

NPS = National Park Service

NWR = National Wildlife Refuge

pers. comm. = personal communication

SF = State Forest

SNA = Scientific Natural Area

SRA = State Recreation Area

SWA = State Wildlife Area

USFWS = U.S. Fish and Wildlife Service

UW = University of Wisconsin

WA = Wildlife Area

WDNR = Wisconsin Department of Natural Resources

REPORTS

(1 JUNE–31 JULY 2015)

Snow Goose—A lone bird was observed from 1–6 June in Douglas County (LaValleys).

Canada Goose—Reported from all 72 counties, with no single count exceeding 300 birds. Breeding confirmed in 64 counties.

Mute Swan—This European native was observed in these seven counties (compare to 10 counties in 2014): Ashland, Brown, Door, Ke-

waunee, Milwaukee, Waukesha, and Wood. This is the lowest number of reporting counties in five years. The high count was of six birds at Marquette Park (Kewaunee County) on 2 June by Sinkula. Breeding confirmed in Door County and probable breeding was detected in Ashland County. [−32.3%]

Trumpeter Swan—Reported from 32 counties statewide, a record high (compare to 27 counties last summer). A quarter of all counties were in the northwest region. Twenty-two to twenty-four birds were counted at Crex Meadows SWA (Burnett County) on 2 and 4 July by Haseleu and W. Seeger, respectively. Breeding confirmed in 22 counties including Grant* (mob), Rusk* (Stutz), and Waushara* (Cieszynski). Probable breeding observed in three counties including Eau Claire* (Chrousers). [+34.3%]

Tundra Swan—Two counties reported lingering birds: Jesse Louthain observed three at Bay Beach Wildlife Sanctuary (Brown County) on 19 June and two more were found on the Little Eau Pleine River (Portage County) on 27 June by Brocken and Janz. Neither report provided details.

Wood Duck—Reported in every county except Lafayette and Menominee, a record high (compare to 66 counties in 2014). Old Marsh Road in Horicon NWR (Dodge County) contained 130 birds on 25 July, as observed by Passint and Prestby. Breeding confirmed in 62 counties. [+7.7%]

Gadwall—Reports came from the following eight counties, which is less than half of last summer's 17 counties: Brown (mob), Dane (Jim Schwarz), Dodge (mob), Dunn (Polk), Fond du Lac (mob), Juneau (Ford-Hutchinson), Manitowoc (Sontag), and Outagamie (Bruyere). No more than 10 birds were counted on any report, which is also less than half of last year's high count. Breeding confirmed in Dane* (Jim Schwarz) and Dodge Counties, plus probable breeding detected in Brown, Dunn, and Fond du Lac Counties. [−18.6%]

American Wigeon—The following nine counties contained birds this summer (the same number of counties as 2014): Brown (Prestby and Swelstad), Chippewa (Woodford), Dodge (mob; maximum count of 6 birds by Tessen), Douglas (LaValleys), Dunn (Polk), Fond du Lac (Ebert),

Manitowoc (Sontag), Rock (Haycraft and Yoerger), and Waukesha (Hurlburt and Moretti). Probable breeding was detected in Dunn* County (Polk).

American Black Duck—Reported from a record high 21 counties in all regions except the southwest. This is a substantial increase from 13 counties in 2014. More than half of the counties are located in the east-central and north-central regions. Two high counts: Twenty (presumably wild) birds landed in a pond at the Wildwood Park and Zoo in Wood County on 27 June (Kennedy and Kuzma Sell), and 18 individuals were observed at Willow Flowage Nature Trail in Oneida County on 30 July (NLDC Birders and David). Breeding confirmed in six counties including Dodge* (Passint and Prestby) and Marinette* (S. Haas). [+65.8%]

Mallard—Reported from every county except Menominee, a record high. The maximum tally was 350 birds. Breeding confirmed in 62 counties. [+5.2%]

American Black Duck x Mallard—An impressive showing with seven counties reporting birds: Brown (two by mob), Calumet (one by the Whitemores), Manitowoc (one by Woodcock), Milwaukee (McKinley and Meinig; the former found a mixed duck flock including juvenile hybrids), Ozaukee (N. Miller), Sheboygan (two by Rick Anderson and five by Matthews), and Wood (three by Kennedy and Kuzma Sell). Only two counties encountered birds in 2014.

Blue-winged Teal—Reported from a record high 50 counties in all regions except the southwest (compare to 37 counties last year). No count exceeded 30 birds. Breeding confirmed in 22 counties. Another eight counties found probable breeding. [+27.7%]

Northern Shoveler—Reported from 15 counties in all regions except the southwest (compare to 16 counties limited to the central and southern regions). One third of all the counties were in the east-central region. Eleven birds were seen along Van Patten Road (Outagamie County) on 26 July by Swelstad. Breeding confirmed in Dane* (K. Larson), Dodge* (mob), Portage, and Winnebago* (Christensen) Counties, plus probable breeding detected in Marathon* (Christensen) and Outagamie Counties.

Northern Pintail—Reported from these three counties, which is half of last summer's counties: Brown (CIWB by Prestby and Swelstad), Dodge (Horicon NWR by Karl Hayes and Longhenry), and Waukesha (Bark River Unit of Paradise Valley SWA by mob). No more than two birds were seen at one time. Probable breeding noted in Waukesha* (mob) County.

Green-winged Teal—Reported from 15 counties across all regions except the central and southwest, with relatively even distribution across regions. This is the same number of reporting counties as 2014. No count exceeded 15 birds. Breeding confirmed in Dodge* County (Bartholmais), plus probable breeding was detected in Brown and Fond du Lac Counties.

Canvasback—The following four counties reported birds this summer: Brown (CIWB by mob), Columbia (Schoeneberg Marsh by Evanston), Dodge (Horicon NWR by Turelli), and Waukesha (Bark River Unit of Paradise Valley SWA by T. Hahn), which is comparable to last summer's five counties. No count exceeded two individuals.

Redhead—Reported from 15 counties in all regions except the southwest region; this is comparable to 17 counties in 2014. A third of the counties are located in the east-central region. Frank counted a remarkable 327 individuals along Highway 49 in Horicon NWR (Fond du Lac County) on 10 June. Breeding confirmed in seven counties, including Vilas* (Spahn). Probable breeding was noted in Marquette* (Christensen) County. [+8.4%]

Ring-necked Duck—Reports came from a record high 29 counties in all regions except the southwest this summer (compare to 22 counties last summer). About a quarter of the counties resided in the north-central region. Pritzl counted four broods totaling 32 individuals at the Vista Flowage (Iron County) on 30 June, and Paulios saw 30 birds in Crex Meadows SWA (Burnett County) on 27 June. These are both double of last summer's high count. Breeding confirmed in 12 counties, including Door* (Leavitt), Florence* (K. Kavanagh) and Iron* (mob). An additional eight counties detected probable breeding, including Dodge* (T. Wood) and Sheboygan* (Frank). [+45.0%]

Greater Scaup—Reported in the following five counties: Brown (mob), Douglas (LaValleys), Kewaunee (Sinkula), Manitowoc (mob), and Milwaukee (Ambrose), which is the same number of reporting counties as last year. The CIWB (Brown County) had an influx of 18 birds on 1 July as observed by Prestby and Walton.

Lesser Scaup—Reports came from 12 counties fairly evenly distributed across the east-central, north-central, south-central, southeast, and west-central regions (compare to 14 counties in 2014). CIWB (Brown County) contained 19 birds on 8 June by Prestby, and perhaps the same 19 birds were seen in the Green Bay atlas block (also Brown County) on 20 July by Swelstad. [+14.3%]

Common Eider*—A young male was observed at CIWB (Brown County) on 12 June by Walton and Watson, representing the sixth state record and second summer individual. The other summer record was on 5 June 2007 in Sheboygan County (mob). See *By the Wayside* for documentation of this year's individual.

Bufflehead—All reports: One bird was seen at CIWB (Brown County) from 1–5 June by Prestby, a female was observed in the Kewaunee Harbor on 5 June (Zenner), a mother and well-grown duckling were viewed on Hoodoo Lake in Brule (Douglas* County) on 5 July by M. Berg. This is down slightly from last year's four counties. Douglas County marks only the third county this species has been recorded nesting in the state. The other two historical counties are from Dodge and Waukesha (Brady pers. comm.).

Common Goldeneye—Seven counties reported birds this summer, a drop from last year's 11 counties: Bayfield, Brown, Door, Marinette, Outagamie, and Sawyer Counties. Prestby witnessed two family groups totaling 17 individuals on Pelican Lake (Oneida County) on 1 July. Breeding also confirmed in Bayfield* (Wydeven) and Sawyer Counties.

Hooded Merganser—Reported from a record high 61 counties statewide, which is much higher than last summer's 42 counties. Breeding confirmed in 47 counties. [+48.8%]

Common Merganser—Reported from 16 counties in all northern regions, plus a male Common Merganser and female Hooded Merganser with five ducklings from Marquette*

County (Christensen; see below). This is down from 18 counties in 2014. No report exceeded 19 birds. In addition to Marquette County, breeding was confirmed in another eight counties including Barron* (M. Berg). Probable breeding detected in Price. [+12.1%]

Hooded x Common Merganser—Five apparent hybrid ducklings from a female Hooded Merganser and male Common Merganser were observed on 24 June at Dam #22 on the Mecan River (Marquette County) by Christensen.

Red-breasted Merganser—Reports came from these seven counties (the same number of counties as 2014): Bayfield, Brown, Door, Manitowoc, Milwaukee, Ozaukee, and Sheboygan. Fischer Creek Conservation Area in Manitowoc County contained 71 birds on 17 June (Domagalski). Confirmed breeding in Bayfield* (D. Meyer) and Door Counties, plus probable breeding found in Manitowoc* County (Woodcock). [-19.2%]

Ruddy Duck—Reported from 12 counties in the east-central, south-central, southeast, and west-central regions, which is the same number of reporting counties as 2014. The east-central and south-central regions contained 75% of the counties. Prestby and Passint found 30 birds along Highway 49 (Dodge County) on 25 July. Breeding confirmed in Columbia, Dodge, Dunn, Fond du Lac, and Winnebago Counties, plus probable breeding in Dane and Waukesha Counties.

Northern Bobwhite—The following 11 counties reported birds, an increase from last year's eight counties: Brown, Columbia, Fond du Lac, Iowa, Juneau, Kenosha, Lafayette, Rock, Sauk, Waukesha, and Wood. No count exceeded two birds. It is believed that many, if not all, of these are escaped and/or released birds (Domagalski pers. comm.). Columbia, Kenosha, and Sauk Counties detected probable breeders. [+24.5%]

Ring-necked Pheasant—Reported from a record high 48 counties statewide (compare to 40 counties in 2014). No more than 12 birds were seen at one time. Breeding confirmed in 18 counties and probable breeding was found in another 10 counties. [+40.5%]

Gray Partridge—Thiele observed two birds along C-R W (Grant County) on 23 July. A brood was noted in Grant* County as well (fide Thiele).

Ruffed Grouse—A record high 42 counties reported birds across the central and northern regions, plus Vernon County (compare to 38 counties in 2014). No count exceeded 15 individuals. Breeding confirmed in 26 counties. [+28.6%]

Spruce Grouse—All reports: K. Kavanagh saw an adult with two chicks along Newald Road (Florence* County) on 9 July, Haseleu spotted a hen with approximately eight chicks along Nicolet Road (Forest County) on 16 June, and D. Gustafson encountered an individual in Old A Bog (Oneida County) on 19 June. The following three observations were in Vilas County: Two sightings were in Muskrat Creek bog area on 29 June and 22 July, with the former being a family group (Spahn and Kreiss, respectively) and a mother with six offspring were found in the Land O' Lakes area on 27 June (Jim Baughman et al.). The four counties and six observations were significantly up from last year's single county and observation. Probable breeding in Sawyer County.

Sharp-tailed Grouse—The following four counties—a record high—reported birds, which is a big increase from one reporting county and sighting last summer: Bayfield (Island Lake atlas block on 29 June by N. Anich), Burnett (nine birds between three locations from 6 June–15 July by mob), Douglas (unspecified location for entire season by the LaValleys), and Price (family group of four at Kimberly Clark WA 21–25 July by J. Krakowski and Onchuck). Breeding also confirmed in Bayfield County.

Greater Prairie-Chicken—Birds were spotted at Leola Marsh WA in Adams County (Evanston) and Buena Vista WA (Hogseth and Pendergast) and Fourmile Creek (Christensen), both of which are in Portage County. Breeding confirmed in Portage County and probable breeding was noted in Adams County.

Wild Turkey—Reported from all 72 counties, a record high. Breeding confirmed in 61 counties. [+9.1%]

Common Loon—A record high 41 counties contained birds this summer (compare to 33

counties last summer). Reports came from all central and northern regions, plus the following four southern counties: Columbia (Loy), Dane (Jim Schwarz and J. Swanson), Iowa (J. Kivikoski), and Ozaukee (Dolan and Frank) Counties. County distribution was mostly even across all northern regions and the west-central region. No report exceeded nine individuals. Breeding confirmed in 20 counties. Of the six counties that noted probable breeding, the more southerly ones were Juneau, Monroe, and Wood. [+18.3%]

Pied-billed Grebe—Reported from a record high 49 counties from all regions, with the lowest number of reporting counties from the southwest (compare to 36 counties in 2014). Prestby and Passint found 50 birds along Old Marsh Road in Horicon NWR (Dodge County) on 25 July. Breeding confirmed in 31 counties. [+27.3%]

Horned Grebe—A lone bird lingered at Eagle Harbor in Ephraim (Door County) from 1–3 June (S. Peterson).

Red-necked Grebe—Reports came from Crex Meadows SWA, Fish Lake SWA, and Reisinger Lake (Burnett County) by mob and Schoeneberg Marsh (Columbia County) by mob. This is down from last year's impressive six counties. Breeding confirmed in both Burnett and Columbia Counties.

Western Grebe—A bird found by Spaul on Lake Monona (Dane County) on 20 July was observed by many others on Lake Mendota and Lake Monona through 28 July (Cliff Anderson and Hottman).

Double-crested Cormorant—Reported from 50 counties in all regions, a record high (compare to 44 counties in 2014). The two high counts—both 4,000 birds—were more than twice of last year's high count: CIWB in Brown County on 30 July (Prestby) and Washington Island's ferry dock in Door County on 15 July (M. Walsh). Breeding confirmed in six counties, including Kenosha* (Lyons) and St. Croix* (Olyphant). Ashland and Wood Counties noted probable breeders. [+21.0%]

American White Pelican—Forty-one counties across all regions—a record high—reported birds (compare to 38 counties in 2014). The east-central and northwest regions accounted for roughly a third of all counties. The high count

was 1,600 as estimated by Prestby on the CIWB (Brown County) on 2 June. Breeding confirmed in Brown, Dodge, Outagamie, and Winnebago Counties. Door* (S. Peterson) County detected probable breeding. [+22.4%]

American Bittern—Reported from a record high 42 counties across the state except the southwest (compare to 31 counties in 2014). The regions with the fewest reporting counties were the northwest, south-central, and southeast. Nine birds were counted along Lemke Road in Calumet County on 20 June (Domagalski). Breeding confirmed in Bayfield, Brown* (Prestby), and Marinette Counties, with probable breeding found in an additional 15 counties. [+40.8%]

Least Bittern—Twenty-four counties in all regions—a record high—held birds this summer (compare to 22 counties in 2014). The east-central and south-central regions harbored 37% of the counties. No more than seven birds were reported at one time. Breeding confirmed only in Dodge and Winnebago Counties, less than half of last summer's counties; another eight counties detected probable breeding. [+29.7%]

Great Blue Heron—Reported from all 72 counties, a record high. No report contained more than 80 birds. Breeding confirmed in 17 counties and an additional 12 counties noted probable breeding. [+6.1%]

Great Egret—Thirty-six counties contained birds this summer in all regions except north-central, a record high (compare to 33 counties in 2014). The east-central and southeast regions contained more than 40% of the counties. The north reports are as follows: Douglas (Svingen), Door (E. Howe and Walton), Marinette (mob), Oconto (Andrea R.), and Shawano (Straub) Counties. Tessen estimated 350 individuals at a site in Fond du Lac County on 1 July. Breeding confirmed in Brown, Green Lake, Marinette* (J. Campbell and Phillips), and Winnebago Counties, plus probable breeding was found in Door, Outagamie* (O'Connell), and St. Croix* (Rivard) Counties. [+14.9%]

Snowy Egret—The only report was of a bird on Old Marsh Road in Horicon NWR (Dodge County) on 2 June by Shealer, which is down drastically from last year's impressive four counties.

Cattle Egret—A record high six counties held birds this summer (compare to five counties in 2014): Three birds were seen between the CIWB and Cottage Grove Avenue (Brown County) from 2 June–14 July by Prestby et al., eight in Brothertown (Calumet County) from 21 June–30 July by Schloffs et al., seven individuals on Shady Lane Road (Dodge County) on 23 July by Schrab, two birds by Highway 41 in Fond du Lac County on 18 July (Yunke), two birds in Zeloski Marsh of Lake Mills SWA (Jefferson County) on 21 July by Stutz and Yoerger, and up to four (including birds on nests) between Long Point Island and Lone Elm Avenue (Winnebago County) from 3–24 June by Malcolm and R. Mueller. Thirty-three birds were counted in Brothertown (Calumet County) on 30 July by R. Mueller.

Green Heron—Reported from a record high 69 counties (compare to 66 counties 2012–2014). Twelve birds were counted by O'Connell in a segment of the Little Wolf River (Waupaca County) on 19 July. Breeding confirmed in 29 counties, more than three times the number of counties as last year. [+11.0%]

Black-crowned Night Heron—Reported from 20 counties in the eastern third and south-central and all central regions, with the east-central region containing more than a quarter of the counties. The furthest north reports came from Door (mob) and Marinette (Marcia Hurst) Counties. This is a record high but only slightly above last summer's 18 counties. Shealer observed 330 nesting birds in the Main Pool (Dodge County) on 4 June. Breeding confirmed in six counties, including Milwaukee* (K. Johnson) and Outagamie* (O'Connell). [+17.6%]

Yellow-crowned Night Heron*—A juvenile was found, photographed, and documented by D. Goldberg in Samuel Meyers Park (Racine County) on 20 July. It was relocated on 25 July by Dixon and E. Howe.

Turkey Vulture—Reported from all 72 counties, a record high. The maximum count was 87 birds. Green Lake* (T. Schultz) contained confirmed breeders. An additional 15 counties detected probable breeders. [+5.6%]

Osprey—Reported from 63 counties statewide, a new record and an increase from last year's 50 counties. Four nests comprised of 11

adults and young were encountered in Collins Marsh (Manitowoc County) on 2 July by Christensen. Breeding confirmed in 44 counties. [+24.3%]

Northern Harrier—A record high 56 counties statewide reported birds (compare to 49 counties in 2014). No report exceeded six birds. Breeding confirmed in 19 counties, nearly five times the number of counties as 2014. Another 11 counties found probable breeders. [+23.5%]

Sharp-shinned Hawk—Reported from 24 counties in all central and northern regions (compare to 17 counties total last summer). More than half of the counties were located in the northeast and west-central regions. Six counties confirmed breeding birds and two counties detected probable breeding. [+23.1%]

Cooper's Hawk—Reported from 61 counties statewide, a new record (compare to 44 counties in 2014). Breeding confirmed in 23 counties. An additional five counties found probable [+31.2%]

Northern Goshawk—All reporting counties: Ashland (Merkel), Douglas (mob), Florence (E. Giese and K. Kavanagh), Forest (mob), Lincoln (Edlund), Oconto (J. Wenzel), and Wood (Stout). This is up from five counties in 2014 and is a record high. Unlike last year, no breeding activity was reported.

Bald Eagle—Reported from a record high 71 counties, with Lafayette County being the only county not reporting the species. Forty counties contained confirmed breeders. [+13.9%]

Red-shouldered Hawk—A record high 36 counties statewide reported the species, a substantial increase from last year's 24 counties. The northern counties include Burnett (mob), Door, Lincoln, Marathon, Marinette, Oconto, Polk, Shawano, Taylor, and Washburn (Morales). More than half of the counties came from the central tier. No more than four individuals were seen at one time. Breeding confirmed in 10 counties and probable breeding was noted in another six counties. [+34.2%]

Broad-winged Hawk—A record high 53 counties statewide reported this raptor; eleven of those counties were in the southern tier (compare to 40 counties in 2014). Large kettles total-

ing 1,000–1,010 birds were observed on Rock Island in Door County on 3 June (mob). Breeding confirmed in 22 counties, including Dodge* (Schaefer), Iowa* (Beheler), and Milwaukee* (Wanger), plus an additional seven counties found probable breeders. [+34.2%]

Red-tailed Hawk—Reported from 65 counties statewide (compare to 67 counties last year). No report exceeded 10 birds. Breeding confirmed in 38 counties, more than four times the number of counties in 2014.

Rough-legged Hawk—A late bird stayed at Buena Vista WA (Portage County) through 2 June by R. Mueller.

Yellow Rail—J. Kaminski heard a bird singing at the traditional site of Crex Meadows SWA (Burnett County) on 27 June. This is the first summer report of this secretive species since 2012.

King Rail*— Like last year, the Auto Tour Loop in Horicon NWR (Dodge County) hosted a bird on 14 June, as documented by Vant Hoff.

Virginia Rail—Reports came from a record high 38 counties from all regions except the southwest (compare to 31 counties last summer). Regions containing the fewest counties were the central, northwest, and west-central. The maximum count was seven birds. Twelve counties confirmed breeding birds, and another 12 counties noted probable breeders. [+31.8%]

Sora—Reported from 47 counties statewide, with Sauk being the only county from the southwest. The east-central and west-central regions harbored nearly a third of the counties. This is a record high and is much higher than last summer's 37 counties. No report exceeded 12 birds. Breeding confirmed in 10 counties and probable breeding found in an additional 17 counties. [+43.1%]

Common Gallinule—Reported from these 14 counties, a record high: Columbia, Dodge, Fond du Lac, Jefferson, La Crosse, Marquette, Polk (Blomberg), Rock, Sheboygan, Trempealeau, Walworth, Waukesha, Waushara, and Winnebago. This is a huge increase from last year's eight counties. Twenty-six birds were observed on 11 July in Horicon NWR (Dodge County) by Rick Anderson. Breeding confirmed

in seven counties, including Jefferson* (Bridge and Stutz), Marquette* (Christensen), and Waushara* (Evanson), plus probable breeding in Walworth County. [+40.0%]

American Coot—Reported from a record high 32 counties scattered across all regions (compare to 22 counties in 2014). County concentrations were located in the east-central, south-central, southeast, and west-central regions. Prestby and Passint estimated 130 birds along the south side of Highway 49 on 25 July (Dodge County). Twelve counties confirmed breeding and an additional three counties found probable breeders. [+38.1%]

Sandhill Crane—Reported from 70 counties; only Menominee and Pierce Counties submitted zero reports for the species. This is a record high and up slightly from last year's 67 counties. Tessen tallied 150 birds at a site in Dodge County on 30 July. Breeding confirmed in 59 counties.

Whooping Crane—Reports came from Adams, Dodge, Green Lake, Juneau, Marathon, Sauk, Shawano (Ewing), St. Croix (Cords), and Taylor (Peché) Counties, which is the same number of counties as last year. However, the breeding success was much higher this summer: According to the Whooping Crane Eastern Partnership, 27 pairs constructed a record 37 nests, which yielded 24 chicks total. Three of the offspring survived to the fledging stage and of those, two survived to adulthood. The number of chicks hatched was nearly twice of 13 chicks in 2014, and only one survived to adulthood. The population was estimated at 92 individuals in September 2015, which is one less than the 2014 estimate. Breeding confirmed in Adams, Dodge, Juneau, Marathon, and Wood Counties. [+20.0%]

Sandhill × Whooping Crane—A chick of a Sandhill Crane and Whooping Crane pair that was originally found by Steinruck on 31 May at Horicon NWR (Dodge County) was seen again on 1 June by fide Brunette-Hill. On 22 July USFWS captured this presumably sterile bird. He now currently lives at the International Crane Foundation as a captive individual. It is the first record of this hybrid in the eastern Whooping Crane population.

Black-necked Stilt—Two counties reported birds: Many birders observed up to six individuals



Myles Hurlburt captured this White-eyed Vireo in June 2015.



David Franzen found this Chestnut-sided Warbler carrying food in Vilas County in July 2015.

at Horicon NWR (Dodge County) that were last seen on 21 July by K. Larson and M. Walsh, and the birds seen by many at the Bark River Unit of Paradise Valley SWA (Sauk County) were seen last by Dabey on 19 July. See the Fall Report 2015 for final last dates. Breeding confirmed in Dodge County.

American Avocet—A record high eight counties reported birds, more than double of last year's three counties. A northbound migrant was found at Shady Lane Road pond (Dodge County) on 7 June by Schrab. The remaining reports are of southbound birds: Brown (CIWB on 8 and 29 July by Prestby and Swelstad), Dane (Lake Barney from 7–9 July by Jim Schwarz and Thiessen et al.), Manitowoc Impoundment on 29 July by J. Trick, Milwaukee (Lakeshore SP on 8 July by Edlhuber), Rock (Lake Koshkonong on 3 July by Boone), Sauk (Devils Lake SP on 30 July by L. Hahn), and Walworth (Elkhorn on 13 July by Ott) Counties.

Black-bellied Plover—All reports were of northbound migrants: One at CIWB (Brown County) from 1–3 June by Prestby and Walton, three along the Auto Tour of Horicon NWR (Dodge County) on 3 June by B. Bauer, and an individual at Seagull Bar SNA (Marinette County) from 9–13 June by J. Campbell and Leitzke et al. Five counties reported birds last summer.

American Golden-Plover—Two counties held southbound migrants: Tessen found ten birds at a site in Dodge County on 9 July and Dixon saw a bird along the Des Plaines River (Kenosha County) on 7 July. These are two of only five early (first third) July records. None were reported last year.

Semipalmated Plover—Late spring birds were detected in eleven counties, with the last dates coming from Brown County from 17–27 June (Prestby and Swelstad). The last date ties for the latest departure date in the state, although two over-summering records exist as well. Ten counties contained southbound migrants; among the earliest reports were 6 July in Sheboygan County (C. Schroeder) and 8 July in Brown County (Swelstad). Of the 15 counties between spring and fall migration, the central, northeast, and southwest regions contained no counties. More than a quarter of the counties were in the east-central region. This is down from 18 counties in 2014.

Piping Plover—Six counties noted birds, twice the number of counties as last year and a record high. All reports: Ashland County throughout the season (see details below), a maximum of five birds at CIWB (Brown County) from 1–26 June by Prestby, Walton, and USFWS, one bird in Douglas County (USFWS), a lone bird at the Manitowoc Impoundment on 4 June (mob), two individuals at Seagull Bar SNA (Marinette County) on 9 June by J. Campbell, Leitzke, and USFWS, and another bird on Terrell Island (Winnebago County) on 3 July by Rick Anderson. Choy reports that monitoring efforts led by USFWS, NPS, WDNR, and the Bad River Tribe detected four nesting pairs (ten birds total) that successfully fledged 11 offspring on Long Island (Ashland County), which are similar results to last year. Additional breeding confirmed in Marinette County (Leitzke) and probable breeding was noted in Brown* County (Prestby).

Killdeer—Reported from every county except Menominee, a record high (compare to 66 counties in 2014). Ward counted 147 birds along Winnegamie Drive (Winnebago County) on 29 July. Fifty-five counties confirmed breeding. [+7.8%]

Spotted Sandpiper—A record high 62 counties statewide reported birds this summer (compare to 50 counties in 2014). Twenty-two individuals were observed by Swelstad in the Green Bay atlas block (Brown County) on 20 July. Breeding confirmed in 29 counties, which is way up from last year's single county. [+31.9%]

Solitary Sandpiper—Bayfield (8 June by Brady) and Door Counties reported northbound migrants. A bird found on 18 June in Bayfield County (Brady) was difficult to place in a migratory category. Thirty-four counties found fall birds, with the first reports being on 26 June in Dane County (A. Holschbach) and 1 July in Dodge County (Tessen). This is comparable to 33 counties in 2014, all of which only held southbound birds. All 35 counties between spring and fall migration were statewide in distribution with nearly a third of the counties coming from the east-central and southeast regions. [+22.1%]

Greater Yellowlegs—All 18 reporting counties contained only southbound birds, which is similar to 19 counties in 2014. The northeast and southwest did not report birds, and over a quarter of all counties were from the east-central re-

gion. The earliest dates were 22 June in Brown County (Swelstad) and 30 June in Dunn and Manitowoc Counties (Polk and Swelstad, respectively). [+8.0%]

Willet—All reports: One at CIWB from 17–23 June by Prestby and Swelstad, one at Hurlbut Street Marsh on 24 June by Beilke and Prestby, three at CIWB on 29 July by Prestby (all in Brown County), a lone bird at Nine Springs Natural Area (Dane County) on 10 June by mob, one at Kimmes-Tobin Wetlands (Douglas County) on 18 July by R. Johnson and Svingen, one at the Manitowoc Impoundment on 2 June (Bridge and Sontag), and two in the Clark Mills atlas block on 15 July by Woodcock (also Manitowoc County). This is the same number of counties as last year.

Lesser Yellowlegs—Dodge (6 June by Tessen and T. Wood) and Marathon Counties observed spring migrants. A bird in Dodge County on 14 June (W. Rockey) was either a late spring bird or early fall bird. Definite fall migrants were reported from 25 counties. The first southbound birds were noted on 22 June in Brown (Swelstad) and 23 June in Dodge (T. Wood) Counties. Between both migrations, counties were distributed statewide. The east-central and southeast regions contained 44% of the counties.

Upland Sandpiper—Reports came from a record high 22 counties; all regions were represented except the southeast. This is much higher than last year's 15 reporting counties. About 40% of the counties were in the south-central and northeast regions. Boone and Cullum conservatively counted 11 individuals along W. Airport Road in Janesville (Rock County) on 24 and 25 June, respectively. Ten counties confirmed breeding, including Rock* (Boone and Cullum). An additional four counties detected probable breeding. [+32.0%]

Whimbrel—Up to five birds were seen on the Manitowoc Lakefront on 1, 2, 14, and 18 June and 8 July by Bridge and Sontag. The last date represents the earliest fall arrival date in the state. The previous record was 13 July in 2013 (Brown County by Sinkula).

Hudsonian Godwit—Tessen observed one bird at a site in Dodge County on 9 July and another individual visited the Manitowoc Lakefront on 7 June (Sontag and Woodcock). Because no previous birds were reported in Dodge County

this summer, this is likely a record-early fall arrival. The previous record was 21 July in 1988 in Manitowoc County and 2002 in Sheboygan County (Sontag and T. Wood, respectively). The bird in Manitowoc County this year is one of six late spring departure dates. No birds were reported last year.

Marbled Godwit—A late northbound migrant lingered until 1 June at the Manitowoc Lakefront (Sontag). None were reported last year.

Ruddy Turnstone—Spring migrant reports came from Bayfield, Brown, Douglas, Manitowoc, Marinette (13 June by the Tricks), and Milwaukee Counties. Brown (29–30 July by Prestby and Swelstad) and Manitowoc (8 July by Sontag) Counties contained southbound birds. The latter ties for the earliest fall arrival date. The other record was on 8 July 2013 in Ashland (N. Anich and Brady). This is up from four reporting counties in 2014.

Stilt Sandpiper—All reports were of fall migrants and came from these nine counties (compare to seven counties last summer): Brown, Clark, Dane, Dodge, Fond du Lac, Manitowoc (10 July by Sontag), Marathon, Sauk, and Sheboygan (6 July by Matthews and C. Schroeder).

Sanderling—Spring migrant reports came from the following counties: Ashland, Bayfield, Brown (14 and 17 June by Swelstad), Douglas, and Manitowoc. Fall migrant reports came from Brown (14 and 20 July by Swelstad) and Dodge Counties. This is comparable to five counties in 2014.

Dunlin—Spring migrant reports came from the following 10 counties: Brown (up to 70 birds throughout June by mob), Dane, Dodge, Door, Douglas, Manitowoc, Marinette, Milwaukee, Racine, and Waukesha. Birds were seen nearly daily from 1–17 June collectively throughout all these counties. Birds seen 22, 26, and 27 June at CIWB (Brown County) by Prestby and Swelstad may represent over-summering birds, while a bird at Bakken's Pond (Sauk County) on 22 June by Ouren could have been a northbound or southbound individual. This is up from last year's seven counties. [+10.0%]

Baird's Sandpiper—Brown (12 June by Walton and Watson) and Manitowoc held north-



Greg Hottman found this Eastern Screech Owl in Dane County in June 2015.



Jeff Galligan spotted this Western Grebe having just caught a fish in Dane County in July 2015.



Michael Huebschen imaged these Eastern Bluebirds engaged in nest building in Juneau County in June 2015.



A juvenile Eastern Bluebird stands at alert in Vilas County for David Franzen in July 2015.

bound birds. Fall migrants were reported from these six counties: Brown, Clark, Dodge (9 July by Tessen), Douglas, Marathon (19 July by Belter, Hurlburt), and Sheboygan. This is down from 10 counties in 2014. [-16.0%]

Least Sandpiper—Northbound migrant reports came from Dodge (6 June by Hakkila), Door (6 June by mob), and Manitowoc Counties. Twenty-eight counties had fall migrants. The earliest dates were 26 and 27 June in Brown County (Prestby and Swelstad, respectively) and 27 June in Dodge County (Dunnington). Between spring and fall migrations, county distribution was statewide and nearly half of all counties were in the east-central and southeast regions. This is similar to 28 counties in 2014. [+20.0%]

White-rumped Sandpiper—Four counties reported birds, although direction of migration is difficult to determine in some cases. CIWB in Brown County (mob) noted the species on 3, 5, 8, 12, and 16 June and 1, 8, and 10 July, with the relatively long string of dates suggesting that these birds over-summered. Horicon NWR in Dodge County (mob) only saw birds on 14 June and 9 July; while the first date is of a northbound bird, the second date is possibly that of an early arriving bird. The Manitowoc Lakefront (mob) reported birds 10, 26, and 27 June and 1 and 3 July, where given the relatively continuous reports, birds over-summering were more likely than early fall arrivals. A bird in the Racine Harbor on 31 July (Dixon) was certainly a southbound migrant. This is down from six counties in 2014. [-53.8%]

Buff-breasted Sandpiper—After a one-year absence, a record high four counties held birds this summer: N. Anich encountered two birds in Vista (Ashland County) on 30 July, four individuals were spotted on CIWB (Brown County) on 30 July by Prestby and Swelstad, another three birds were found at a site in St. Croix County on 31 July (Persico), and a lone bird was observed on Anderson Sod Farm (Winnebago County) on 29 July by mob.

Pectoral Sandpiper—Fifteen counties in all regions except the central and northeast reported southbound birds, with more than a quarter of the reports coming from the east-central region. This is a decrease from last year's 20 counties. The first reports came from Dane (4 July by Bridge) and Dodge (5 July by Schrab) Counties. [-12.6%]

Semipalmated Sandpiper—Between June and July, there were only seven scattered days where this species was not reported, suggesting that at least some over-summering took place this year. The biggest gap in reports was from 2–5 July, which may have marked the start of the majority of the southbound bird influx. CIWB in Brown County (mob) had birds between 1 June and 1 July, indicative of over-summering individuals. Manitowoc County (mob) reported birds 1–30 June, also suggesting that birds never left before the beginning of fall migration. An additional ten counties contained apparent late spring birds, with the last reports being 13 June in Marinette and Racine Counties (the Tricks and mob, respectively). Fall migrant reports came from 13 counties, with 22 June in Sauk County (Ouren) and 27 June in Ashland County (N. Anich) being the earliest. Of all 19 counties between spring and fall migration, counties were statewide in distribution except the central region, and the east-central region harbored over a quarter of the counties. This is comparable to 18 counties last year.

Short-billed Dowitcher—A record high fourteen counties statewide except the central and northeast regions reported fall migrants, a substantial increase from nine counties in 2014. The east-central region contained 42% of the counties. The first migrants were seen on 30 June in Dane county (Lindemer) and 1 July in Brown County (Prestby and Walton). [+42.4%]

Wilson's Snipe—Thirty-six counties statewide held birds this summer, a record high (compare to 30 counties in 2014). Half of the counties were located in the east-central, north-central, and northwest regions. The maximum count was 13 individuals. Manitowoc and Taylor* (Goldthwait and Kibbe) Counties contained confirmed breeders, plus another 12 counties noted probable breeders. [+20.0%]

American Woodcock—A record high 48 counties statewide reported birds, which is double last year's counties. Cameron counted 21 individuals in the South Unit of Pershing SWA (Taylor County) on 19 June. Breeding confirmed in 14 counties, plus an additional seven counties found probable breeding. [+56.5%]

Wilson's Phalarope—Five counties reported the species, almost half of last year's nine counties. All reports: One on CIWB 3 June and

10 July (Walton and Swelstad, respectively), one in the Greenleaf atlas block on 23 July (Van Duyse), and another on a Highway 29 wetland on 26 July was spotted by N. Seeger (all three in Brown County), a pair in Reed Lake on 23 June (Burnett County) by Hoefler, another pair on Lemke Road on 18, 20, and 24 June (Domagalski), and a lone bird was spotted at a different wetland on 17 July by R. Mueller (both in Calumet County), up to two individuals on Kelepp fish ponds (Clark County) on 25 and 26 July by Belter et al., one bird was seen on the Shady Lane Road pond on 18 July by Schrab, and another was seen at an unknown location on 25 July by Tessen (both in Dodge County). Breeding confirmed in Calumet County and probable breeding was detected in Burnett County. [-31.8%]

Red-necked Phalarope—Swelstad found a lone bird in the Green Bay atlas block (Brown County) on 26 July.

Bonaparte's Gull—Reported from these nine counties (compare to 12 counties in 2014): Brown (over-summered), Dane (2 July by mob and 18 July by Jim Schwarz), Door, Green Lake (30 July by Roti Roti), Manitowoc (over-summered), Menominee (4 July by Wilken), Sheboygan, Vilas (25 July by Peczynski), and Winnebago (12 June by Hurlburt and 8 July by M. Benson). The high count this year was far less than last year's 800 birds: Prestby counted 83 individuals at the CIWB (Brown County) on 16 June. [-12.9%]

Little Gull*—Although rare, this species has been seen regularly along Lake Michigan counties during the summer months. Two of the three counties reported in 2015 fell in this category: Prestby photographed and documented a second-year bird at the CIWB (Brown County) on 26 June, and up to five—presumably all first-year individuals—were seen by many at the Manitowoc Lakefront for the entire summer season. These birds were originally found by Sontag and formally documented by T. Wood. More unusual was in the inland sighting of a first-year individual at Patrick Marsh (Dane County) from 19 June–8 July. It was discovered by Lindemer, last seen by Evanson, and was photographed and documented by K. Larson. In 2014, three counties also reported birds.

Laughing Gull—The only reporting county was Manitowoc (compare to four counties in 2014), where two adults originally found by Sontag on 27 May at the impoundment stayed through 22 June (Sontag) and were observed by many. The next day Tessen saw a juvenal-plumaged bird at the same location. Sontag witnessed courtship behavior, making for probable breeding in Manitowoc* County. No breeding activity was detected during WBBA I.

Franklin's Gull—Four counties held birds, which is the same number as last year. All reports were of single birds: A basic-plumaged adult on 8 June and a probable juvenal-plumaged bird on 30 July at CIWB (Brown County) by Prestby, a first-summer or adult on 10 June at Nine Springs Natural Area (Dane County) by mob, an unknown-aged individual on 23 June at a site in Manitowoc County (Tessen), and an adult on 15 June at North Point Park (Sheboygan County) by Hampton and T. Wood.

Ring-billed Gull—Reported from a record high 61 counties statewide (compare to 53 counties in 2014). CIWB (Brown County) contained 3,500 birds on 17 June by Swelstad. Six counties contained confirmed breeders. Florence* (K. Kavanagh) County noted probable breeding. [+15.1%]

Herring Gull—Thirty-four counties scattered across the state reported birds. This is a record high and is more than last year's 30 counties. More than 40% of the counties fell in the east-central and southeast regions, and about half of all the counties were ones bordering a Great Lake. The maximum number recorded at the CIWB (Brown County) was 700 individuals, reported on several June dates by mob. Breeding confirmed in seven counties, including Marinette* (Beilke and Leitzke). Door and Florence* (K. Kavanagh) Counties detected probable breeding. [+22.9%]

Iceland Gull—Two counties contained birds, marking not only the first summer reports since 2011 but also making them two of 10 summer records: A second-year bird on 2 June at Manitowoc Lakefront by Sontag and an adult on 3 June at Sheboygan Lakefront by Wanger.

Lesser Black-backed Gull—Four counties held birds, which is similar to five counties in 2014. All reports were of single birds, unlike last



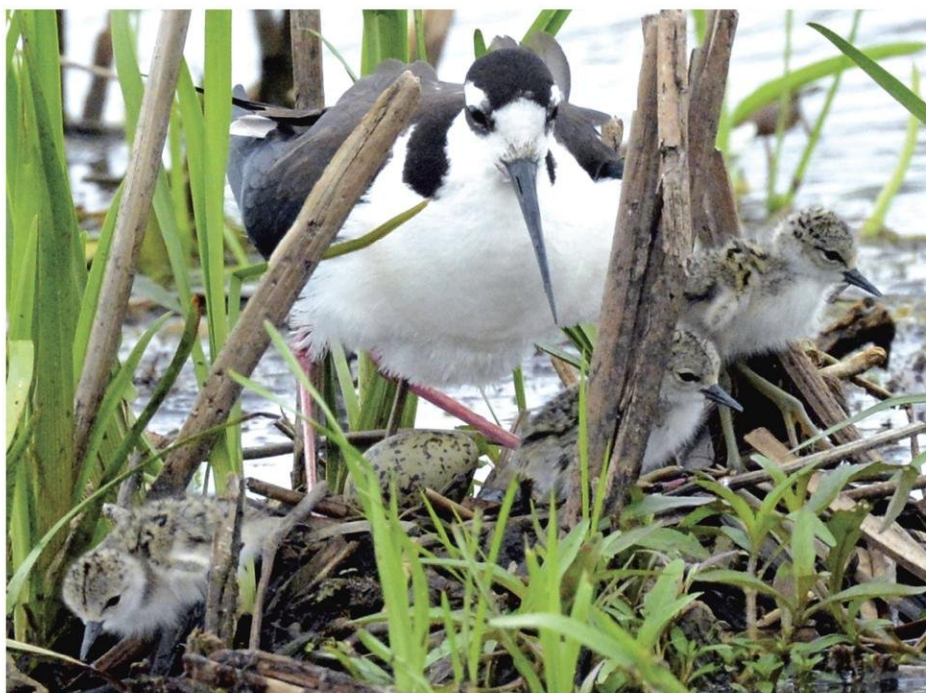
David Franzen imaged this Mourning Warbler in June 2015 in Vilas County.



Eric Preston caught this Henslow's Sparrow posing in Iowa County in June 2015.



Delia Unson watched these Sandhill Cranes dancing in Adams County in June 2015.



Michael Huebschen captured this adult Black-necked Stilt with three young and an egg still unhatched in June 2015 in Dodge County.

year's impressive 20+ individual count: A first-year bird was at CIWB in Brown County on 8, 17, and 26 June (Prestby), another first-year individual was at the Manitowoc Impoundment from 4 June–15 July (Domagalski et al.), an unspecified aged individual was sighted on 12 June at Bradford Beach (Milwaukee County) by Mooney, and a first-year bird on 3 and 5 June and 28 July along the Sheboygan Lakefront (Wanger et al.). The Lesser Black-backed Gull has been expanding its range in Wisconsin in recent years and is now considered a permanent non-breeding resident (Domagalski pers. comm.).

Herring × Lesser Black-backed Gull—

Wanger photographed an adult at the Menomonee Falls dump (Waukesha County) on 3 July.

Glaucous Gull—All reports: Unknown location and age in Douglas County from 1–5 June (LaValleys), first-, second-, and third-cycle birds (one of each) at the Manitowoc Lakefront from 17 June–25 July (Sontag and Tessen), and an unspecified age on 2 July at a site in Sheboygan County (Tessen). This is comparable to two counties in 2014.

Great Black-backed Gull—All reports, including ages if available: A lone bird was at the CIWB (Brown County) on 1 and 2 June by Prestby, up to five birds lingered at the Manitowoc Impoundment from 2 June–28 July (Bridge and Sontag et al.), a third-cycle then a first-cycle bird at Bradford Beach (Milwaukee County) on 2 June and 2 July by Mooney, and another third-cycle individual at Coal Dock Park (Ozaukee County) on 3 June and 5 July by Wanger et al. This is the same number of reporting counties as last year.

Caspian Tern—Reported by a record high 32 counties in all regions (compare to 23 counties last summer). Roughly 44% of all the counties were located in the east-central and southeast regions. Tessen estimated over 325 birds at a site in Manitowoc County on 4 June. Door* (Cochrane) and Marinette* (Leitzke) Counties contained confirmed breeders, and Kewaunee County noted probable breeding. [+46.6%]

Black Tern—Reported from a record high 38 counties statewide (compare to 32 counties in 2014). Fifty-five percent of the counties were from the central tier. Rice Lake in Marathon

County contained 97 birds on 17 June (Christensen). Confirmed breeding in 22 counties plus probable breeding in three counties. [+27.4%]

Common Tern—Reported in a record high 15 counties from all regions except the southwest (compare to 12 counties in 2014). Unusual inland reports: Burnett (Hoefer and Shealer), Eau Claire (observers provided no details), Jefferson (mob), and Rock Counties (Boone and Cullum). Over 46% of the counties were located in the northwest and east-central regions. Bayview Park in Bayfield County hosted 100 birds on 28 July (Brady). Ashland, Brown, Door, and Green Lake Counties contained confirmed breeders. [+28.6%]

Arctic Tern*—Prestby photographed and documented a bird at CIWB (Brown County) on 1 June.

Forster's Tern—Reported from 22 counties statewide except for the southwest region (compare to 28 counties in 2014). The east-central region contained 27% of the counties. A colony in the Pancake Island area (Green Lake County) boasted an estimated 350 birds on 3 June as observed by Christensen. Breeding confirmed in six counties, including Waukesha* (Winze). [+9.1%]

Rock Pigeon—Reported from every county except Menominee, a record high. Breeding confirmed in 35 counties, six times the number of counties as in 2014. [+8.9%]

Band-tailed Pigeon*—Wisconsin's fifth state record and second summer record visited a feeder west of Hayward (Sawyer County) on 13 July by fide Nechvatal. All the state records have occurred since 2002.

Eurasian Collared-Dove—Reported from a record high 17 counties in the following regions ordered from most to least number of counties: Southwest (six), south-central (five), west-central (three), east-central, and southeast (two each). The most northerly report came from Dunn County. This is up from last year's 10 counties. Kirschbaum counted six birds at the Evergreen Cemetery in Prairie du Chien (Crawford County) on 20 June. The state's first confirmed breeding records came from Brown* (Van Duyse), Crawford* (Kirschbaum) and Dunn* (P. Campbell) Counties. The following counties are all new probable breeding records: Columbia* (Owen),

Fond du Lac* (Jeff Baughman and Frank), Grant* (Ouren and Thiele), Green* (Yoerger), La Crosse* (Puchalski), Lafayette* (Dadisman), Monroe* (Lichter), and Rock* (Boone). [+59.4%]

White-winged Dove*—Two reporting counties marked the 20th and 21st state records and eighth and ninth summer records. Eleven of these state records have occurred in the past five years. An individual was photographed and documented in Dodgeville (Iowa County) on 14 June by L. Bailey and was seen the next day by J. and M. Kivikoski. Another bird visited a private residence in Racine County on 18 and 19 July (E. Howe) and was photographed and documented by Wegner.

Mourning Dove—Reported in all 72 counties. No more than 53 birds were counted in any report. Breeding confirmed in 56 counties.

Yellow-billed Cuckoo—Reported from a record high 55 counties across the state (compare to 46 counties in 2014). The maximum count was five birds. Ten counties held confirmed breeders, and another 22 counties detected probable breeding. [+31.5%]

Black-billed Cuckoo—A record high 62 counties statewide reported this species, which is 10 more counties than last year. A conservative fourteen birds were heard in Crex Meadows SWA in Burnett County on 27 June (J. Kaminski). Breeding confirmed in 19 counties and probable was found in another 22 counties. [+19.2%]

Eastern Screech-Owl—Reported from a record high 13 counties in all southern regions, east-central (almost a quarter of all counties), west-central, and these four north-central and northeastern counties: Door (Magerkurth), Oconto (Beilke and Walton), Oneida (Yünke), and Taylor (mob). This is more than twice of last year's six counties. Brown* (mob), Dane, Milwaukee, and Winnebago Counties contained confirmed breeders. Oconto* (Beilke and Walton) and Taylor Counties found probable breeders. [+66.0%]

Great Horned Owl—A record high 52 counties from all regions reported birds, which are twice as many counties as last summer. Breeding confirmed in 28 counties, four times the number of counties as 2014. [+60.8%]

Snowy Owl—For the second summer in a row, a bird lingered near the intersection of Highway 57 and County Road C (Door County) from 1–23 June by mob. It was last sighted by Krouse. This makes it the 17th summer record.

Barred Owl—Reports came from a record high 59 counties statewide, an increase from last year's 47 counties. Breeding confirmed in 18 counties, three times the number of last year's counties. Another 15 counties contained probable breeders. [+31.6%]

Long-eared Owl—This secretive owl was spotted in two counties this summer: Up to two birds that were part of a family group continuing from May (see Spring Report 2015) in Dane* County were observed from 1–13 June by mob, which was last seen by Schilke, and one bird was in the Newman Lake area (Price County) on 1 June by Krakowski. Dane County is the fifth county to have a confirmed breeding record of this species in the state.

Short-eared Owl—Up to two birds were viewed at Buena Vista WA (Portage County) on 1, 2, and 30 June and 11 July by the Tricks and Rick Anderson. Another bird was found at Leola Marsh WA (Adams County) on 19 July by Kreiss and Mertens. Last year only Portage County reported birds.

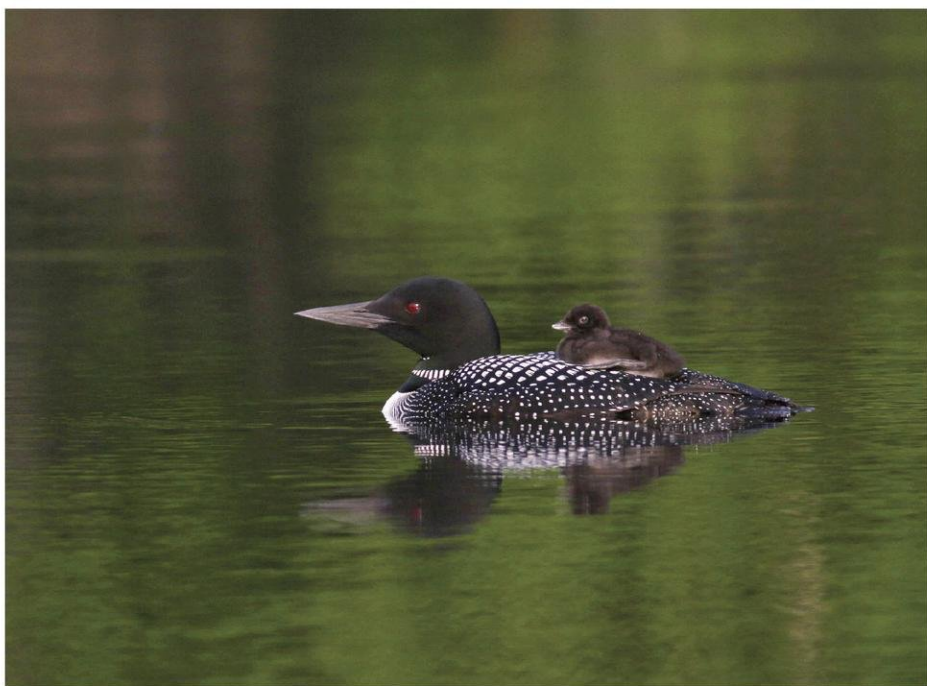
Northern Saw-whet Owl—Seven counties contained birds, a record high (compare to five counties in 2014). All reports were of single birds: Adams County on 19 July (Ford-Hutchinson), a fledgling in Door* County on 3 June (Squier), an individual defending its territory in Eau Claire* County on 5 July (Walton), Forest County on 28 June (Spahn), Rusk County on 22 July (Prestby), Taylor County on 3 July (Jeff Dawson and Goldthwait), and Vilas County on 26 June (Spahn).

Common Nighthawk—Forty-eight counties across the state—a record high—reported birds. This is up substantially from last summer's 29 counties. Forty-two individuals were counted by Jesse Ellis at Interstate SP (Polk County) on 4 June. Adams, La Crosse* (Hamilton), Marinette, and Vilas Counties contained confirmed breeders. Another 13 counties noted probable breeding. [+47.7%]

Chuck-will's-widow*—For the third year in a row, an individual returned to Kettle Moraine



Michael Huebschen in Juneau County found this Whooping Crane family in June 2015.



Jim Edlhuber in Sawyer County found this Common Loon with young on its back in July 2015.



David Franzen discovered this very young Chestnut-sided Warbler in Vilas County in July 2015.

SF on both the Jefferson County and the Walworth County sides of Young Road, where it was heard by many. The bird was first relocated on 4 May by Bridge and it was last reported on 5 July by M. Evanson and Schwartz. No formal documentation was provided for this bird. Probable breeding in Jefferson and Walworth Counties.

Eastern Whip-poor-will—Reports came from 48 counties statewide, a record high (compare to 30 counties in 2014). Black River SF's Battle Point Road (Jackson County) contained 12 birds on 10 June by Otto, less than half of last year's high counts. Marquette County confirmed breeding, and another 23 counties found probable breeding. [+53.2%]

Chimney Swift—Reported from a record high 70 counties, with only Langlade and Menominee Counties not reporting birds (compare to 63 counties in 2014). The high count this year was less than half of last year's high count: P.

Hayes watched 175 individuals fly in to roost at the Vernon County Museum on 14 June. Twenty-five counties confirmed breeding. [+8.8%]

Ruby-throated Hummingbird—Reported from a record high 71 counties; only Menominee was missing from the list. Lund counted 36 birds at Hazel Run (Clark County) on 19 and 27 June. Breeding confirmed in 38 counties, more than five times the number of counties as 2014.

Belted Kingfisher—Reported from 71 counties (excluding Menominee County), a record high. No report exceeded 10 birds. Breeding confirmed in 39 counties, more than five times as many as last year's counties. [+10.6%]

Red-headed Woodpecker—Reported from a record high 57 counties in all regions (compare to 49 counties in 2014). P. Hayes counted 22 birds along Boghaunter Trail (Juneau County) on 31

July. Thirty counties contained confirmed breeders. [+24.4%]

Red-bellied Woodpecker—Reported in every county except Ashland and Iron, a record high (compare to 66 counties last summer). The maximum number of birds spotted at one time was 11 birds. Fifty-six counties confirmed breeding, including Bayfield* (W. Seeger), Douglas* (Nicoletti), Florence* (K. Kavanagh), Forest* (Maertz), Marinette* (C. Kluskens and Leitzke), and Vilas* (Besadny). This is nearly four times the number of counties as 2014. [+11.4%]

Yellow-bellied Sapsucker—A record high 59 counties statewide reported birds, with Waukesha County (Cassini) being the only one representing the southeast region. This is an increase from 45 counties in 2014. Spahn found 17 individuals along Briss Lake Impoundment Road (Forest County) on 28 June. Breeding confirmed in 46 counties including Dodge* (Pritchard), nearly four times the number of counties as 2014. [+21.2%]

Downy Woodpecker—Reported from every county, a record high. No report exceeded 15 birds. Sixty-one counties confirmed breeding, nearly four times as many as last year's counties. [+6.1%]

Hairy Woodpecker—Reported from every county except Shawano, a record high. Fifty-seven counties confirmed breeding. [+7.0%]

Black-backed Woodpecker—Five counties observed birds, a record high and a notable increase from the two counties in 2013 and 2014. Merkel found a bird in the bog north of FR 182 (Ashland County) on 21 June. Another was seen in the Bayfield County Forest on 5 July (M. Berg). Brule (Douglas County) contained another bird as observed by B. Collins on 18 June. Up to two were by the Pine River near Alvin (Forest County) on 2 and 10 July by Spahn and S. Haas, respectively, and Spahn saw four birds in a family group on Trail CTH (Vilas County) on 12 July. Probable breeding was found in Forest County.

Northern Flicker—Reported from every county except Pepin, a record high. No count exceeded 14 birds. Fifty-four counties contained confirmed breeders, over five times the number of counties as last year.

Pileated Woodpecker—Reported from a record high 66 counties statewide. Breeding confirmed in 27 counties, a substantial increase from last year's five counties. [+10.3%]

American Kestrel—Reported from 68 counties. This is a record high and is up slightly from last year's 62 counties. Thirty-four counties confirmed breeding, nearly seven times the number of counties in 2014. [+12.7%]

Merlin—A record high 34 counties from all regions except the southwest reported birds, including the following southern counties: Dodge (mob), Jefferson (Stutz), Kenosha (McCreary), and Milwaukee (Bontly and Zehner). Half of the counties fell in the northern tier. Last year's 22 reporting counties was the previous record high. Breeding confirmed in 19 counties, with a number of new breeding records: Barron* (M. Berg), Clark* (Walton), Dodge* (Bartholmais and Vant Hoff), Kewaunee* (Longmire), Marinette* (S. Haas and K. Kavanagh), Milwaukee* (C. Schwartz), and Waupaca* (O'Connell). Probable breeding observed in Bayfield and Forest Counties. [+70.0%]

Peregrine Falcon—Assuming there was no movement between sites, a minimum of 40 adults and offspring were counted in 23 counties scattered across all regions except the central and northwest (compare to 18 counties in 2014). Forty-three percent of the counties fell in the east-central and west-central regions. The number of counties is a record high, but the estimate of number of birds is identical to last year. Ashland, Brown, La Crosse, Manitowoc, and Ozaukee Counties contained confirmed breeders, and Crawford* County (J. Collins) noted probable breeding. [+35.3%]

Olive-sided Flycatcher—Late spring migrants were noted in Kewaunee, Ozaukee, and Portage (20 June by mob) Counties. Reports from the breeding range came from Ashland, Bayfield, Door, Florence, Forest, Sawyer, Taylor, and Vilas Counties (compare to 15 counties in 2014). No report exceeded two birds. Florence, Forest, and Taylor* (mob) Counties detected probable breeding. [-10.0%]

Eastern Wood-Pewee—Reported from every county, a record high. Fifteen was the maximum number of birds reported on any checklist. Forty-

five counties confirmed breeders, a substantial increase from last year's six counties. [+5.1%]

Yellow-bellied Flycatcher—Reports of late spring migrants came from Milwaukee, Ozaukee, and Sauk (2 June by Mack) Counties. Summer range reports came from 17 counties fairly evenly distributed in all northern regions, which is an increase from the last two years' 13 northern counties. The maximum count was six individuals. Three birds found along a section of the Little Wolf River in Waupaca County on 27 June (O'Connell) were probably summer residents. Another bird at the Cedar Bog in Ozaukee County on 27 July was likely an early southbound individual (W. Mueller). Forest County confirmed breeding, and another six counties found probable breeding. [+21.1%]

Acadian Flycatcher—Reported from a record high 28 counties in the following regions: all southern (18 counties, with even county distribution), all central (nine counties), and Marathon County in the north (A. Staffen). This is a substantial increase from last year's 20 counties. The high count came from Waukesha County, where 11 birds were counted at the Scuppernong Ski and Hiking Trail in the Kettle Moraine SF on 6 June (Szymczak). See the Fall Report 2015 for last date sighted. Breeding confirmed in six counties including Rock* (Boone and Cullum). Fourteen more counties detected probable breeding, including Columbia* (Luthin) and Sheboygan* (C. Schroeder). [+32.3%]

Alder Flycatcher—Reported from 62 counties statewide, a record high (compare to 54 counties in 2014). Spahn counted 18 individuals at Powell Marsh on 16 July (Vilas County). Thirteen counties confirmed breeders, including Columbia* (Luthin). An additional 28 counties reported probable breeding. [+18.5%]

Willow Flycatcher—A record high 54 counties in all regions reported birds, including the following northern counties: Burnett, Door, Marathon, Marinette, Oconto, Polk, and Taylor. This is an increase from last year's 42 counties. Chiwaukee Prairie SNA (Kenosha County) contained 22 individuals on 21 June, as observed by E. Howe. Breeding confirmed in 19 counties, including Polk* (M. Berg). Another 26 counties noted probable breeding. [+20.4%]

Least Flycatcher—Reported from 69 counties, a record high (compare to 64 counties in 2014). Schilke conservatively estimated 30 birds at Allequash Lake (Vilas County) on 1 June. Thirty counties confirmed breeding, ten times the number of counties as last year. [+14.0%]

Eastern Phoebe—Reported from all counties, a record high. No count exceeded 11 birds. Breeding confirmed in 65 counties. [+5.6%]

Great Crested Flycatcher—Reported from a record high 72 counties. Fifteen birds were counted at Trempealeau NWR on 13 June (Prestby). Forty-four counties confirmed breeding, over five times the number of last year's counties. [+5.4%]

Eastern Kingbird—Reported from every county, a record high. High counts: Twenty-one birds in the Swift and Peters Lake area (Walworth County) on 17 July by M. Nowak and 20 birds at an Adams County site on 2 July (Bieber and Coker). Sixty-two counties confirmed breeding.

Scissor-tailed Flycatcher*—For the third summer in a row, this south-central U.S. species was recorded in the state. A WDNR crew originally found a male at Crex Meadows SWA (Burnett County) on 2 July. James Hansen and Reichhoff observed the bird later that day; the latter submitted photos.

Loggerhead Shrike—Bockhop observed a bird along Upper Road in Saxon (Iron County) on 5 June. R. Mueller saw another bird at Buena Vista WA (Portage County) on 2 June, and Persico found two birds and a nest in Bierbrauer WPA (St. Croix County) on 12 July. Last year two counties reported this species.

White-eyed Vireo—Four counties reported birds, which is twice as many as last year. Henriksen found a bird the UW-Madison Arboretum (Dane County) on 13 June and was observed by many others after until 23 June (Winesett). A. Holschbach encountered a pair of birds at the Arena Boat Landing (Iowa County; see note below) on 25 June, an individual was seen by many along the Glacial Drumlin State Trail between Lake Mills and Zeloski Marsh (Jefferson County) on 12, 24, and 25 June, and one more bird was detected in Yellowstone Lake SP (Lafayette County) on 6, 8, and 16 June by mob. Breeding confirmed in Iowa County by A.



Stephen Fisher photographed this Broad-winged Hawk in Oneida County in July 2015.

Holschbach. Jefferson County found probable breeding.

Bell's Vireo—Reports came from the south-central (three counties), southwest (five counties), and west-central regions (five counties), plus Fond du Lac (mob) and Winnebago (Hurlburt) Counties in the east-central region. This is a record high and slightly higher than last year's 12 counties. Ten birds were surveyed in the Tamarack Creek SWA (Trempealeau County) by R. Staffen on 25 June. Seven counties confirmed breeding, including Juneau* (Epstein) and Trempealeau* (R. Staffen). Fond du Lac* (Jeff Baughman and Frank), Green, and Lafayette Counties detected probable breeding. [+66.7%]

Yellow-throated Vireo—Reported from 66 counties statewide, a record high (compare to 61 counties in 2014). The Tricks encountered 15 birds along Cottonville Avenue (Adams County) on 2 June. Breeding confirmed in 26 counties, a substantial increase from last year's single county. [+10.0%]

Blue-headed Vireo—Reported from 25 counties in all regions, a small increase from last year's 23 counties. Sixty percent of the counties fell in the northern tier. Southern counties reporting birds after early June (i.e. potential summer residents) include Columbia (Luthin), Sauk (mob), and Waukesha (mob). Richmond encountered nine singing males in the Bailey Lake area (Forest County) on 22 July. Breeding confirmed in eight counties, four times the number of counties as 2014. Probable breeding reports came from an additional four counties. [-6.8%]

Warbling Vireo—Reported from every county except Rusk and Shawano, a record high (compare to 63 counties in 2014). DeBoer found 15 birds in Richard Bong SRA (Kenosha County) on 2 June. Forty-three counties confirmed breeding, a significant increase from last year's four counties. [+10.8%]

Philadelphia Vireo—Both reports occurred on 6 June: Riveredge NC (Ozaukee County) by Messer and Fisher found two birds along Blong Road (Vilas County). The latter sighting may have been of summer residents.

Red-eyed Vireo—Reported from all 72 counties. In the Long Lake atlas block (Florence County), S. Haas counted 66 birds on 6 June. Fifty-

three counties confirmed breeding, nearly five times the number of counties as last year.

Gray Jay—Seven counties contained birds, which is a record high and a turn-around from last year's single county, which was a record low. Up to four birds between three locations were found in Florence County (Kavanaghs), three birds were observed between three locations in Forest County (mob), four birds were at a site in Langlade County (Lapin), five birds were seen between three locations in Oneida County (mob), three individuals at a site in Price County (J. Krakowski), another four birds at a site in Sawyer County (Merkel), and 10 individuals between two locations in Vilas County (Spahn). Breeding confirmed in Ashland, Iron, Langlade* (Lapin), Oneida, Price, Sawyer, and Vilas Counties. Florence County noted probable breeding.

Blue Jay—Reported in all 72 counties. Brady encountered a late migratory group of 108 birds in the Bark Bay atlas block (Bayfield County) on 3 June. Sixty-four counties confirmed breeding.

American Crow—Reported in every county, with no report containing more than 68 birds. Breeding confirmed in 64 counties.

Common Raven—A record high 41 counties in all central and northern regions, as well as Sauk County (Jeffers) reported birds; compare to last summer's 35 counties. Aside from the southwest, the east-central region had the lowest number of counties (three). Brady counted 55 birds in the Moquah atlas block (Bayfield County) on 5 June. Breeding confirmed in 20 counties, nearly seven times the number of counties as last year. Probable breeding was found in another seven counties, including Outagamie* (Swelstad) and Wood* (Prestby). [+14.9%]

Horned Lark—Reported from a record high 47 counties scattered across the state (compare to 38 counties in 2014). Domagalski counted 66 birds on Sukowaty Farm (Manitowoc County) on 28 July. Twenty-four counties confirmed breeding, a substantial increase from last year's two counties. [+19.0%]

Northern Rough-winged Swallow—Reported from a record high 67 counties statewide (compare to 60 counties in 2014). The maximum count was 40 birds, about a quarter of last year's high count. Forty-one counties confirmed breed-

ing, nearly six times the number of counties as 2014. [+16.9%]

Purple Martin—A record high 50 counties from all regions reported birds (compare to 42 counties in 2014). Belter estimated 120 individuals at “Greg’s Purple Martin Colony” (Marathon County) on 14 June. Thirty-seven counties confirmed breeding. [+14.5%]

Tree Swallow—Reported from every county, a first. M. Benson estimated 500 birds along Osborne Road in Nepeuskun (Winnebago County) on 5 July. Breeding confirmed in 69 counties. S. Sample reports that BRAW monitors found 13,320 offspring fledged from bluebird nest boxes.

Bank Swallow—A record high 66 counties statewide reported birds, a considerable rise from last summer’s 49 counties. The two impressive high counts came from the CIWB area (Brown County): An estimated 1,800–2,000 individuals on 8 July (Prestby and Swelstad) and 1,200 birds on 1 July (Prestby and Walton). Breeding confirmed in 42 counties. [+23.4%]

Barn Swallow—Reported from all counties, a record high. Sixty-two counties confirmed breeding.

Cliff Swallow—Reported from a record high 67 counties in all regions (compare to 62 in 2014). M. Walsh estimated a breeding colony of 985 adults and chicks at the Rock Island boat-house (Door County) on 27 June. Breeding confirmed in 61 counties. [+7.2%]

Black-capped Chickadee—Reported in every county. The high counts each consisted of 40 birds: Myrick Marsh in La Crosse County on 11 July (Bonn) and S. Gregerson Road in Douglas County on 12 July (Nicolleti). Breeding confirmed in 67 counties. Offspring totaling 1,311 individuals fledged from bluebird nesting boxes monitored by BRAW members (S. Sample).

Boreal Chickadee—The following three counties reported this species (similar to two counties in 2013 and 2014): One bird was at Wheeler Lake (Florence County) by the Kavanaghs, eight individuals were found between five locations in Forest County (mob), and another was sighted on Stella Lake Road (Oneida

County) by Lapin. Forest County confirmed breeding.

Tufted Titmouse—Forty-two counties—a record high—held birds this summer. Reports were evenly distributed between all southern, central, and west-central regions. Outliers were found in Fond du Lac (Volkert), Marathon (Nordstrom), Taylor (Roti Roti), and Winnebago (Uslabar) Counties. Only 32 counties reported birds in 2014. Eight birds were seen in the Edgerton atlas block (Rock County) by Haycraft and Yoerger on 27 June. Breeding confirmed in 23 counties, including Adams* (Evanson), Fond du Lac* (Volkert), Green Lake* (Roti Roti and T. Schultz), and Pierce* (fide B. Sample). Four more counties, including Buffalo* (Harriman and Schwartz) and Dodge* (Bartholmais), found probable breeders. [+34.8%]

Great Tit—Since the presumed release of several European songbird species in the Chicago area in Illinois in 2002, birds are being encountered in the western Great Lakes region with greater frequency. The two reports this summer came from Ozaukee County: An individual was observed at Harrington Beach SP on 5 June (Sommer) and two birds were found on Jay Road Beach on 11 July (Hopwood). Both reports confirmed breeding. None were reported last summer.

Red-breasted Nuthatch—A record high 58 counties in all regions reported birds, a significant increase from last year’s 44 counties. Twenty-six individuals were spotted along the Heart Lake Game Trail (Vilas County) on 17 July by Spahn. Thirty-four counties confirmed breeding, a substantial increase from last year’s three counties. New breeding records include Iowa* (A. Holschbach), Racine* (E. Howe), and Sauk* (A. Holschbach) Counties. [+18.0%]

White-breasted Nuthatch—Reported from every county, a record high. The Schlitz Audubon Record indicates that 46 birds were counted at Schlitz Audubon NC (Milwaukee County) on 23 June. Breeding confirmed in 62 counties, more than five times the number of counties as 2014. [+5.1%]

Brown Creeper—Reported from a record high 30 counties in all northern and central regions (compare to 26 counties in 2014), plus Dodge County (Schaefer and Szymczak). Ap-

proximately two-thirds of the counties were in the northern tier. No report exceeded five birds. Ten counties confirmed breeding and another three detected probable breeding. [+30.4%]

House Wren—Reported from all counties, a record high. Confirmed breeding in 62 counties. S. Sample and fellow BRAW members counted 4,777 young that fledged from bluebird nest boxes.

Winter Wren—Twenty-nine counties in all regions—a record high—reported the species (compare to 22 counties last summer). About half of all counties were from the northeast and north-central regions. All southern counties (all of which were in June): Dane (Dischler), Milwaukee (Huf), Ozaukee (O'Donnell and Sommer), and Sauk (mob). The maximum count was eight birds. Breeding confirmed in six counties and another 15 counties found probable breeders. [+27.9%]

Sedge Wren—Reported from a record high 65 counties in all regions, which is a considerable increase from last year's 51 counties. No count exceeded 45 birds. Twenty counties confirmed breeding, a substantial increase from last year's two counties. Probable breeding was found in an additional 29 counties. [+17.1%]

Marsh Wren—Reports came from 56 counties statewide, which is a record high and a noticeable increase from 45 counties in 2014. The maximum count was 85 birds. Breeding confirmed in 23 counties, nearly six times the number of counties as 2014. Another 16 counties noted probable breeders. [+25.8%]

Carolina Wren—Only eight counties reported birds this summer: Crawford (Kirschbaum), Dane (mob), Eau Claire (Betchkal), Grant (Shealer and Thiele), Green Lake (T. Schultz and W. Schultz), Rock (Cullum), Sauk (Heikkinen), and Winnebago (Uslabar). This is down from 10 counties in 2014. Green Lake* (mob) County confirmed breeding, which is only one of a few counties to confirm breeding in the state. Crawford, Dane, Eau Claire* (Betchkal), and Grant Counties detected probable breeding. [-11.1%]

Blue-gray Gnatcatcher—A record high 63 counties statewide reported birds, with nearly a quarter of those counties being from the north-

ern tier. This is a substantial increase from last year's 46 counties, only three of which were northern counties. The Urban Ecology Center reported 18 individuals at Fellenz Woods (Washington County) on 6 June. Breeding confirmed in 37 counties. [+26.4%]

Golden-crowned Kinglet—Nineteen counties—a record high—contained birds this summer, which is nearly double of last year's 10 counties. The majority were from the northern regions, with the north-central containing 42% of all counties. These east-central and southeastern counties were outliers: Fond du Lac (A. Holschbach and J. Holschbach), Racine (E. Howe), and Waukesha (Szymczak). Merkel counted 19 individuals in a bog north of FR 182 (Ashland County) on 12 July. Twelve counties confirmed breeding, including Racine* (E. Howe) and Waukesha* (Schaefer and Szymczak) Counties. Probable breeding in Fond du Lac County. [+50.0%]

Ruby-crowned Kinglet—Six counties held birds, similar to the past two years' five counties: Douglas (Nicoletti), Florence (Kavanaghs), Bayfield (Anich), Forest (mob), Price (Parker), Shawano (Wilken), and Vilas (mob). Douglas* (Nicoletti) County confirmed breeding, and Florence and Forest Counties detected probable breeding.

Eastern Bluebird—Reported from every county except Langlade. Monitors on behalf of BRAW documented 31,330 birds fledged from bluebird nesting boxes (S. Sample), which is more than the past two years' approximate 23,000 individuals but is not at the height of fledged birds in 2012, when over 36,000 birds fledged. Sixty-nine counties confirmed breeding.

Veery—Reported from 67 counties statewide, which is up from last summer's 57 counties and is a record high. Prestby encountered 22 birds along County Road W (Rusk County) on 5 July. Breeding confirmed in 23 counties, a substantial increase from last year's four counties. Twenty-nine more counties noted probable breeding. [+19.6%]

Swainson's Thrush—Tessen noted a late spring migrant in his yard in Outagamie County on 16 June. The following four county reports came from the breeding range: Apostle Islands National Lakeshore and another site in Bayfield

(D. Meyer and Geraghty, respectively), St. Croix National Scenic Riverway in Burnett (Jacisin), an unspecified site in Douglas (LaValleys), and Mount Whittlesey and Upson atlas blocks in Iron (mob). Two counties found early southbound birds: Milwaukee on 27 and 29 July (Bontly and Zehner) and Portage on 27 July (Schaufenbuel). This is comparable to six counties in 2014.

Hermit Thrush—Reported from 31 counties in all central and northern regions, an increase from 25 counties in 2014. Nearly three-quarters of all counties were from the northern tier. Twenty-six individuals were counted by Spahn in the Stormy Lake area (Vilas County) on 26 June. Breeding confirmed in 19 counties, a huge increase from last year's single county. An additional six counties found probable breeders. [+6.9%]

Wood Thrush—Reported from every county except Menominee and Vilas, a record high and a considerable increase from last year's 59 counties. The maximum count was 10 birds. Fourteen counties confirmed breeding, a noticeable increase from two counties in 2014. Forty counties detected probable breeding. [+18.3%]

American Robin—Reported in all 72 counties. A roost flight of 1,600 birds was estimated on Kettle Moraine Road (Washington County) on 26 July by Schaefer. Breeding confirmed in every county except Langlade and Menominee Counties.

Gray Catbird—Reported from every county, a record high. Thirty-two birds were counted at a site in Lake Mills (Jefferson County) on 25 June by Stutz. Sixty-seven counties confirmed breeding. [+5.1%]

Brown Thrasher—Reported from every county except Rusk, a record high. The high count of 18 birds came from a site in Adams County on 2 July (Bieber and Coker). Breeding confirmed in 50 counties. [+12.4%]

Northern Mockingbird—A record high nine counties reported birds, almost twice of last year's five counties: Burnett (Haseleu), two birds in Door (K. Larson and Berggren), a family group in Eau Claire (mob), Green (J. Kivikoski), Iowa (Nechvatal), Iron (Bates and Burns), Juneau (Greene), Rock (Smallwood), and Vilas (Spahn). Six birds in the family group in Eau

Claire County were sighted on 26 June (J. Polk). Door and Rock* (Smallwood) County noted probable breeding.

European Starling—Reported from all counties, a record high. Prestby estimated 300 birds at the intersection of County B East and Ledge Lane (Oconto County) on 17 July. Breeding confirmed in 66 counties.

Cedar Waxwing—Reported in all 72 counties. Brady saw 195 migrants in the Bark Bay atlas block (Bayfield County) on 3 June. Sixty counties confirmed breeding, over four times the number of counties in 2014.

Ovenbird—Reported from every county except Lafayette, a record high. Stutz encountered 41 individuals along the Flambeau Breeding Bird Survey route (Sawyer County) on 29 June. Thirty-six counties confirmed breeding, six times more than last year's counties. [+9.0%]

Louisiana Waterthrush—Ten counties reported this species, an increase from six counties in 2014 and a record high: Dunn (Hogseth), Grant (Thiele), Iowa (mob), Monroe (Epstein and D. Nelson), Ozaukee (Bontly and Zehner), Pepin (Harriman and Schwartz), Polk (Jesse Ellis), Sauk (mob), Vernon (P. Hayes), and Waukesha (Winze). See Fall Report 2015 for last dates seen. Jesse Ellis tallied nine birds from several families along the Meadow Valley Trail at Interstate SP (Polk* County) on 11 June. Iowa County also confirmed breeding, and Dunn, Grant, and Pepin found probable breeders.

Northern Waterthrush—Reported from a record high 32 counties in all central and northern regions, in addition to Ozaukee County (Cutright and O'Donnell). Over two-thirds of the reports came from the northern tier. This is nearly twice as many counties as the 17 reporting counties in 2014. High counts of seven birds were noted in two locations: Kohler Peet Cedar Swamp in Burnett County on 16 June (Hoefer) and South Turtle Lake in Vilas County on 12 June (N. Bentley and Lumpkin). Six counties confirmed breeding, including Burnett* (Hoefer) and Douglas* (M. Berg and Nicoletti). Another 12 counties detected probable breeding. [+71.4%]

Golden-winged Warbler—Reports came from a record high 30 counties in all central and northern regions, in addition to a late bird on 16

June in Milwaukee (mob). This is a noticeable increase from last year's 24 counties in five regions. More than a quarter of the counties were in the northwest region. Counts of 10 birds were noted in several locations. Seventeen counties confirmed breeding, a noticeable increase from last year's single county. An additional three counties noted probable breeders. [+20.8%]

Blue-winged Warbler—Reported from a record high 52 counties in all regions, a substantial increase from last year's 41 counties. All northern reporting counties: Barron, Burnett, Door, Marathon, Marinette, Polk, Rusk, and Taylor. Note that half of the northern counties are in the northwest region. Ten birds were observed in North Bend Bottoms in Jackson County on 10 June (R. Staffen). Breeding confirmed in 22 counties and 19 counties found probable breeding. [+30.5%]

Brewster's Warbler—The Kavanaghs found a male defending a territory since 16 May along S. Pentoga Road and Hemlock Lake (Florence* County) on 16 June. This is the first summer report of this hybrid since 2013.

Black-and-white Warbler—A record high 49 counties statewide reported birds (compare to 40 counties in 2014). The number of counties varied little between all central and northern regions. All southern counties: Dodge, Milwaukee, Ozaukee, and Sauk. Nicoletti found 14 individuals along Empire Wilderness Road (Douglas County) on 9 July. Breeding confirmed in 26 counties, a substantial increase from two counties in 2014. [+21.5%]

Prothonotary Warbler—Reports came from 21 counties in all regions except the northeast, a record high (compare to 15 counties last year). About three-quarters of the counties are from south-central, southwest, and west-central regions. The two northern reports came from Marathon (Barker) and Polk (M. Berg and Jesse Ellis) Counties. No report exceeded eight birds. See the Fall Report 2015 for the last date the species was sighted. Breeding confirmed in eight counties and four more counties detected probable breeders. [+53.7%]

Tennessee Warbler—Nine counties held birds, nearly double of five counties in 2014. Late spring migrants were found in Bayfield, Brown, and Jefferson (5 June by Daniel Schneider)

Counties. Single singing males in Forest County on 2 July (Peczynski) and Rusk County on 29 June (Stutz) may have been breeding birds. Fall migration was first detected in Portage County on 11 July (Schaufenbuel) then 19 and 23 July in Bayfield County (Brady). Clark, Florence, and Wood Counties noted southbound birds as well.

Nashville Warbler—Reported from 42 counties—a record high—from all central and northern regions, in addition to Ozaukee (breeding confirmed by mob) and Walworth (Boone) Counties in the southeast (compare to 31 counties in 2014). Thirty-eight percent of all counties were located in the north-central and northwest regions. The high count was of 22 birds at two locations: Brule River (Douglas County) on 23 June by B. Collins and ATV Trail #421 in Sawyer County on 28 June (Merkel). Twenty-four counties confirmed breeding, nearly five times the number of counties in 2014. Probable breeding was found in seven counties. [+28.6%]

Connecticut Warbler—A late northbound individual was seen on 4 June in Milwaukee County (Bontly). Only two breeding range counties reported birds, a significant decrease from five counties last year: Bayfield (mob) and Douglas (mob) Counties. The two high counts were both of nine birds in Bayfield County on 10 July: West Church Road/South County Line Road junction (M. Berg) and along Bingo Road (B. Collins). Bayfield County confirmed breeding and Douglas County found probable breeding.

Mourning Warbler—A record high 59 counties from all regions held birds (compare to 44 counties in 2014). Nineteen birds were counted along an unnamed logging road in Sawyer County on 12 July (Merkel). Twenty counties confirmed breeding, five times the number of last year's counties. Probable breeding was found in 19 counties. [+37.7%]

Kentucky Warbler—There are only two reporting counties for this species this year, half of last summer's four counties: Grant County (three locations by mob) and Vernon County (two locations by Duerksen and Epstein). See the Fall Report 2015 for last date seen. Grant County confirmed breeding and Vernon County had probable breeding.

Common Yellowthroat—Reported from every county, a record high. Stutz estimated 75

birds in Zeloski Marsh (Jefferson County) on 24 July. Breeding confirmed in 61 counties.

Hooded Warbler—Reports came from a record high 22 counties in all regions except the northwest (compare to 15 counties in 2014). Forty-five percent of these counties were in the southeast and southwest regions. Northern sightings included Florence (K. Kavanagh) and Vilas (Peczynski) Counties. Bridge counted 10 birds in the Blue Spring Unit of the Kettle Moraine Oak Opening SNA (Jefferson County) on 11 July. Eight counties confirmed breeding. An additional four counties detected probable breeding. [+43.5%]

American Redstart—Reported from all 72 counties, a record high. Thirty birds were estimated at Peninsula SP (Door County) on 21 June by Dinnon. Breeding confirmed in 57 counties, more than five times the number of counties in 2014. [+8.0%]

Kirtland's Warbler—On behalf of USFWS and WDNR, Grveles reports that the 2015 census detected 14 males at the Adams County site, two at the Bayfield County site, and three at the Marinette County site, all of which are increases from last year's census. Between the census and the period outside of the census, 21 males total were found in the state. At least 14 females were present at the Adams County site, double that of 2014. Fourteen pairs had thirteen successful nests (and two unsuccessful nests) that fledged 34–51 offspring, a huge increase from 8–10 offspring in 2014! Additionally, Marinette County hosted a female that successfully fledged two young between 28 and 30 July, making for the latest recorded fledging date in the state. Marinette County did not confirm breeding last year. The total number of adults and offspring in Wisconsin this summer was between 72 and 89 birds; in 2014 the maximum total was 30 individuals. The last observation date was on 31 July, where a female was seen carrying food in Marinette County. This family likely stuck around well into August, as Grveles states this is typical of Kirtland's Warblers in Wisconsin. Summer 2015 was the most successful breeding season in the state for this federally endangered bird.

Cape May Warbler—An outstanding 13 counties contained birds, a record high: Ashland, Bayfield, Door, Douglas, Florence, Forest, Iron, Marinette, Oconto, Oneida, Price, Sawyer, and

Vilas. This is more than double the five counties in 2014. Douglas, Forest, and Price Counties confirmed breeding; none were confirmed last year. Bayfield and Oneida Counties noted probable breeding.

Cerulean Warbler—A record high 21 counties from all central and southern regions reported birds, in addition to Barron (Prestby) and Polk (B. Collins and D. Larson) Counties in the northwest (compare to 16 counties last year). The southeast and southwest regions contained 52% of the counties. Ten birds were counted at Wyalusing SP (Grant County) on 1 June by Buehler. See the Fall Report 2015 for the last date seen. Grant and Walworth Counties confirmed breeding. Another six counties found probable breeders including Polk* (B. Collins). [+41.6%]

Northern Parula—Twenty-three counties in all northern and southern regions contained birds, a record high. County distribution was fairly even across the northern tier. All southern counties: Dane, Grant, Milwaukee, Racine, and Waukesha Counties. M. Berg found 19 individuals along a section of the Brule River (Douglas County) on 4 July. Six counties confirmed breeding. Probable breeding was detected in seven counties, including Grant* (Thiele) and Waukesha* (Szymczak). [+23.2%]

Magnolia Warbler—Twelve counties spanning the northern tier reported birds, and these four counties in central and southern regions contained individuals: Columbia (6 June by Scheffer), Manitowoc (two on 21 June by Michael Kloepping), Milwaukee (1 June by Foss), and Waupaca (4 June by M. Gray). This record high is a notable increase from last year's 12 counties. Nearly a third of all the counties were in the north-central region. S. Haas counted eight birds in the Helen Lake atlas block (Vilas County) on 23 June. Breeding confirmed in six counties; none were confirmed last year. Two counties found probable breeders. [+20.0%]

Blackburnian Warbler—Reports came from 20 counties evenly distributed in all northern regions, plus the following four central and southern counties: Adams (13 June by Hannah), Grant (5–17 June by mob), Manitowoc (13–23 June by mob), and Sheboygan (27 July by Frank; probable early fall migrant). This is the same number of reporting counties as last year. Nicoletti counted 10 birds along S. Gregerson Road (Dou-

glas County) on 29 June. Nine counties confirmed breeding this year, while no evidence was found last year. Probable breeding was noted in four counties. [+16.1%]

Yellow Warbler—Reported in every county except Menominee, a record high. The two high counts were of 32 individuals on 25 June: Lake Mills atlas block (Jefferson County) by Stutz and Arena Boat Landing (Iowa County) by A. Holschbach. Breeding confirmed in 59 counties, more than four times the number of counties as 2014.

Chestnut-sided Warbler—A record high 60 counties statewide reported birds (compare to 46 counties in 2014). About 20% of all counties came from the southern tier. K. Kavanagh counted 28 individuals at Dunbar Barrens SNA (Marinette) on 3 June. Breeding confirmed in 30 counties, including Kenosha* (E. Howe), Milwaukee* (Strelka), and Ozaukee* (O'Donnell). [+24.1%]

Blackpoll Warbler—A lingering spring migrant was found in the Point Sable atlas block (Brown County) on 3 June by Beilke.

Black-throated Blue Warbler—Reports came from the following 12 counties, a record high (compare to nine counties in 2014): Ashland, Bayfield, Door, Douglas, Florence, Forest, Iron, Langlade, Marinette, Oconto, Sawyer, and Vilas. On 8 June and 1 July, N. Anich counted five birds along Upson CE's Main West Road (Iron County). Forest, Iron, and Vilas Counties confirmed breeding, and another four contained probable breeders. [+44.0%]

Palm Warbler—Fourteen counties—a record high—contained birds this summer (comparable to 12 counties in 2014). Reports spanned across the northern regions, plus Wood County (Prestby). The north-central region contained 42% of the counties. Bingo Road in Bayfield County held eight birds on 10 July (B. Collins). Ashland, Bayfield, Forest, and Price Counties confirmed breeding; no breeding evidence was found last year. Oneida, Vilas, and Wood* (Prestby) Counties found probable breeding. [+35.5%]

Pine Warbler—Reported from a record high 54 counties from all regions (compare to 41 counties in 2014). No more than 12 birds were

reported at one time. Breeding confirmed in 23 counties, including Iowa* (A. Holschbach and J. Kivikoski), Ozaukee* (Frank), Sauk* (A. Holschbach), and Waukesha* (Szymczak). No breeding was confirmed last year. Twelve counties noted probable breeding including Columbia* (Schwalbes and Shealer). [+24.6%]

Yellow-rumped Warbler—Reports came from a record high 29 counties in all central and northern regions except east-central. This is a substantial increase from last summer's 19 reporting counties. The north-central region held 27% of the counties. Spahn found 18 birds near County Highway K (Vilas County) on 1 July. Fourteen counties confirmed breeding and seven counties contained probable breeders. [+18.4%]

Yellow-throated Warbler—As per usual, the only reporting county for this species is Grant County, where four birds were seen between the following three locations: Birds originally found on 26 April (see Spring Report 2015) at Wyalusing SP were seen throughout the summer by mob. Cassville and Dewey Nelson SP (both Thiele) also contained individuals. See Fall Report 2015 for the final date seen. Breeding confirmed in Grant County.

Prairie Warbler—Two reporting counties: A male initially found on 20 May at the Jersey Flats unit of Kettle Moraine SF (Fond du Lac County) by Jeff Baughman and Maertz was seen through 15 June by mob. Another bird first found on 3 May in the Scuppernong Ski and Hiking Trail of Kettle Moraine SF (Waukesha County) only lingered through 6 June (first and last sightings by Szymczak). Fond du Lac* (C. Schroeder) and Waukesha Counties detected probable breeding.

Black-throated Green Warbler—Reported from 29 counties in all regions except the southwest and west-central (compare to 31 counties in 2014). More than half of the counties were in the north-central and northeast regions. Little Big Marsh in Door County hosted 58 birds on 5 June (Sweets). Breeding confirmed in 15 counties, including Sheboygan* (mob). This is a substantial increase from last year's two confirmed breeding counties. Another two counties found probable breeders.

Canada Warbler—Reports came from a record high 25 counties from all central and

northern regions. A southern report came from Ozaukee County on 23 June (W. Mueller). Most counties were from the northern tier, where county distribution was even across all regions. This is a notable increase from last year's 20 counties. Lapin counted seven birds in Woodboro (Oneida County) on 8 June. Seven counties confirmed breeding; no counties were confirmed last year. Another five counties noted probable breeders. [+30.4%]

Wilson's Warbler—Late northbound migrants were detected in Manitowoc (2 June by Sontag) and Milwaukee (1–4 June by Foss et al.) Counties. An apparent pair was found in the Rock Island atlas block on 1 June by K. Larson and M. Walsh and two more possibly late spring migrants were sighted on Washington Island from 2–4 June by M. Walsh (both in Door County). A lone bird at the Superior Municipal Forest (Douglas County) on 1 June by the Kraemers may have been a summer resident as well. This was a much more productive summer for the species compared to last year's single county report. Door* County (K. Larson and M. Walsh) detected probable breeding at both locations, marking only one of two breeding records in the state. The other was Bayfield County, which was discovered during WBBA I. However, breeding is yet to be *confirmed* for this species.

Yellow-breasted Chat—Four counties held birds, which is similar to five counties last year: A bird was first sighted at the UW-Madison Arboretum (Dane County) on 2 June by M. Bailey and Henrikson then viewed by many others until 23 June (mob). Another Dane County individual was found by Thiessen at Hook Lake SWA on 16 June. A bird occupied Eagle Valley Nature Preserve (Grant County) from 11 May–31 July by Thiele. Reese found another individual at a site in Trempealeau County on 10 July, and one more bird was first detected at Kettle Moraine Low Prairie SNA (Waukesha County) on 28 May by D. Gustafson which was seen by many others and remained until 19 June (Dabey). See the Fall Report 2015 for last date seen. Dane and Grant Counties held probable breeders.

Grasshopper Sparrow—Reported from 40 counties scattered across the state, a rebound from 26 counties in 2014. A quarter of the counties were from the west-central region. The Badger Drop Zone in Monroe County contained 45 birds on 20 June (Nevins), more than double

of last year's high counts. Eleven counties confirmed breeding, a notable increase from last year's single county. An additional 15 counties contained probable breeders. [+11.1%]

Henslow's Sparrow—Reports came from 32 counties in all central and southern regions, with the only northern report coming from Polk County (M. Berg). This is comparable to last year's 30 counties. The west-central region contained a quarter of the counties. J. Kivikoski observed 16 birds along Lawinger Road (Iowa County) on 27 July. Seven counties confirmed breeding, including Dunn* (P. Campbell and Hogseth), Milwaukee* (Lubahn), and Waukesha* (Dabey and Szymczak). Probable breeding was found in 12 counties, including Ozaukee* (Sommer) and Trempealeau* (R. Staffen). [+8.5%]

Le Conte's Sparrow—Reported from the following seven counties: Ashland (three locations by mob), Bayfield (Northern Great Lakes Visitor Center and unspecified atlas block by N. Anich and Brady), Burnett (Crex Meadows SWA by Huber and Kinslow), Douglas (Rudolph Road and Windy Lane in Brule by M. Berg), Oneida (Thunder Lake SWA by L. Erickson and Spahn), Vilas (East Boundary Trail and Powell Marsh SWA by Marshall and Schilke, respectively), and Wood (Ball Road by Prestby). This is the same number of reporting counties as the past two years, and six of the seven are the same counties as last year. No more than two birds were reported at a time. Ashland, Bayfield, and Wood Counties detected probable breeding.

Nelson's Sparrow—After a two-year hiatus, Schmoker and the Gaylord Nelson Audubon Chapter observed two birds at Crex Meadows SWA (Burnett County) on 6 June.

Chipping Sparrow—Reported from all 72 counties, and every county except Menominee and Shawano confirmed breeding. Fifty birds were estimated by Bieber and Coker at a site in Adams County on 2 July.

Clay-colored Sparrow—Reported from a record high 64 counties statewide (compare to 58 counties in 2014). B. Collins observed 32 birds along Bingo Road (Bayfield County) on 10 July. Thirty-eight counties confirmed breeding, including Dodge* (mob), Fond du Lac* (mob), Iowa* (J. Kivikoski), Jefferson* (Stutz), and Wal-

worth* (Bridge). Less than a fifth of these counties contained confirmed breeders last year. [+10.7%]

Field Sparrow—A record high 64 counties statewide contained birds, an increase from last year's 58 counties. Bieber and Coker found 35 birds at a site in Adams County on 2 July, which is nearly twice that of last year's high count. Breeding confirmed in 42 counties, six times the number of counties as last year. [+12.0%]

Lark Sparrow—Reports came from a record high 24 counties in all southern regions, central, and west-central regions (compare to 17 counties in 2014). Unusual were these two northern reports, especially the latter: Burnett (mob) and Oneida (David and NLDC Birders) Counties. Thirty percent of the counties were from the west-central region. The high count came from Sauk County, where several groups comprising 18 birds were seen at the eastern section of Spring Green Preserve on 7 July (A. Holschbach). Thirteen counties confirmed breeding, including Burnett* (Hudick), Columbia* (Doverspike), Jefferson* (Bridge), Marquette* (Christensen and Stauffer), Oneida* (David and NLDC Birders), and Waupaca* (mob). Less than a quarter of these counties confirmed breeding last year. Another nine counties contained probable breeders, including Adams* (Evans and Obukowicz, Dane* (mob), Jackson* (R. Staffen), and Walworth* (Bridge). [+52.9%]

Dark-eyed Junco—Reported from the following eight northern counties: Ashland (P. Lindstrom), Bayfield (mob), Door (DeNoto), Douglas (P. Hayes and Nicoletti), Forest (Richmond and Spahn), Iron (Lumpkin and Matula), Marinette (S. Haas), and Vilas (mob). Interesting were two birds in Grant County on 9 June (Duerksen), perhaps late spring migrants. This is an increase from last summer's seven reporting counties. No report exceeded six birds. Bayfield, Douglas, and Vilas Counties confirmed breeding; no counties were confirmed last year. Marinette County contained probable breeders. [+12.5%]

White-crowned Sparrow—For the second summer in a row, this species had an impressive showing with five counties reporting: Bayfield County on 27 July, perhaps an early southbound bird (Brady), Door County on 4 and 22 June, the former a late spring bird and the latter a potential summer resident (M. Walsh and Shumway, re-

spectively), Marinette County on 24 June, potentially an over-summering individual (K. Kavanagh), Milwaukee County on 3 June, a late northbound migrant (Lubahn), and two locations in Racine County on 9 and 14 June, late spring birds (E. Howe and D. Goldberg, respectively). This is a record high number of reporting counties for the summer season.

White-throated Sparrow—A record high 32 counties scattered across the state reported birds (compare to 27 counties last year). All southern counties: Dodge (B. Bauer), Grant (Coglan; probable summer resident), Jefferson (Stutz; potential summer resident), Milwaukee (Goodman), Ozaukee (W. Mueller and O'Donnell; over-summering birds), and Washington (Faith and Shaefer; the latter observer saw over-summering birds). Nearly 60% of the counties are in the northern tier. Twenty-eight individuals were found near FR 182 (Ashland County) on 12 July by Merkel. Breeding confirmed in 15 counties, a substantial increase from last year's two counties. Another five counties noted probable breeding. [+16.4%]

Vesper Sparrow—Fifty-six counties statewide, a record high, reported birds (compare to 47 counties last year). A. Kearns found 25 birds in the North Unit of Namekagon Barrens SWA (Burnett County) on 15 July, and Nicoletti encountered 24 individuals at a site in Douglas County on 18 June. Twenty-three counties confirmed breeding, a notable increase from three counties in 2014. Probable breeding was detected in 18 counties. [+13.9%]

Savannah Sparrow—Reported from 69 counties. The maximum count was 39 birds. Breeding confirmed in 37 counties, more than seven times the number of counties in 2014.

Song Sparrow—Reported from all 72 counties. Stutz estimated 125 birds at Zeloski Marsh (Jefferson County) on 24 July. Sixty-three counties confirmed breeding.

Lincoln's Sparrow—Reports came from a record high 17 counties in all northern regions plus these two counties: Ozaukee (Michael Kloepping) and Wood (Prestby). This is a noticeable increase from 13 counties last year. The majority of the northern counties were from the north-central and northeast regions. No count exceeded eight individuals. Eight counties con-

firmed breeding, another increase from last year's single county. An additional two counties found probable breeders. [+41.7%]

Swamp Sparrow—Reported from a record high 67 counties (compare to 61 counties in 2014). Heikkinen and Unson found 43 birds along Dike Road in Horicon NWR (Dodge County) on 4 June. Breeding confirmed in 42 counties, six times the number of counties in 2014. [+5.8%]

Eastern Towhee—Reported from a record high 69 counties (compare to 59 counties in 2014). Fifty birds—more than twice of last year's high count—were estimated in the north unit of Namekagon Barrens SWA (Burnett County) on 15 July by A. Kearns. Another 45 individuals were estimated in Crex Meadows SWA (also Burnett County) on 27 June by J. Kaminski. Thirty-three counties confirmed breeding. [+11.3%]

Scarlet Tanager—Reported from every county except Menominee and Winnebago, an increase from 60 counties in 2014 and a record high. No tally exceeded 10 birds. Breeding confirmed in 37 counties, a huge increase from two counties in 2014. [+13.5%]

Western Tanager*—A male was encountered at Bay Beach Wildlife Sanctuary (Brown County) on 13 June by Dave and Margaret Brasser. In addition to their documentation (see *By the Wayside*), Tessen also saw and documented the bird.

Northern Cardinal—Reported from 69 counties, a record high. Two locations contained 19 birds: Albany atlas block (Green County) on 12 July by Yoerger and Mazomanie atlas block (Dane County) on 11 July by Kalenic. Fifty-one counties confirmed breeding. [+5.1%]

Rose-breasted Grosbeak—Reported from every county except Menominee, a record high. The maximum count was 22 birds. Sixty-two counties confirmed breeding.

Indigo Bunting—Reported from all 72 counties, a record high. Several birders reported 30 birds from various locations. Breeding confirmed in 53 counties, nearly six times the number of counties as 2014.

Dickcissel—Reported from 49 counties statewide, with the most northerly report coming from Burnett County. The west-central region harbored about a quarter of all reporting counties. This is up slightly from last year's 45 counties. No count contained more than 30 birds. Eleven counties confirmed breeding, a noticeable increase from three counties in 2014. Probable breeding was detected in 19 counties. [−6.4%]

Bobolink—Reported from a record high 68 counties (compare to 62 counties in 2014). J. Kivikoski estimated 75 birds at the Factory Road Restoration Project (Iowa County) on 7 July. Breeding confirmed in 43 counties, nearly nine times the number of last year's counties. [+8.2%]

Red-winged Blackbird—Reported in all 72 counties, and all counties except Menominee and Shawano confirmed breeding. The maximum count was 500 birds.

Western Meadowlark—Twenty-two counties in all regions except the east-central and southeast—a record high—reported birds, a substantial increase from last year's 14 counties. More than a quarter of all counties were in the west-central region. Yoerger found 11 birds in the Juda atlas block (Green County) on 21 June. Bayfield* (N. Anich), Douglas, Iowa, Lafayette, and Portage Counties confirmed breeding. Nine counties noted probable breeding, including Florence* (Kavanagh). [+30.7%]

Eastern Meadowlark—A record high 67 counties reported birds (compare to 59 counties last summer). Nevins counted 29 birds in the Badger Drop Zone (Monroe County) on 20 June. Forty-three counties confirmed breeding, more than four times the number of counties as 2014. [+7.5%]

Yellow-headed Blackbird—Reports came from 26 counties in all regions except the southwest (comparable to 25 counties in 2014). Over 40% of the counties were located in the east-central and south-central regions. The maximum count was 78 birds. Breeding confirmed in 15 counties, including Burnett* (mob) and Sheboygan* (Christensen). An additional two counties detected probable breeding. [+6.8%]

Brewer's Blackbird—Reports came from 31 counties scattered across the state (compare

to 30 counties in 2014). More than 60% of the counties are located in the northeast and north-central regions. Twenty-six birds were seen in an atlas block in Douglas County on 8 July (Nicolletti). Fifteen counties confirmed breeding, a substantial increase from two counties in 2014. Three additional counties found probable breeders.

Common Grackle—Every county reported birds, a record high. Breeding confirmed in 70 counties with only Langlade and Shawano missing from the list. The maximum count was 200 birds.

Brown-headed Cowbird—Reported from all 72 counties, a record high. No count exceeded 50 birds. Fifty-six counties confirmed breeding.

Orchard Oriole—Reports came from 46 counties in all regions except the northwest (compare to 44 counties in 2014). All north counties: Door (Diehl), Marinette (Marcia Hurst and Leitzke), Oconto (Beilke and Jerry Smith), and Taylor (Roti Roti). Over 20% of all counties were in the west-central region. Prestby counted 14 birds at Trempealeau NWR on 13 June. Breeding confirmed in 36 counties, including Adams* (Hannah), Portage* (Schaufenbuel), and Wau-paca* (Bird It Up and M. Gray). [+16.0%]

Baltimore Oriole—Reported from every county, a record high. No count exceeded 28 birds. Sixty-six counties confirmed breeding.

House Finch—Reported from a record high 63 counties in all regions (compare to 57 counties in 2014). The Mazomanie atlas block in Dane County contained 54 birds on 11 July (Kalenic). Breeding confirmed in 47 counties, nearly six times the number of counties as 2014. [+7.4%]

Purple Finch—Reports came from 32 counties in all central and northern regions, a record high but similar to last year's 30 counties. More than two-thirds of all counties are in the northern tier, where counties are divided pretty evenly between regions. Bacon observed 19 birds along 310 Road (Iron County) on 13 July. Seventeen counties confirmed breeding including Manitowoc* (J. Holschbach) and Wood* (Prestby), which is more than four times the number of counties as in 2014. An additional eight counties detected probable breeding. [+17.8%]

Red Crossbill—All reporting counties: Bayfield (mob), Douglas (mob), Forest (S. Haas), Marinette (S. Haas), Rusk (Prestby), and Sawyer (Schaefer and Szymczak). The last two observers found 15 birds at Spider Lake in the Chequamegon NF (Sawyer County) on 11 June. Collectively the dates ranged from 1 June–27 July. This is up from last year's four reporting counties. Douglas and Marinette* (S. Haas) Counties confirmed breeding; no counties contained confirmed breeders last year.

White-winged Crossbill—Two counties reported birds: B. Collins found 14 birds along Bingo Road (Bayfield County) on 10 July and up to 14 individuals were encountered between three locations in the Brule area (Douglas County) on 18 June and 1 and 3 July by M. Berg and B. Collins. There was only one report last year.

Pine Siskin—After an impressive showing in Winter 2014–2015 and Spring 2015, a record high 29 counties in all regions except the southwest reported birds, which is nearly five times the number of reporting counties in 2014. Over 40% of all counties were in the north-central and west-central regions. All southern counties: Dane (mob), Milwaukee (C. Petherick and Zehner), and Rock (Cullum). Fourteen individuals were seen at Blaisdell Lake (Sawyer County) on 20 June by Merkel. Eight counties confirmed breeding, including La Crosse* (Puchalski) and St. Croix* (Olyphant). No breeding evidence was found in 2014. Probable breeding was noted in three counties. [+81.3%]

American Goldfinch—Reported in all 72 counties, with no count containing more than 65 birds. Breeding confirmed in 45 counties which is five times the number of counties as last year.

European Goldfinch—This species is in the same group of European songbird species as the Great Tit that were released in Illinois in 2002. The European Goldfinch is also becoming established in the western Great Lakes region. Three birders found up to five birds between two locations in Kenosha County on 3 and 4 July and five locations in Racine County contained up to seven individuals between 1–30 June (mob). Like last year, Racine County was the only location where breeding was confirmed.

Evening Grosbeak—Perhaps reflective of the high number of birds seen this past winter, the following ten counties—twice as many as last summer—reported birds: Ashland (N. Anich and P. Anich), Bayfield (mob), Door (DeNoto), Douglas (mob), Florence (DeBoer and Kavanaghs), Forest (S. Haas and Maertz), Iron (mob), Marinette (J. Campbell and S. Haas), Shawano (Brad Steger), and Vilas (S. Haas). No report exceeded four individuals. Florence and Marinette Counties confirmed breeding; no counties were confirmed last year. Forest and Vilas Counties detected probable breeding.

House Sparrow—Reported from all counties except for Iron and Langlade, a record high. No count exceeded 170 birds. Breeding confirmed in 59 counties.

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Thomas, Linda Thomas, Mary Thomas, Rodney Thomas, Sue Thomas, Jon Thometz, Hilary Thompson, Pam Thul-Immler, Paul Thut, Priscilla Thut, Darwin Tiede, Julia Tiefenthaler, Steve Tiefenthaler, Kris Tierney, Nancy Tikalsky, Dana Timms, JTR TMR, Lauren Tobin, Sarah Toner, John Toren, William Trachte, Jennifer Trantow, Jenna Trantum, Ryan Treves, Dale Trexel, Joel Trick, Patti Trick, Curtis Tripp, Patty Trnka, Maureen Trojak, Jane Trotter, Karen Trudeau, Patti Truhn, Semeon Tsalbins, Beth Tubbs Fortner, Thaddeus Tuchalski, Vicki and Gordon Tucker, Paul Turelli, Dena Turner, Deb Turski, Two Rivers Stopover Project, Rob Tyser, Bob Uebele, Christine Uhe, Ashley Umlauf, Delia Unson, Deanna Uphoff, Urban Ecology Center, Ken Uslabar, Tom Utech, Donald Van Duyse, Lindy Van Vlissingen, Renee Vanden Boom, Rick Vant Hoff, Penny VanTassel, Aimie Vaughn, Jim Veltman, Tonissa Verhaagh, Elmer Verhasselt, Dan Versaw, Andrea Verville, Ma VH, Dan Vickers, Levi Vickery, Jana Viel, Brenda Vinall-Mogel, Ashley Viste, Elaine Vokoun, Robert Volenec, Bill Volkert, Carol Von Ott, Sara Vondrachek, Larry Vongroven, Sandy Vorpahl, Susan Vos, Nick Voss, Amy W., Melissa Wagner, Steve Wagner, Judy Walden, Kaye Waldsmith, Christian Walker, Patricia Walker, Sylvia Walker, Josh Wallestad, Melody Walsh, Tim Walsh, Nick Walton, Mike Wanger, Todd Ward, Ken Wardius, Jackson Warlock, C. Warneke, Jay Watson, J. Wawashkeshi, WDNR Game Bird Brood Survey, WDNR Staff, Kayla Weaver, Brad Webb, Jane Weber, Jasonn Weber, Scott Weberpal, Kristin Wegner, Herbert Weigl Jr., James Weis, John Weisgerber, Casey Weissburg, Robert Welch, Terri Welisek, Allison Wells, Christina

Wells, Jeffrey Wells, Kathy Wendling, Marcy Wendt, Laura Wentz, David Wenzel, Jennifer Wenzel, Karen Werner, Jennifer Werrell, Linda Wesp, Chris West, John Wethall, Richard Wetzell, Will Weyandt, Kim Wheeler, Jeffrey White, Joanne White, Toni White, Audrey Whitlock, Steve and Sue Whitmer, Mark and Becky Whitmore, Jane Whitney, Tara Wickersheim, Freeman Wicklund, Cory Wiedenhoef, Gary Wiegel, Lynn Wildes, Nicholas Wihelm, John Wilke, Mike Wilken, Bob Wilker, Colleen Wilkinson, David Willard, Andrew Williams, Mouser Williams, Q and B Williams, Geoffrey Williamson, Colleen Willms, Brian Wilmot, Todd Wilson, Ben Winesett, Dan Winkler, Marlyn Winter, Charles Winterwood, John Winze, Debra Witter, Max Witynski, Martha Wohlfeil, Matthew Wojtyla, Cole Wolf, Joy Wolf, Georgia Wolfe, Ted

Wolff, Maureen Wolter, Paul Wolter, George and Bonnie Wood, Steve Wood, Thomas Wood, Julie Woodcock, Michele Woodford, Adam Woodis, Woodland Dunes Nature Center, Brianna Wordell, Mike Worland, Charlie Wright, Justin Winn, Adrian Wydeven, Sarah Wynn, Adam Yellen, Perry Yingling, Quentin Yoerger, Christine Young, Elizabeth Young, Margaret Young, Marie Young, Jeff Yunke, Ron Zabler, Jayne Zabrowski, Jerry Zamirowski, Jody Zamirowski, Peg Zappen, Erika Zar, Norma Zehner, Jesse Zeise, Gisela Zelenka-Drysdale, Jonathan Zellmer, Elijah Zempel, Mary Zenker, Tom Zenner, Sarah Zibrowski, Ellie Zimmer, Rob Zimmer, Haydee Zimmerman, Roy Zimmerman, Brad Zinda, Dalton Zuehlke, Geoffrey Zuelsdorf, Jeff Zuhlke, and William Zwartjes.



Delia Unson secured this image of a young Trumpeter Swan family in Dodge County in June 2015.

50 Years Ago—Nancy Nabak

Excerpts from Summer 1966, Volume 28, Number 2

Wisconsin's Summer Bird Count: 1961–1965 by Sam Robbins—

"During the past five years Wisconsin ornithologists have logged 2, 224 man-hours in an attempt to measure the constancies and the variations of summer bird populations throughout the state . . . The areas have been well spread out, sampling the bird life in 43 counties.

This has been a pioneer project. So far as we know, no other state had previously attempted any large scale cooperative censusing of its breeding birds. There were no tried and true methods to use as guidelines. Thus, observers were encouraged to census their areas in varied ways. Some chose to cover a farm on foot; some walked a chosen series of roads of limited mileage; some traveled by car, making three-minute listening stops every $\frac{1}{4}$ or $\frac{1}{2}$ mile; some traveled by boat to some of the islands in Green Bay...one party worked suburban Milwaukee areas on horseback.

The project was planned to take full advantage of the song period of most breeding birds, after the completion of spring migration.

One of the obvious benefits of the project has been the stimulation of added field work . . . By getting more observers in the field in June, the count has led to some observations that help refine more precisely the probable breeding range of a number of species.

Owen Gromme once remarked: "A bird book is often out of date even before it is published." One sees evidence of this when one compares some summer bird count data with the range maps in Gromme's *Birds of Wisconsin*, which is the most recent published effort to describe the summer ranges of Wisconsin birds."

Following this summary was a list of 35 species that were recorded one or more times on summer counts outside the summer range described on Gromme's maps. Of notable interest:

"Canada Goose: By the time of the publication of *Birds of Wisconsin*, efforts to use domestic birds to induce wild birds to remain and nest in Wisconsin had been successful at several points in northern and central Wisconsin. Observations on counts at Racine in 1964 and 1965 indicate that a similar effort in that area is succeeding."



Jim Edlhuber captured this immature Red-tailed Hawk calling in Waukesha County in July 2015.

“By the Wayside”—Summer 2015

(“By the Wayside” is intended to show selected documentation that successfully won acceptance from the WSO Records Committee. They are presented without editing, as submitted by the authors.)

These reports of rare species include Common Eider and Western Tanager.

COMMON EIDER

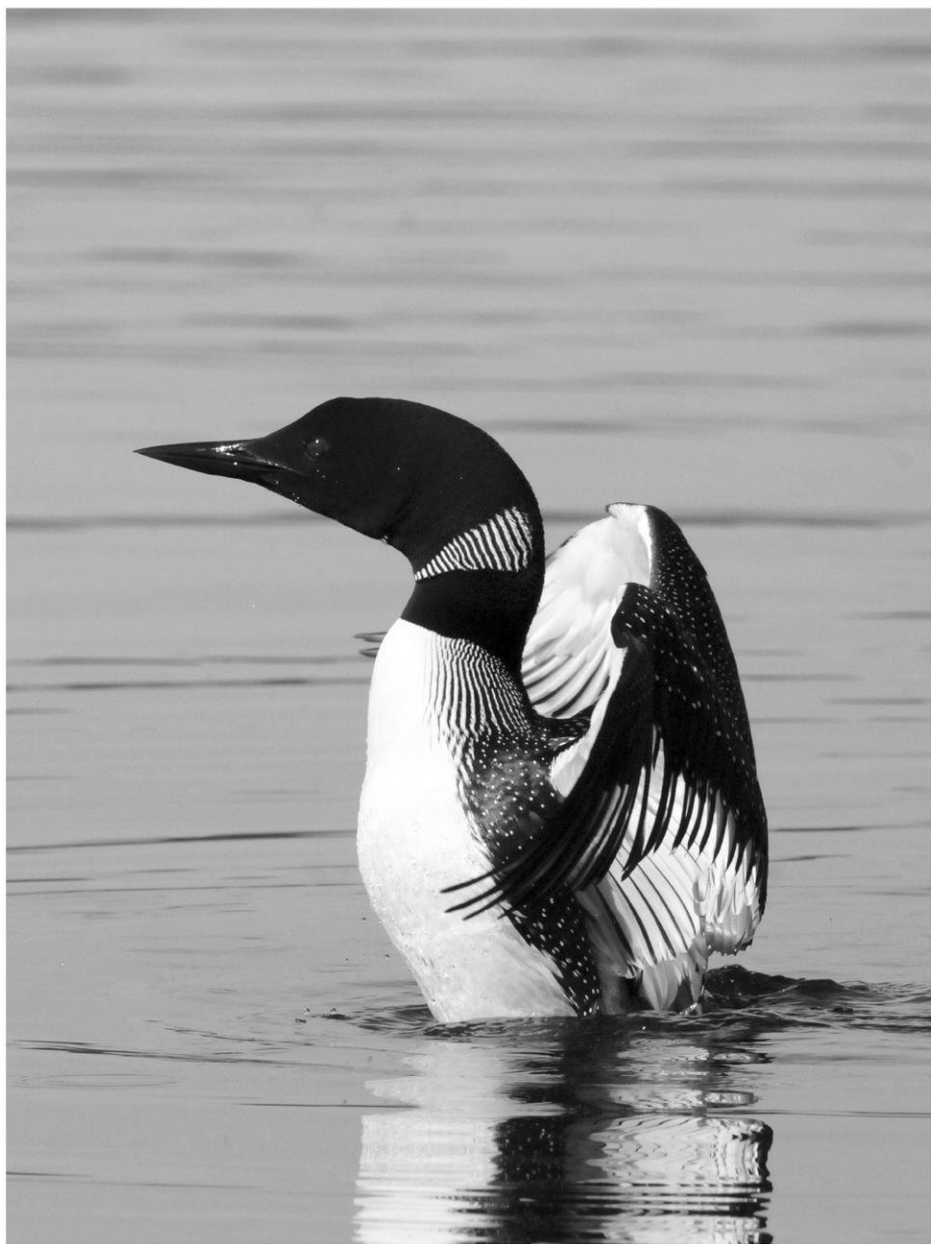
(Somateria mollissima)

12 June 2015, CIWB, Brown County—Chunky sea duck, larger than nearby Mallards. Chocolate brown overall. White tail feathers, scalloping on sides of breast, and smudges on flanks and back. Mostly white underwing coverts. Light eyebrow and feathers closest to the distal end of the bill. Blocky head. Distinctive long orange bill that appeared to extend up the front of the bird’s face, but was extensively feather covered on the sides. Distinguished from King Eider by head and bill shape. This bird’s head appeared blocky with a long bill. Feathers extended quite a distance along the sides of the bill giving the orange bill a very fine appearance despite being rather long. King Eider would show less feathering on the sides of the bill, and have a more rounded head with a smaller bill.—*Nicholas Walton, Green Bay, Wisconsin.*

WESTERN TANAGER

(Piranga ludoviciana)

13 June 2015, Bay Beach Wildlife Sanctuary, Brown County— Size: Similar to the Baltimore Orioles that were near it. Shape: Similar to the orioles, but slightly plumper. Plumage/Color Pattern: Yellow body, yellow underparts, yellow collar, yellow upper wingbar, yellow rump, yellow belly, yellow undertail coverts; red head, including throat and nape; black back; black wings with bold white wing stripe below the large yellow wingbar; black tail. Bill Color and Shape: Pale upper and lower mandibles; thick. Scarlet Tanager is all red with black wings and no wingbars. American Goldfinch is much smaller, and doesn’t have a red face or head. As we walked the road east of the Bay Beach Nature Center, we heard a song that we thought was a Scarlet Tanager. We located the bird in a large cottonwood tree 30 meters from the road and were surprised that it was bright yellow with a red head and black wings with wingbars. The song was very similar to that of the Scarlet Tanager—melodic but hoarse, like “a robin in a hurry, with a cold.”—*Dave & Margaret Brasser, Sheboygan, Wisconsin.*



Michael Huebschen in Oneida County photographed this Common Loon rising from the water in June 2015.

WSO Records Committee Report: Summer 2015

Quentin Yoerger

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The WSO Records Committee reviewed 19 records of 13 species for the Summer 2015 season, accepting 13 of them (68%). The highlights include Arctic Tern, three Little Gull including a Dane County record, and the state's seventh Common Eider.

ACCEPTED RECORDS

Table 1 provides a list of records accepted by the WSO Records Committee during the Summer 2015 season. Information on each record, such as species, location, observer(s), and date(s), is accompanied by the tally of votes made by the five-person committee. Records with one or fewer dissenting votes are accepted into the state records.

RECORDS NOT ACCEPTED

In the header for each record, voting tallies are shown in parentheses. Votes to accept are listed first. Two or more dissenting votes from the five-person committee results in a Record Not Accepted.

Black-headed Grosbeak—

Eagle River, Vilas County, 28 July 2015 (0–5).

The report submitted did not contain a written description of the bird. Two photos of an immature grosbeak were provided. No discussion as to why the observer believed the bird pictures was a Black-headed Grosbeak vs a Rose-breasted Grosbeak. One of the pictures provided show a small red spot below the bird's shoulder. This spot indicates that the bird pictured is an immature Rose-breasted Grosbeak.

Northern Hawk-Owl—

River Falls, St Croix County, 20 July 2015 (0–5).

The report is of a heard only bird "Identified by the sound" described only as a "rising screeching sound".

The report made no attempt to rule out any of the much more common owls found in Wisconsin that can all make various screeching noises.

Northern Hawk-Owl—

Hudson, St Croix County, 22 July 2015 (0–5).

The description provided is

Table 1. Records Accepted by the WSO Records Committee Summer 2015

Species	Date	Observer	Location	County	Notes	Vote
Arctic Tern	5/30	Steve Thiessen	Sheboygan	Sheboygan	Photo	5 - 0
Arctic Tern	6/1	Tom Prestby	Cat Island Causeway	Brown	Photo	5 - 0
Band-tailed Pigeon	7/13	Sawyer	west of Hayward	Photo	5 - 0	
Common Eider	6/12	Nicholas Walton	Cat Island Causeway	Brown	Photo	5 - 0
King Rail	6/14	Rick Vant Hoff	Horicon Marsh Auto Tour	Dodge	Photo	5 - 0
Little Gull	6/15	Tom Wood	Manitowoc Impoundment	Manitowoc		5 - 0
Little Gull	6/26	Tom Prestby	Cat Island Causeway	Brown	Photo	5 - 0
Little Gull	6/28	Kristy Larson	Patrick Marsh	Dane	Photo	5 - 0
Western Tanager	6/13	Dave & Margaret Brasser	Bay Beach Wildlife Sanctuary	Brown		5 - 0
Western Tanager	6/14	Daryl Tessen	Bay Beach Wildlife Sanctuary	Brown		5 - 0
White-winged Dove	6/14	Lori Bailey	Dodgeville	Iowa	Photo	5 - 0
White-winged Dove	7/18	Kristin Wegner	Racine	Racine	Photo	5 - 0
Yellow-crowned Night-Heron	7/20	Drew Goldberg	Myers Park	Racine	Photo	5 - 0

“Medium sized owl, similar in stature to a short eared, I would guess it to be roughly 1.5 feet tall. Banded chest, angular marks on face disk.” Vocalizations were described as a “loud screech, a few times a minute. The end of the call ascends.”

The report did not adequately rule out any of the much more common owls found in Wisconsin that can all make various screeching noises.

Pyrrohuloxia—

Pewaukee, Waukesha County, 13 July 2015 (0–5).

The description provided is “Mostly gray underbody with large red plume on top of head with red face and red down the back.” “A naked eye observation by an observer who acknowledges they are not a bird watcher”. No mention of the beak color or shape was provided. The description provided does not rule out the most likely species. The committee feels the bird was most like a molting juvenile cardinal.

Western Kingbird—

Mineral Point Park, Dane County, 12 July 2015 (0–5).

The report is of a bird seen atop a tall tree on a bare branch. The ob-

server noted “I could clearly see the yellow underparts & sides, no white tail band, grayish and darker plumage, size and shape but not the top of the head.”

The observer compared the bird seen with nearby Eastern Kingbirds. No discussion of other tyrant flycatchers that this bird could have been. The description provided does not successfully nail down the bird to a single species.

Western Sandpiper—

Manitowoc Impoundment, Manitowoc County, 04 June 2015 (0–5).

The report is of “a peep that was (slightly) bigger than the adjacent Semip (3) and Least (1). In addition its bill was larger and obviously more drooped. Also there was some rufus on its head and scapulars”

The committee feels this descriptions does not eliminate several possible shorebird species. Would like to see more description of the bird including such things as leg color, wing length compared with the tail, streaking on the sides, or facial pattern. Simply not detailed enough to cinch the identification.



Steve Betchkal made these sketches of a deceased Great Crested Flycatcher.

Wisconsin Big Day Counts: 2015

Daniel Schneider

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Fort Atkinson, WI 53538
DanRSchneider9@gmail.com*

For nearly forty years *Passenger Pigeon* subscribers have been reading of the Big Day participants' intricate plans, stake-outs and adventures. Unfortunately, in recent years the number of submissions has significantly diminished from 25 reports in 2000, to 12 in 2008, to only 3 in 2016. Recent efforts to expand this summary to include Big Sits and Green Big Days have done little to slow this decline. I have no doubt birders are just as competitive as ever and run just as many Big Day events as they did back in 2000. It is important to many Wisconsin Society for Ornithology members to see the summary continue, so we will continue to investigate other ways to engage more Big Day participants. If you have any comments or suggestions to increase the number of submissions, we encourage you to submit them to: BigDay@wsobirds.org.

THE SUMMARY

There were three checklists submitted for inclusion in *The Passenger Pigeon* in 2015; one Big Day report from Jim Frank and two Green Big Day reports, one from Kay Kavanagh, and one submitted by the Horicon Marsh Festival "Birding by Bike" team.

The Big Day Counts

Jim Frank, 152 species, 15 May 2015, Horicon National Wildlife Refuge and Ozaukee County, 240 miles by car, 4 miles on foot

Highlights of Jim's 14 hours of intensely birding southeast Wisconsin were an impressive 11 species of sparrows, 27 warblers, and 13 waterfowl along with a Snowy Egret and a Black-necked Stilt.

The Green Big Day Counts

Kay Kavanagh, 102 species, 26 May 2015, Florence County, 23 miles biking

This annual Green Big Day was once again held in Florence County. This great effort by Kay was cut short due to some early afternoon thunderstorms. Highlights for her 23 mile ride included a whopping 87 Red-eyed Vireos and 32 Baltimore Orioles.

Daniel Schneider, Matt Herzmann, (et al.), 95 species, 10 May 2015, Horicon Marsh, 7 miles biking, 2 miles walking

Matt and Dan lead the Horicon Marsh Bird Festival's "Birding by Bike" event around the south end of the marsh and the City of Horicon. Highlights for the four-hour tour included Bufflehead and Ruddy Duck off of

Palmatory Road and a Common Moorhen at the Horicon Marsh Education and Visitor Center.

THE RULES

The Big Day Rules

- The count must be taken within a 24-hour calendar day (midnight to midnight).
- All participants must be within direct conversational contact at all times during the birding and traveling periods. This excludes meal and rest stops if birding is not conducted during those times. This limits the number of parties involved to **one** and participants to that number safely and comfortably contained in one vehicle.
- The count must be taken within the state boundaries, but it may cover as many parts of Wisconsin as birders can reach in the time limit.
- Areas can be revisited during the day.
- The same areas may be covered on different Big Day counts.
- No fees are involved in conducting the counts.
- Counting individuals is optional.
- It is critical that all unusual species—whether they are early or late sightings or rare species—be completely documented. Reports of rarities are subject to review by the WSO Records Committee.

Additional Green Big Day and Big Sit Rules

- Green Big Day (non-Big Sit) competitors must refrain from using any motorized vehicles from the time they start counting until they finish counting.
- Big Sits observations must be made from within a pre-determined 17-foot (diameter) circle.

- There's no limit to how many people can occupy one Big Sit circle.
- The same circle must be used for the entire Big Sit.
- If a bird is seen or heard from within the Big Sit circle but is too distant to identify, the circle can be left to get a closer look/listen for confirmation. However, any new bird seen or heard while confirming the original, can't be counted unless it's seen or heard from an "anchor" who stayed behind in your circle, or when you return to your spot.
- The participants can work in shifts. No one person needs to be there throughout the whole Big Sit.

SUBMITTING REPORTS

To submit your report electronically, please send your summaries to Big-Day@wsobirds.org. Paper results should be sent to Daniel R. Schneider N1055 Cold Spring Road, Fort Atkinson, WI 53538. While there is not an official Big Day form or checklist, we encourage you to use the *Checklist of the Birds of Wisconsin*, which can be found on the WSO website. Big Day reports for 2016 should be received by January 15th, 2017 for inclusion in *The Passenger Pigeon*. Don't forget to include some fun details of your adventure like places you visited, weather details, species highlights, and if you did a Green Big Day or Big Sit!

Daniel Schneider works for the Wisconsin Department of Natural Resources in Madison. As a former Research Scientist, he has studied grassland birds in Wisconsin, Great Green Macaws in Costa Rica, migratory songbirds in coastal Mississippi, and Spotted Owls in central California. From spring until fall he enjoys BIGBYing throughout south central Wisconsin and in winter he regularly escapes to the humid jungles to bird. He lives in rural Fort Atkinson with his wife Lauren, son Adler, and two dogs Hawk and Heidi.

About the Artists

Steve Betchkal is the designer of the Hubbard Scientific Industries Bio2 Inflatable Pigeon. He also invented mnemonics for Caspian Tern, Ruby-crowned Kinglet, House Finch, and Summer Tanager. He keeps lists of lists: Birds seen at highway speeds. Birds on beer bottles. Birds counted while in a sleeping bag. Is that overdoing it? I don't think so. Obsession is fine, as long as it's practiced in moderation...

Jim Edlhuber, a lifelong native of Wisconsin, has been photographing wildlife for over 20 years. He considers himself an avid photographer and is always trying to capture nature and wildlife through his lens. He is in several photography clubs and has won numerous awards for his work. In recent years, Jim has focused mostly on birding photography and finds it to be the most challenging. Jim features some of his photography work online through his blog, windowntowildlife.com.

David Franzen and his wife, June, have lived in Phelps, Wisconsin since 1969. He worked for 34 years in the woods of northern Wisconsin, retired from the U.S. Forest Service in 2001 and from a private forestry consulting business in 2004. After retirement he took up bird photography with most of his work being shot within 100 yards of his house. His primary interest is in photo-

graphing bird behavior. He does not use blinds, but quietly waits in a chair for a bird to strike an interesting pose within close range. During 34 years of forestry work, he captured with the mind, many images that far surpass what he has captured with the camera. The most beautiful nature scene he ever viewed was encountered while trout fishing a small stream surrounded by maple forest that had sparse understory prior to spring leaf emergence. On that misty morning, a huge timber wolf glided over a hill across the stream and came toward him to stream's edge. When a wolf moves slowly, it kind of glides effortlessly, and this big guy was more like a spirit than a real animal. A real magical moment. David does occasional slide programs for local groups.

Jeff Galligan is 48 years old and lives in Middleton, Wisconsin. He is a retention program advisor and the coordinator of a mentoring program for students of color at Madison College and recently completed his doctorate in educational leadership. He enjoys wildlife photography (especially birds), reading, cooking, traveling, kayaking, and hiking.

Chuck Heikkinen is currently the co-editor of *The Passenger Pigeon* and is an avid amateur nature photographer. He is retired and enjoys travel and photography both in and outside the U.S. He

particularly enjoys traveling and taking images of birds in Wisconsin.

Greg Hottman is an amateur wildlife photographer from Oregon, Wisconsin. Greg started out taking pictures of birds, mostly warblers, to help with identification. As a youngster in the 60s he can remember seeing flashes of red going through the yard in his hometown of Cross Plains and running inside to the Encyclopedia Britannica to see what bird that might have been. He inherited that “those cows ain’t gonna milk themselves” gene so he gets up early, gets most of his work done by 6am which frees him up for the rest of the day. Greg’s favorite birds to photograph are owls. The neighborhood foxes are fun too.

Michael J. Huebschen is the current Art Editor for *The Passenger Pigeon* and has been an amateur wildlife photographer for over 45 years. He is retired from UW-Oshkosh and lives in Oshkosh, Wisconsin with his wife, Cynthia. They enjoy travel, wildlife observations, hiking, canoeing and fishing.

Myles Hurlburt is an amateur photographer who resides in Wausau, with his wife and four sons. He’s always loved birding and got hooked on birding photography while vacationing in Butternut, Wisconsin when he heard this different sounding bird and had his camera—it was a Blackburnian Warbler. Ever since then he’s been hooked on photographing birds, butterflies, and nature in general. When not fo-

cused on family and work in IT Management, much of his free time is spent outdoors photographing nature, especially birds.

Hope Landgraf is currently in grade 11 at Sheboygan County Christian High School.

Eric Preston is an amateur nature photographer who travels the Midwest, and beyond, to photograph the natural world. He especially likes looking for and photographing birds and butterflies in the native grasslands of southern Wisconsin. His photographs have appeared in numerous books and magazines, including *Birder’s World* and *Gulls of the Americas*. He has been interested in birds and nature for most of his life. He currently lives in Madison, Wisconsin with his wife, Kim, and son, Anders.

Delia Unson got hooked on birding while participating in the first Breeding Bird Atlas of Wisconsin from 1996 to 2000. She enjoyed learning about the lives of the birds she watched - their migration to Wisconsin, courtship and nest building, chick hatching and raising, flight and food-gathering training and for most, their eventual migration to warmer climates for the winter. About 10 years ago, she added bird and other nature photography to the mix, which greatly increased her enjoyment in nature forays. Recently, she and her husband, Chuck Heikkinen, started co-editing *The Passenger Pigeon*.

Guidelines for Authors and Artists

AUTHORS

The Passenger Pigeon, issued quarterly by the Wisconsin Society for Ornithology (WSO), publishes articles on Wisconsin birds, on ornithological topics of interest to WSO members, and on WSO activities and business. Anyone with a serious interest in Wisconsin birdlife—whether a professional ornithologist or an amateur birder—is encouraged to submit articles and observations to this journal. The Editors are happy to discuss ideas for articles with potential authors.

Readers are encouraged to submit articles to be considered for publication in *The Passenger Pigeon*. It should be noted that all research articles will be submitted for peer review. Articles not presenting research will go through the traditional editorial process. The editors will do as much as possible to see that work is published, including offering suggestions for improvement when pertinent.

General articles should be sent via email to PassengerPigeon@WSOBirds.org and research-based articles should be sent directly to the Peer Review Editor, Matt Hayes at research@wso-birds.org. If necessary, articles may be sent by surface mail to: Passenger Pigeon, 5018 Odana Rd, Madison, WI 53711.

Following are specific guidelines for submission:

- The article should have not been previously published in a different journal.
- The text must be in Word format (.doc or .docx), either Word for Windows or Word for Mac.
- The manuscript should be double-spaced throughout (including figure and table captions) and use 12-point Times New Roman or Calibri font style.
- The text must be on pages separate from figures and tables.
- On the title page, provide the article title, name, address, telephone number, and email address of all authors of the article.
- Include the acknowledgments, literature cited, and a brief biographical sketch of each author at the end of the manuscript.
- Research articles should generally follow standard scientific format, with separate sections for abstract, introduction, methods, results, discussion, conclusions, and bibliography. Deviations from this format (e.g., combined results and discussion section) will be considered on an individual manuscript basis.
- The spelling of common and scientific bird names should follow the most recent edition of the Checklist of North American Birds (see <http://checklist.aou.org>), published by the American Ornithologists' Union (AOU), or the most recent updates to the checklist.

- When appropriate, lists of species in tables or text should follow the most current AOU taxonomic sequence.
- Use capital letters for the full common names of birds (e.g., American Robin, Red-headed Woodpecker).

Guidelines for submitting figures and tables:

- Each figure and each table must be on a separate page.
- Captions for all figures should be sent as a separate text file, not embedded with the figure.
- Figures and tables should be submitted in a way suitable for black-and-white reproduction.
- Tables are to be created as ‘typists’ tables.’ This involves creating a tabular version of your table in Microsoft Word without using the actual “Table” function in that program. Instead, use tabs to separate your columns and a carriage return to separate rows—do not add spaces to make columns line up. Alternatively, tables may be submitted as Microsoft Excel spreadsheets.

Guidelines for citing literature in text:

- Citations should be listed chronologically in parentheses:
- No comma between author(s) and date: (McGhee 1995)
- Use “and” between two authors: (Li and Aschenbrenner 2007)
- If more than two authors, use “et al.:
- Personal communication or reference to unpublished data: Cite the person’s initials and surname, insti-

tutional affiliation, followed by “pers. comm.” or “.unpub. data.” Example: (E. Ramirez, University of Wisconsin-Madison, unpub. data).

- Works by the same author(s) in the same year are arranged alphabetically by article title and differentiated by letter (1998a, 1998b).

Guidelines for formatting references in bibliography section:

- References at end of document should be listed alphabetically by last name of first author, then in increasing chronological order. Follow the models below for citing books, book chapters, journal articles, etc.

Sample References:

Reller, A.W. 1972. Aspects of behavioral ecology of Red-headed and Red-bellied woodpeckers. *American Midland Naturalist* 88(2): 270–290.

Bajema, R.A. and S.L. Lima. 2001. Landscape-level Analyses of Henslow’s Sparrow (*Ammodramus henslowii*) Abundance in Reclaimed Coal Mine Grasslands. *The American Midland Naturalist* 145(2): 288–298.

Curtis, J.T. 1959. Vegetation of Wisconsin: An Ordination of Plant Communities. Madison, WI: University of Wisconsin Press.

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Estades, C.F. 1997. Habitat fragmentation, pine plantation forestry and the conservation of forest bird communities in central Chile. Master of Science

Thesis, University of Wisconsin-Madison.

Kilvington, M., J. Rosier, R. Wilkinson and C. Freeman. 1998. Urban restoration: Social opportunities and constraints. Paper presented to the Symposium on Restoring the Health and Wealth of Ecosystems, Christchurch, New Zealand, September 28–30.

National Audubon Society. 2014. Christmas Bird Count Historical Results. www.audubon.org/bird/cbc/hr/index.html [accessed September 1, 2013].

Strickland, D. and H. Ouellet. 2011. Gray Jay (*Perisoreus canadensis*). In A. Poole (Ed.), *The Birds of North America Online*. Ithaca, NY: Cornell Lab of Ornithology. <http://bna.birds.cornell.edu/bna/species/040> [accessed December 31, 2015].

ARTISTS

All photos must be submitted as jpeg digital images in e-mail attachments to Michael Huebschen, the Assistant Editor for Art, at mhuebschen4@gmail.com. They will be stored in secure digital files until recommended for a given quarterly issue of *The Passenger Pigeon*.

Although we would prefer to print all images chosen for *The Passenger Pigeon* in color, many will be printed in black & white due to the prohibitive cost of printing everything in color. One image per issue will be selected as a color cover photo. Every effort will be made to use the best photos submitted by as many contributors as possible. The Editors will make the final selections.

Following are the criteria for submitted work:

1. Jpeg digital images of photos, drawings, paintings, sculptures, wood carvings, quilts or other artistic works featuring birds seen or photographed in Wisconsin should be sent as email attachments and should be in as large a size as possible, with resolution of at least 300 d.p.i. (1.2 megabytes for black-and-white and 1.5 megabytes for color). Lower resolution simply does not print well and pixel-dense images make the best candidates for printing since they often need to be cropped. All photos of birds submitted must have been taken in Wisconsin.

2. Please note: since the seasonal reports are for the year previous to the current issue, any photographs for a given issue should also be from the same period. For example, photographs for the Winter, 2015 issue should have been taken on or between December 1, 2014 and February 28, 2015; photographs for Spring 2016 should have been taken on or between March 1, 2015 and May 31, 2015; for Summer, 2016 on or between June 1, 2015 and July 31, 2015; and for Fall 2016, on or between August 1, 2015 and November 30.

3. All images submitted must be material not previously published in *The Passenger Pigeon*.

4. All images must include the bird species name and name of the artist. Date and location are also necessary in the case of photographs. Images of works other than photographs should have a title if one has been selected.

5. The most useful images are those in “portrait” format, rather than “landscape” format. A cropped photo 4” horizontal by 5” vertical is ideal for consideration for a cover photo. The “fill page” images are also best done in portrait format and might run as large as

4.75" × 7". The editors may do some additional cropping of images for publication.

6. Since no images will be returned, the submission must be high-resolution copy of the original. In most cases contributors will have cropped the images for the best effect. Cropping the images too tightly should be avoided since the editors may choose to do more cropping. All unused or unusable digital images will be destroyed after the issue goes to press.

7. It is the policy of Wisconsin Soci-

ety for Ornithology not to offer monetary compensation to contributing artists for use of their images in *The Passenger Pigeon*. The Society is grateful for those who have contributed limited use of their images for publication in *The Passenger Pigeon* in the past and to those who will do so in the future.

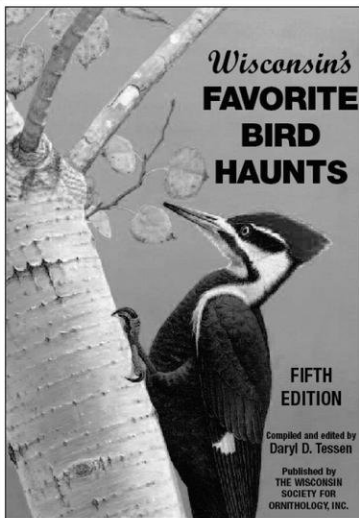
8. When images have been selected and approved for each quarterly issue, a short biography from each contributing artist will be requested. It is tradition to publish those in the "About the Artists" pages of each issue.



Chuck Heikkinen found this female Red-winged Blackbird carrying nesting material in Sauk County in June 2015.



Chuck Heikkinen couldn't resist imaging this calling Upland Sandpiper apparently urging him to leave its nesting area in Sauk County in June 2015.



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AREA A - Green Pond

Green Pond should be the focus for looking the area in spring and fall. One can see a large number of birds in the area. The area includes the northern edge of the Central Valley and the northern edge of the Central Valley.

322

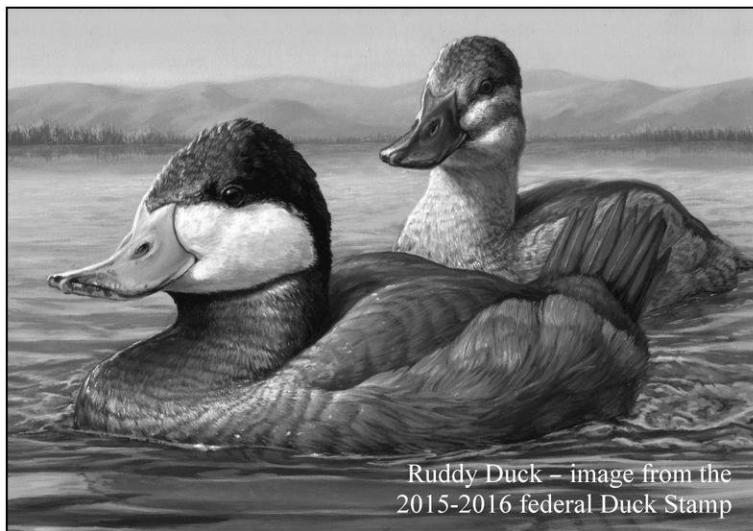
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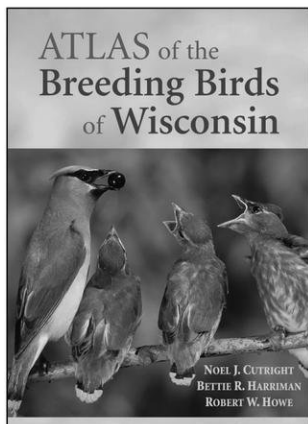


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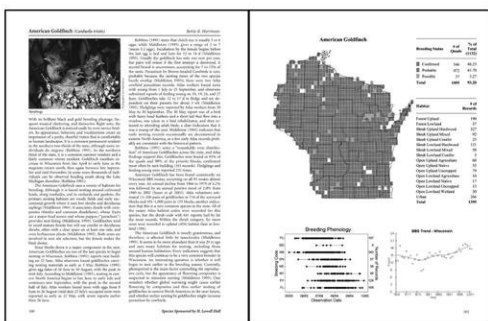
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THE WISCONSIN SOCIETY FOR ORNITHOLOGY

The Wisconsin Society for Ornithology is an educational and scientific non-profit organization founded in 1939 “to encourage the study of Wisconsin birds.” The Society achieves this goal through programs in research, education, conservation and publication.

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CONTENTS

SUMMER 2016

Volume 78, Number 2

Incoming President's Statement <i>Michael John Jaeger</i>	153
Outgoing President's Statement: Every Ending is a New Beginning <i>Kim Kreitinger</i>	155
From the Editors' Desk: The Future is Us <i>Chuck Heikkinen and Delia Unson</i>	159
Recent Declines in Gray Jays on Christmas Bird Counts in Northern Wisconsin <i>Ryan C. Menebroeker, Paula Spaeth Anich, Derek H. Ogle, and Nicholas M. Anich</i>	161
Wisconsin Endangered Resources Report 8 Status of the Cooper's Hawk in Wisconsin <i>Robert N. Rosenfield and Raymond K. Anderson</i>	171
Status of the Cooper's Hawk in Wisconsin, Wisconsin Endangered Resources Report Number 8: With Selective Retrospective and Interpretation <i>Robert N. Rosenfield, Madeline G. Harden, John Bielefeldt and Raymond K. Anderson</i>	191
Nest Site Selection and Breeding Survey of Belted Kingfishers in Wisconsin <i>Richard P. Thiel</i>	201
The Summer Season: 2015 <i>Alyssa DeRubeis</i>	207
50 Years Ago in <i>The Passenger Pigeon</i> <i>Nancy Nabak</i>	253
"By the Wayside"—Summer 2015	255
WSO Records Committee Report: Summer 2015 <i>Quentin Yoerger</i>	257
Wisconsin Big Day Counts: 2015 <i>Daniel Schneider</i>	261
About the Artists	263
Guidelines for Authors and Artists	265
Notes and Announcements	270