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The Passenger PIGEON

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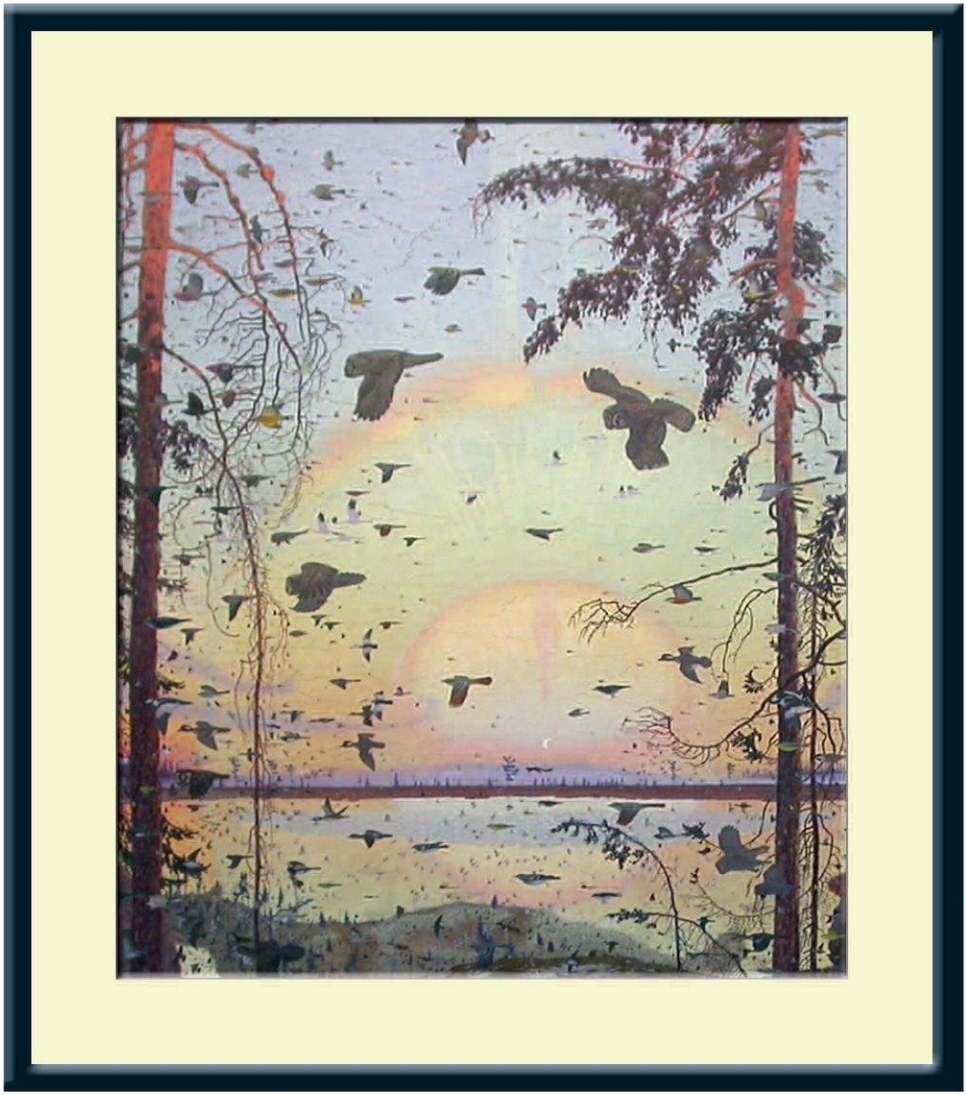

1939 ✳ 75TH ANNIVERSARY ✳ 2014

THE PASSENGER PIGEON VOL. 76 No. 2 Summer 2014

WSO website: wsobirds.org

EDITORS
Bettie R. and Neil A. Harriman
5188 Bittersweet Lane
Oshkosh, WI 54901
920. 233. 1973
bettie@new.rr.com
harriman@uwosh.edu
PEER REVIEW EDITOR
Scott D. Hull
WDNR, Bureau of Science Services
2801 Progress Road
Madison, WI 53716
608. 224. 6196
Scott.Hull@Wisconsin.gov
ASSISTANT EDITOR (Art)
Michael Huebschen
218 N. Meadow Street
Oshkosh, WI 54902
920. 426. 3256
huebschenhuebschen@sbcglobal.net
BIRD REPORTS COORDINATOR
Joe Schaufenbuel
5676 Regent Street
Stevens Point, WI 54482-9170
715. 345. 2788
schaufenbuel@charter.net
FIELD NOTE COMPILER (Spring)
David A. LaPuma
939 Eagle Heights Apt. C
Madison, WI 53705
732. 447. 4894
david@woodcreeper.com
FIELD NOTE COMPILER (Summer)
Randy Hoffman
305 Fifth Street
Waunakee, WI 53597
608. 849. 4502
ecurlew@hotmail.com
FIELD NOTE COMPILER (Autumn)
Robert C. Domagalski
PO Box 396
St. Nazianz, WI 54232
920. 881. 4002
rcd2@new.rr.com
FIELD NOTE COMPILER (Winter)
Ted Keyel
825 Pilgrim Trail
Sun Prairie, WI 53590
715. 326. 0899
erkeyel@gmail.com

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Membership rates per year are: Individual, $30; Family, $35; Youth/Student, $15.00; Senior, $15.00; Sustaining, $75; Library, (*Passenger Pigeon* only) $25. Life membership (Single), $600; Life (Couple), $700; Patron, $1,000 are one time payments. Contact Jesse Peterson, Membership Chair, 7680 Payvery Trail, Middleton, WI 53562 with membership and mailing-related questions.

Send all manuscripts and related correspondence to the Editors. Information for "Seasonal Field Notes" should be sent to the Bird Reports Coordinator (see inside back cover). Art work and questions about the art should be sent to the Assistant Editor for art (see left column). Manuscripts that deal with Wisconsin birds, ornithological topics of interest to WSO members, and WSO activities are considered for publication. For detailed submission guidelines, see pages 131–132 of the Summer 2007 issue (Vol. 69, No. 2) or contact the Editors. As a general guide to style, use issues after Vol. 60, No. 1, 1998.

Front Cover: This 2011 painting by reknown Wisconsin artist and WSO member, Tom Uttech, is called "enassamishinjingweian" —you will have to ask Tom what that means.

Many WSO Volunteers to Thank in a Time of Big Change

It seems to have become a tradition for retiring WSO presidents to use their eighth and final President's Statement—appearing like clockwork in the summer volume of The Passenger Pigeon in even-numbered years—to say both goodbye and thank you. Thank you to board members and other volunteers in the Society whose hard work has made it possible to carry out the duties of leading WSO over the preceding two years. And thank you to members of the Society for giving me this opportunity to serve.

I don't wish to break tradition, but in offering my sincerest thanks to many individuals, I also want to take a moment to reflect more generally on just how much the leadership of WSO has changed in the four years since I was elected vice president and joined the board in May 2010. To me, it reflects not just the strength of the state's overall birding community, but the depth of the Society's bench. And it should be an invitation to others to step forward and take advantage of new opportunities to get involved in WSO as it celebrates its 75th anniversary, starts work on a second breeding bird atlas, and strengthens its commitment to avian conservation, and serving the state birding community.

The inside back cover of each issue of *The Pigeon* carries a list of WSO officers and committee chairs. The summer 2010 volume listed 27 positions and their incumbents. The fall 2014 volume will show only seven of those folks still in those roles.

Having just written a history of the Society's last 25 years (Vol. 76, No. 1 of The Pigeon), I was already aware of how much a volunteer organization evolves over time, and thus how as a living, breathing organism it is in constant need of new blood to keep it strong and vigorous. Nevertheless, the pace of change since 2010 has been extraordinary, with these retirements most notable:

- **Bettie** and **Neil Harriman** in May 2014 after serving as *Pigeon* editors since 2003.
- **Mary Uttech** in May 2014 after serving as *Badger Birder* editor since 2001.
- **Christine Reel** in 2013 after serving as treasurer since 2002.
- **Bill Mueller** in 2013 after chairing the Conservation Committee and then Education since 2003.
- **Jane Dennis** in 2012 after serving as secretary since 1996.
- **Daryl Tessen** in 2012 after chairing the Awards Committee since 2000.
- **Barbara Duerksen** in 2012 after serving as youth education coordinator since 2001.
- **John Idzikowski** and **Brian Boldt** in 2012 as Records Committee archivists after serving since 1993 and 2002 respectively.
- **Jim Frank** in 2011 after chairing the Records Committee since 1992.

Last year, WSO also suffered a huge personal and organizational loss with the death of **Noel Cutright**. This widely known and much-beloved ornithologist was twice president of WSO and served 32 years on its board, most recently as historian.

Each of their contributions to this organization has been of enormous value, and it has been my personal pleasure to work with each of them, and in Mary's case, to succeed her at the helm of our monthly newsletter when my term as president is over.

Another big change in WSO publications will come with the election of **Chuck Heikkinen** and **Delia Unson** of Madison to succeed Bettie and Neil as editors of *The Pigeon*. Also joining the staff are **Scott Hull**, a WDNR research scientist, and **Amy Staffen**, a staff ecologist with WDNR, who will be acting as associate editors and overseeing the peer-review process.

They will be joining Assistant Editor (Art) **Michael Huebschen**, Bird Reports Coordinator **Joe Schaufenbuel** and our four seasonal field notes compilers—**David LaPuma**, **Alyssa DeRubeis**, **Bob Domagalski**, and **Ted Keyel**. Those four further illustrate the pace of change, since all but Bob has come aboard in the past year. Alyssa succeeds summer compiler **Randy Hoffman**, who also is retiring from his quarterly "Lessons From the Seasons" column and is also wrapping up his tenure as chair of WSO's two-year-long strategic planning effort.

Now let me highlight those seven individuals who names remain from that 2010 list, starting with **Tom Schultz** of Green Lake and **Jeff Baughman**, Campbellsport, who have led our Field Trips committee since 1987, finding us wonderful birds statewide and now in the Tropics as well. Both also have served WSO as vice president and president during that time, as was also the case with **Jesse Peterson** of Middleton, who has been Membership chair since 2002 and this year took over coordination of the Honey Creek Birdathon/Bandathon.

Michael John Jaeger of Madison recently resumed chairing Scholarship and Grants, after a brief stint at the helm of Conservation, while Grants was led by **Steve Brick**, who remains on the committee. **Levi Wood**, also of Madison, remains as our Honey Creek chair and chief steward there, while Green Bay's **Tom Erdman** is our File Keeper and **Dave Kinnamon** of Bayside is our longtime Legal Counsel.

For whatever reason, I feel like I have presided over WSO's transition to a new and younger generation of leaders. At the top will be **Kim Kreitinger**, a conservation biologist at the Wisconsin Department of Natural Resources from Madison who has served these past two years as WSO's most energetic vice president ever, recruiting new board members, spearheading expansion and redevelopment of our web site, rejuvenating the Cox Nature Center at Honey Creek, and spurring WSO to help fund Project SNOWstorm and co-sponsor an ornithological symposium.

Jenny Wenzel, president of Hoy Audubon Society in Racine, has ably succeeded Dennis as secretary, and **Mickey O'Connor**, an avian zookeeper at the Milwaukee County Zoo, was elected to succeed Reel in the huge job as treasurer. Reel has continued to assist with convention and birdathon accounting and as registrar for the WBCI annual meeting.

The WSO Board has seen other recent changes that portend new energy for its endeavors. Front and center are Web Administrator **Paul Jakoubek** of Monona, and Communications Chair **Rebecca Setzer** of Port Washington, who have been working closely with Kreitinger on expanding the content at wsobirds.org, adding monthly e-Alerts for our online members, creating a monthly Birding Events Calendar and overseeing the complete redesign of the web site that was approved by the board in January.

Records Committee Chair **Quentin Yoerger**, Evansville, is involved in rebuilding the web site, which aims to incorporate the Society's Rare Bird Reports, including a photo archive. The new website also aims to make better use of Bird TV ("Bird Teaching Video"), a series of educational videos covering topics related to wild birds videotaped, written, and produced by **Steve Betchkal** in conjunction with WSO.

Before he died, Cutright recruited **Nancy Nabak** of Green Bay to succeed him as historian, a job in which she already has invested more than 350 hours bringing some order to WSO's Archives at UW-Green Bay in time to help us celebrate our 75th anniversary. That celebration is being coordinated by Convention Chair **Christine Zimmerman**, Sheboygan, who annually devotes tons of time and energy to what is a yearly highlight for many members. Her team includes husband **Jeff Zimmerman**, registrar **Margaret Brasser** and silent auction chair **Janet Speth**.

I also am in debt to our other strong committee chairs:

- Education—**Jim Knickelbine,** director of the Woodland Dunes Nature Center, Two Rivers, who helped launch the Oriole Count as part of WSO's partnership with the Bird Protection Fund's Great Wisconsin Birdathon.
- Research—**David Drake**, Extension wildlife specialist and associate professor, Department of Forest and Wildlife Ecology, UW-Madison, who worked with Kreitinger to create a WSO Symposium at The Wisconsin Chapter of The Wildlife Society Annual Meeting, entitled "The Latest Technology in Avian Research and Monitoring."
- Awards—**Andy Paulios**, McFarland.
- Conservation—**Peter Blank**, Madison, who is helping lead a revision of WSO's Code of Ethics.
- Youth Education Coordinator—**Ed Hahn**, Watertown, who has expanded distribution of an upgraded youth birding kit statewide.
- Bookstore—**Penny Fish**, Sheboygan.

I can't neglect to mention other key tasks and volunteers such as **Anna Pidgeon**, who has handled the banding at Honey Creek for the past decade; **Daniel Schneider**, May Day Counts compiler; **Rich Staffen**, for updating and rebuilding the WSO Speakers Bureau; **Dani Baumann**, Badger Birder contributor; and the four other members of our Records Committee who join Quentin in reviewing rare bird reports on a seasonal basis: **Jerry DeBoer, Tom Prestby, Mark Korducki,** and **Aaron Stutz.**

Additionally, Korducki has coordinated the state's 92 Breeding Bird Survey

routes since 1998, and ran the WSO Hotline from 1996 until it was discontinued in 2012; Robert Domagalski has served as WSO's Christmas Bird Count compiler since 2000.

As you can tell, it takes a lot of volunteers to carry out the work of WSO. Plus, I know my list is incomplete and doesn't enumerate the many volunteers who have stepped forward to help lead amazing convention field trips, enter bird observation data into eBird or maintain the trails at Honey Creek, etc., and for that I apologize. But what I have tried to do, as I step aside after my four years as an officer, is to capture a snapshot of an extraordinary organization, 75 years young and in great hands to meet the challenges ahead.

President

More Changes

Once again the editors would like to extend a thank you to someone who is retiring from the staff of *The Passenger Pigeon.* Since beginning his seasonal perspective on birds and birding in Wisconsin in Lessons From the Seasons with the Summer 2006 issue (68:2)—which was a lesson from the Fall season of 2005—Randy Hoffman has brought us a lesson in every issue of the Pigeon. He will be ending those lessons with the Fall 2014 issue of the Pigeon when he gives us the lesson based on the Fall season of 2013. That's eight years of four seasons, or 32 lessons. I hope you have found Randy's thoughts, ideas, suggestions, and information helpful to a better understanding of "our" birds and to our own behavior as birders. As Randy has told us, more than once, never forget you are an abassador for the birding community every time you are out there searching for birds.

Since the summer of 2009, Randy has also served as the seasonal field notes compiler for the Summer Season—started with the 2008 summer. That's six years of compiling and writing the summer season report and "By the Wayside" for that season. And part of that time he was also the Bird Reports Coordinator—from Fall of 2005 to Spring of 2011—collecting and distributing reports to all the seasonal field note compilers.

That's a lot of time and energy devoted to making your WSO journal one of the best in the nation. Please join these editors in extending a HUGE thank you to Randy and wishing him much pleasure and success as he retires from the Wisconsin Department of Natural Resources this year.

It was been noted already that *The Passenger Pigeon* is becoming a peer-reviewed journal. Please read the following pages to find out how this is going to work.

Peer Review comes to the Passenger Pigeon Journal

Beginning in 2014, the Wisconsin Society for Ornithology will introduce a peer-reviewed science section in its Passenger Pigeon journal. Dr. Scott Hull, a research scientist with the Wisconsin Department of Natural Resources (WDNR), and Amy Staffen, a staff ecologist with WDNR, will be acting as associate editors and overseeing the peer-review process. This new section will not displace the regular contributions that have been part of the journal for decades, such as Seasonal Reports, Christmas Bird Count summaries, committee reports, etc. However, we anticipate that the peer-reviewed section will attract more representatives from the academic community to the Passenger Pigeon journal, many of whom are restricted to publishing only in peer-reviewed journals.

The Passenger Pigeon welcomes and will publish original research that advances the scientific understanding and conservation of Wisconsin birds and

their habitats. The Passenger Pigeon is especially interested in submissions from undergraduate and graduate students from Wisconsin institutions and from citizen scientists. Submissions that are technique or methodologically based should have relevance beyond a single species. Submissions may be considered in the following general categories:

1. *Research Articles*—
   Most submissions will fall under this category and will report the results of original research on birds and/or their habitats in Wisconsin. The Passenger Pigeon will also accept article submissions of research projects occurring elsewhere in the Midwest if the study species are known to occur in Wisconsin. Submissions with a social science aspect will be considered if there is a strong link to or implications for bird conservation.

2. *Review Papers*—
   Summarizes previously published research in the ornithological literature that has broad influence or impact on birds and their habitats.

3. *Commentaries/Rebuttals*—
   Brief submissions in response to peer-reviewed articles published after 1 January 2014.

4. *Perspectives*—
   Invited by the peer-review editor and in consultation with the WSO board on topics or themes of high conservation or scientific value.

Peer-review articles do NOT include observational reports such as species documentation in Wisconsin, documentation of nesting or of odd behavior of a species. These should still be sent directly to the Editor of the Passenger Pigeon. If authors are unsure if their manuscripts need to be peer reviewed they should contact the editors, Chuck Heikkinen and Delia Unson.

Instructions for Authors of Articles for Peer Review

For initial submission of articles for peer review, e-mail the manuscript including all tables and figures to Scott Hull (Scott.Hull@wisconsin.gov; 608-224-6196), peer-review editor. The text, tables and figures should be combined into one document (MS WORD preferred).

A cover letter should accompany the initial submission and include a statement that the manuscript reports on original research that is not published elsewhere. Full disclosure of possible redundant publication should be made in the cover letter. Please include in the cover letter the name, address, email, and phone number of the corresponding author. Also include the names and contact information for 2–3 reviewers within Wisconsin who have expertise in the area of your manuscript but who have not worked closely with you on the submission.

Manuscript Formatting

- Each submission should be ordered as: Cover Letter, Title Page, Abstract with keywords, Introduction, Study Area/Methods, Results, Discussion, Acknowledgments, Literature Cited, Figures, Tables. Figures and Tables may be attached as separate files or at the end of the main document.
- Double space all text using 12 point Times New Roman or similar font and include line and page numbers on each page.
- Acknowledgement section should include a statement about the scientific code of ethics such as whether an Animal Use and Care Protocol was approved and followed during the course of the project under review.

Review Process

- All submissions will be initially reviewed by the peer-review editor to determine the manuscript's appropriateness for the Passenger Pigeon. Submissions meeting the scope of the peer-review section of the Passenger Pigeon will be forwarded for review. Those deemed inappropriate will be returned to the author with an explanation from the peer-review editor.
- Two independent reviewers with expertise in the manuscript's topic area will objectively examine the manuscript. The peer-review editor will make a decision on accepting or rejecting the manuscript based on the reviewer's comments.
- Manuscripts will generally be evaluated on the following criteria: contribution to ornithological knowledge in Wisconsin, clear research objectives or problem statement, sound experimental design and analysis, appropriate conclusions, and writing quality.

Bettie and Neil Harriman, Editors

American Avocet by Bob Larson

The Story of the Passenger Pigeon Monument

Stanley A. Temple

Department of Forest and Wildlife Ecology
University of Wisconsin-Madison
Madison, Wisconsin 53706
and
Aldo Leopold Foundation
Baraboo, Wisconsin 53913
satemple@wisc.edu

ABSTRACT

From the earliest days of the Wisconsin Society for Ornithology there had been discussions about erecting a monument to the Passenger Pigeon, which WSO had adopted for its logo and the name of its journal. World War II put the project on hold, but in 1947 the dream was realized with the erection of the Passenger Pigeon Monument at Wyalusing State Park. I describe some little-known details of how the monument came to be, its 67-year history and its significance in 2014 as we commemorate the centennial of the Passenger Pigeon's extinction.

When the Wisconsin Society for Ornithology was organized in 1939 the Passenger Pigeon (*Ectopistes migratorius*) featured prominently in several key discussions among the organization's founders (*The Passenger Pigeon* Vol. 1, No.1, 1939). Early decisions to adopt the Passenger Pigeon as the WSO logo and to name WSO's journal *The Passenger Pigeon* came to fruition promptly, but action on the idea of erecting a public monument to the Passenger Pigeon took some time to materialize. In 1941 Owen Gromme (bird artist and Curator of Birds at the Milwaukee Public Museum) presented the general idea of a monument to members at the third WSO Convention in Racine.

Several WSO members who attended the 1941 convention were quite enthused and later that year offered suggestions on how to move the idea forward. Owen Gromme sketched several images of a Passenger Pigeon that might be considered for a plaque that would be the central feature of a monument (Figure 1). Phil Sander (naturalist and conservationist from Kenosha) drew up rough plans for a stone monument on which the plaque would be placed (Figure 2). Wallace Byron Grange (the first Superintendent of Game for the Wisconsin Conservation Department) proposed that the monument should be erected at Babcock, Wisconsin, where

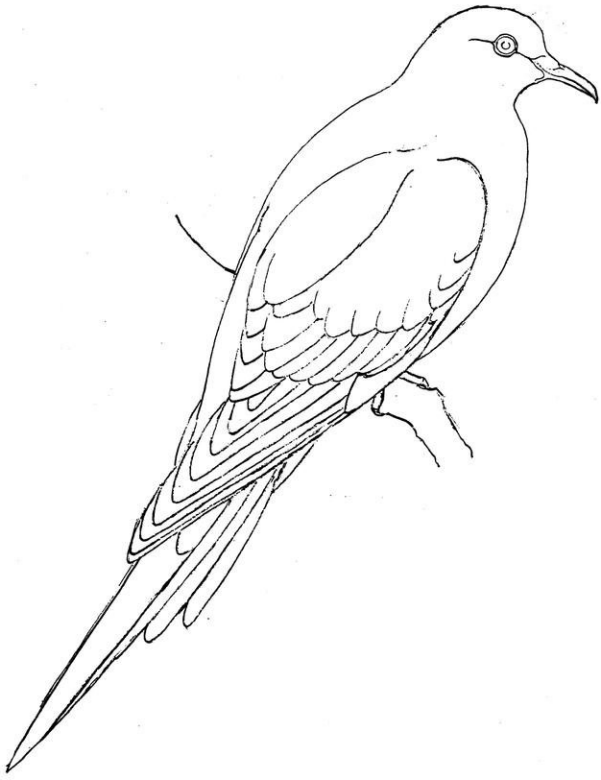

Figure 1. Owen Gromme's original 1941 sketch of a Passenger Pigeon for the proposed plaque commemorating the bird's extinction.

he had established the Sandhill Game Farm in 1937. The site had historical significance. A.W. [Bill] Schorger (Wisconsin's premier natural historian and an authority on the Passenger Pigeon) had determined through his meticulous search of historical records that the last Passenger Pigeon in Wisconsin had been shot near there sometime between 9 and 15 September 1899 (Schorger 1955). The event was recognized as being significant at the time, and several scientists examined the specimen. Schorger could confirm none of the subsequent vague reports of Passenger Pigeons in Wisconsin after this date. Others opined that the Babcock location was too out of the way, and few would likely visit the site. The University of Wisconsin campus and the grounds of the State Capital in Madison as well as Devil's Lake State Park were also suggested as possible locations, but those proposals generated little enthusiasm. Cornelius Louis [Neal] Harrington (Superintendent of State Forests and Parks) proposed that the monument could be placed at Wyalusing State Park, a location that met many of the criteria that were emerging through consensus.

So many individuals showed interest in the project that late in 1941

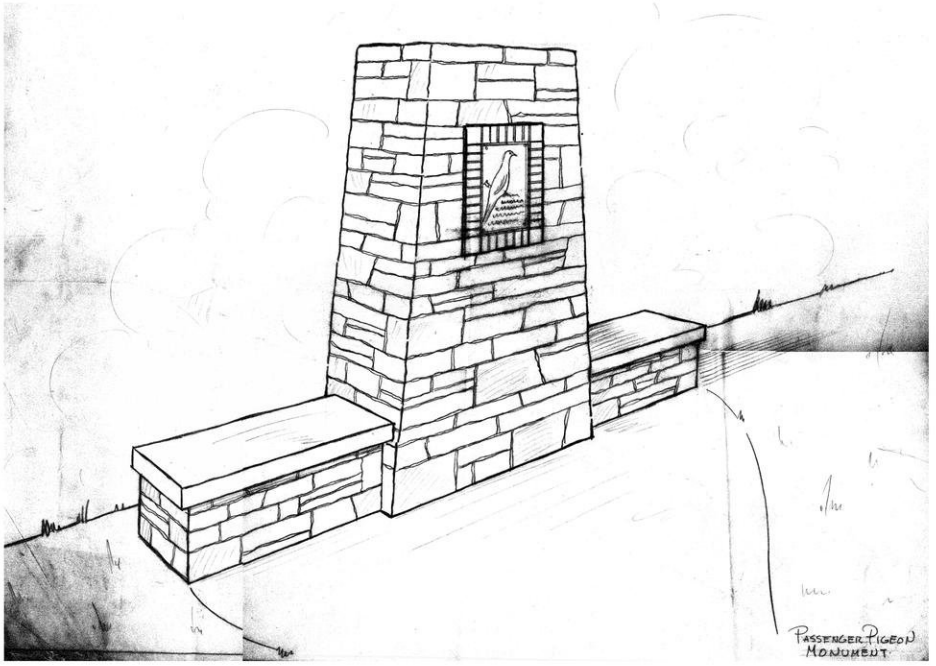

Figure 2. Phil Sander's original 1941 sketch of a monument on which a plaque would be mounted.

WSO President Murl Duesing (Curator of Education at the Milwaukee Public Museum) appointed a committee to move the project forward. The committee consisted of Owen Gromme (Chair), Clarence S. Jung (a WSO founder and President, 1945–47), Elizabeth A. Oehlenschlaeger (a WSO member), Phil Sander, and Walter E. Scott (of the Wisconsin Conservation Department, a founder of WSO and first editor of *The Passenger Pigeon*). The committee favored one of Owen Gromme's sketches for the plaque. They asked A.W. Schorger to draft the inscription for the plaque since he was by then the widely acknowledged authority on the Passenger Pigeon's history. His inscription was accepted:

"DEDICATED TO THE LAST WISCONSIN PASSENGER PIGEON SHOT AT BABCOCK, SEPT. 1899. THIS SPECIES BECAME EXTINCT THROUGH THE AVARICE AND THOUGHTLESSNESS OF MAN."

With the image and inscription for the plaque agreed upon, the selection of a site for the monument became the focus of the committee's activities in 1942. In May 1942 Gromme and several committee members visited Wyalusing State Park to inspect possible locations for the monument. Park Superintendent Paul A. Lawrence led the group to several locations, but a site on Sentinel Ridge overlooking the confluence of the Wisconsin River with the Mississippi River was chosen

Figure 3. The bronze plaque created by Earl G. Wright, cast in bronze at the Leoffelholz Foundry and unveiled at the 1946 WSO Convention in Appleton.

for its spectacular view over the river valley, which would have been a seasonal migration corridor for huge flocks of Passenger Pigeons in the past. The Indian mounds along Sentinel Ridge were already an attraction that drew visitors to the site, so the group concluded that a monument placed nearby on the brink of the bluff would be well visited.

The incoming WSO president, Earl G. Wright, was a talented artist and sculptor, a noted ornithologist and Director of the Neville Public Museum in Green Bay. He took the design concept and in 1942 prepared a plaster model of the plaque that incorporated Schorger's terse inscription and his own rendition of Gromme's pigeon sketch. His beautiful design was accepted, but World War II put many plans on hold, including the plan for advancing the monument project. A shortage of bronze during the war meant that the casting of the plaque had to be delayed. But the project remained popular, and as the war was ending WSO renewed its efforts to complete the task. Mr. and Mrs. Louis Roberts Taylor of Milwaukee (active birders and patrons of the arts) took Wright's model and had it cast in bronze by Milwaukee's Loeffelholz Foundry Company in time for its unveiling at the 1946 WSO convention in Appleton (Figure 3). On the occasion Aldo Leopold and A. W. Schorger were asked to say a few words to mark the unveiling of the plaque. WSO solicited donations to support the monument project, and several dozen individuals contributed.

Meanwhile, Paul Lawrence and his staff at Wyalusing State Park took Sander's rough sketch of the stone monument and modified it to fit tastefully into the chosen site on Sentinel Ridge. The earliest rendering of Lawrence's final design was prepared as a line etching by Madison artist Hjalmar A. Skuldt (Figure 4). Using

Figure 4. Hjalmar A. Skuldt's line etching of the stone monument designed and constructed by Paul A. Lawrence. The image appeared on the cover of *The Passenger Pigeon* in January 1947 and on the cover of *Silent Wings* in May 1947.

locally quarried stone from the park's quarry the staff erected the simple but elegant stone monument. It was completed in time for the main bronze plaque and a smaller acknowledgment plaque to be installed before the 1947 WSO convention in Madison, when a formal dedication of the monument was being planned.

On 11 May 1947 the convention attendees traveled to Wyalusing State Park for the official dedication of the completed monument (Figure 5). Featured speakers included A. W. Schorger and Hartley H. T. Jackson (head of the US Fish and Wildlife Service's Section of Biological Surveys, an Honorary Member of WSO, and future author of *Mammals of Wisconsin*). The initially invited keynote speaker was to be Jay Norwood "Ding" Darling (Pulitzer Prize winning conservation journalist from Iowa) who was unable to attend. For the occasion Walter E. Scott edited the now-classic booklet *Silent Wings*, which contained essays by Leopold, Schorger, and Hartley (Scott 1947). Although it is often reported incorrectly that Aldo Leopold spoke at the dedication ceremony, his famous speech was actually delivered a year earlier, and I could find no proof that he was even present at the 1947 event. At the dedication WSO President J. Harwood Evans (Principal of Oshkosh High School) presented the plaque and monument to the State of Wisconsin, and Conservation Commissioner William J. P. Aberg accepted the gift.

The monument was a signature accomplishment of the young WSO, and

Figure 5. Early photograph of the monument taken in 1947.

it immediately attracted widespread attention as the first monument ever erected to commemorate an extinct species, even being so listed in *Ripley's Believe It or Not!* It later became famous in part because of Aldo Leopold's poignant essay, "On a Monument to the Pigeon," which appeared in his classic book, *A Sand County Almanac* (Leopold 1949). In the years that followed the monument became a pilgrimage destination for bird conservationists, and it was visited by scores of park visitors who often learned for the first time of the Passenger Pigeon's tragic demise.

In 1997 WSO observed the 50th anniversary of the monument's dedication with a commemorative ceremony organized by Fred Lesher (Professor at University of Wisconsin-La Crosse and President of WSO in 1984). Activities were held at the monument 31 May–1 June, and among the featured speakers was Phil Sander, who had played such a significant role in the creation of the monument. A reading of "On a Monument to the Pigeon" by Leopold's daughter, Nina Leopold Bradley, was a highlight.

As the 100th anniversary of the Passenger Pigeon's extinction drew nearer WSO again began planning for a commemoration centered on the monument. An inspection of the monument revealed that it was due for much-needed restoration work. Over the decades mortar had deteriorated and stones had been damaged and fallen out. The Park Superintendent, Chad Breuer, agreed to work with WSO on getting the monument ready for 2014. Tom Boldt, CEO of the Boldt Company and a strong conservation supporter, generously donated the services of his company's senior

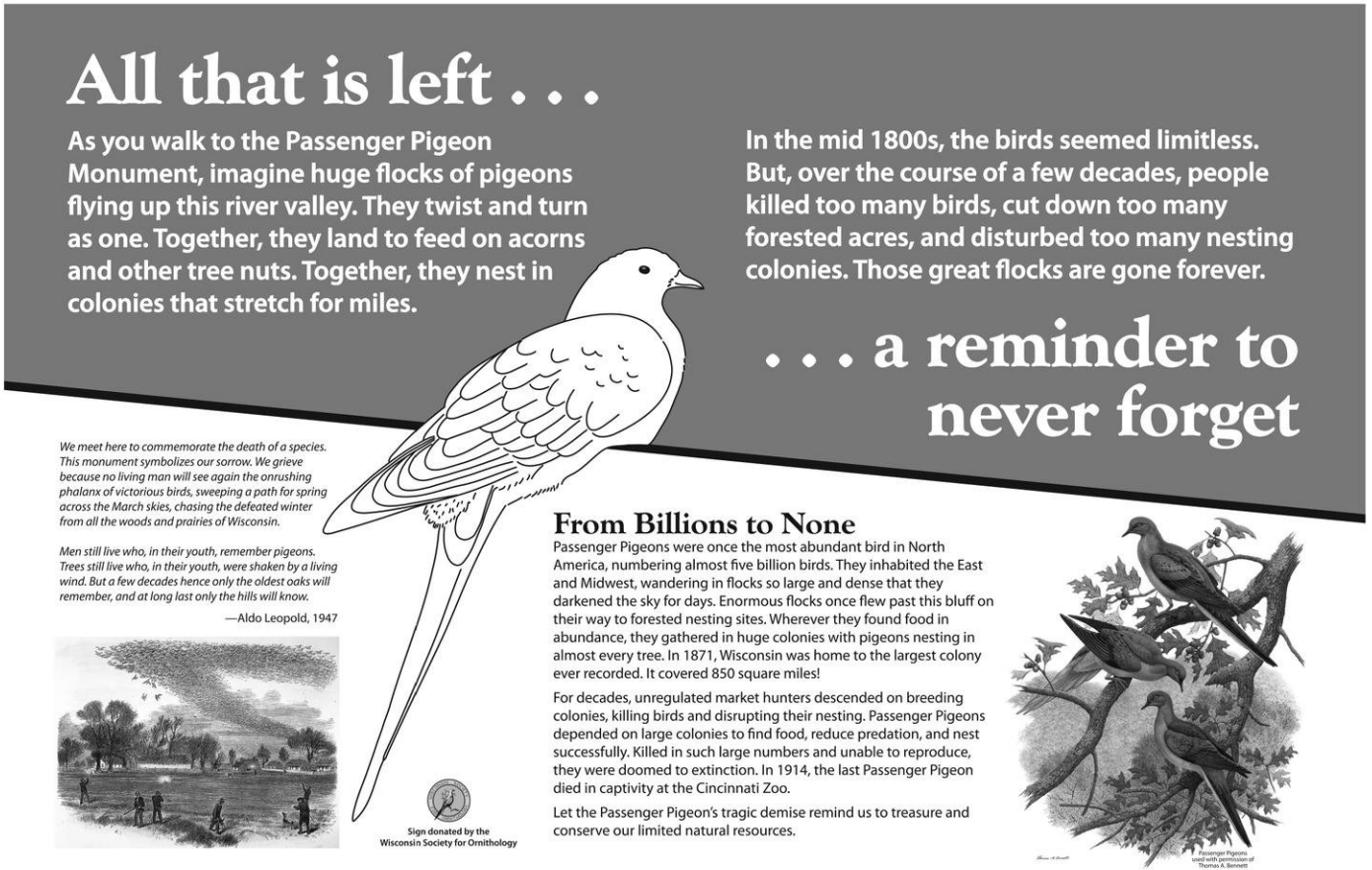

Figure 6. The interpretive sign placed near the monument in 2014 through the collaborative effort of WSO and the Wisconsin Department of Natural Resources.

masons to do a thorough restoration of the monument. That work was completed in 2013, and the monument now looks nearly as good as it did back in 1947. In collaboration with the Wisconsin Department of Natural Resources, WSO has erected a new interpretive sign that explains to visitors the story of the Passenger Pigeon and its significance (Figure 6). The 2014 reprint of *Silent Wings* will allow a new generation of readers to learn more about the Passenger Pigeon. Finally, the monument will be featured in a 2014 documentary film about the Passenger Pigeon, giving it broad exposure to audiences who aren't aware of its existence.

The Passenger Pigeon Monument stands as one of WSO's most enduring accomplishments, and it will continue to remind generations hence of the careless loss of a bird that was once such a conspicuous element of the Wisconsin environment.

Acknowledgments

Nancy J. Nabak, WSO Historian, located several items in the WSO Archives that filled in important details of the monument's history. Notes from my conversations with the late Phil Sander, Norval R. Barger, and Walter E. Scott also helped in putting the story together. Phil Sander's recollections have been published (Sander 1977).

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Stanley A. Temple is the Beers-Bascom Professor Emeritus in Conservation in the Department of Forest and Wildlife Ecology at the University of Wisconsin-Madison. For 32 years he held the academic position once occupied by Aldo Leopold. He is currently a Senior Fellow with the Aldo Leopold Foundation. He has received major conservation awards from The Society for Conservation Biology, The Wildlife Society, and The Wisconsin Society for Ornithology (Silver and Gold Passenger Pigeon awards). Among other recognitions, he is a Fellow of The American Ornithologists' Union, The Explorer's Club, The Wildlife Conservation Society, and The American Association for the Advancement of Science. He has been President of the Society for Conservation Biology, Chairman of the Board of The Nature Conservancy in Wisconsin, and Editor of The Passenger Pigeon.

Aldo Leopold's Essay "On a Monument to the Pigeon"

Stanley A. Temple

Department of Forest and Wildlife Ecology
University of Wisconsin-Madison
Madison, Wisconsin 53706
and
Aldo Leopold Foundation
Baraboo, Wisconsin 53913
satemple@wisc.edu

ABSTRACT

Aldo Leopold's poignant essay, "On a Monument to the Pigeon," is best known because it was included in his widely read 1949 book, A Sand County Almanac. *That 1949 essay was a modified version of his earlier essay that appeared in the WSO booklet,* Silent Wings, *in 1947, which was in turn a modification of the speech he gave at the 1946 WSO Convention. The three versions differ in significant ways. Based on my examination of the original copies of each of the three versions, I present an interpretation of how and why Leopold modified the essay over the three-year period.*

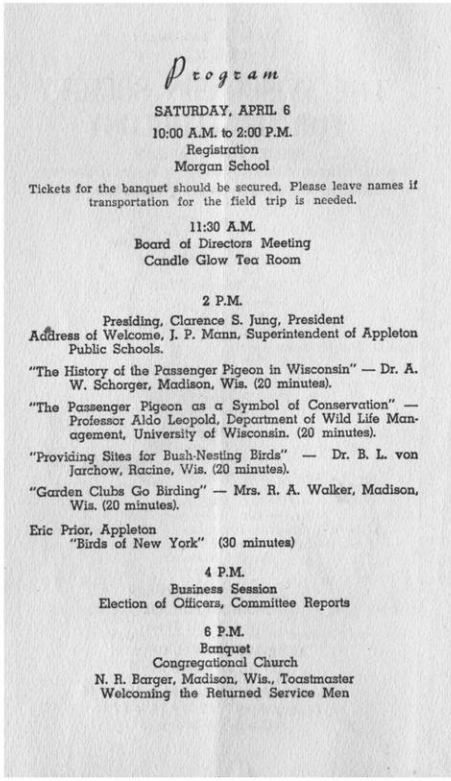
Aldo Leopold's "On a Monument to the Pigeon" (Leopold 1949) is widely regarded as one of his most moving essays. The Passenger Pigeon is the main focus of the essay, but it is also his most thoughtful commentary on the larger issue of human-caused extinctions as a symptom of our tragic relationship with other species. Although most readers recognize the essay only as one of the "Sketches Here and There" in *A Sand County Almanac*, that well-known version of the essay was the final product of three years of tinkering with and rewriting what began as the hand-written script for a speech Leopold gave at the 1946 WSO Convention in Appleton. It next appears a year later, much revised, as the lead essay in *Silent Wings: A Memorial to the Passenger Pigeon* (Leopold 1947), and finally it is included in its most polished form in *A Sand County Almanac* (Leopold 1949). Because Leopold's papers have been preserved, catalogued, and made easily accessible online by the University of Wisconsin Archives (http://uwdc.library.wisc.edu/collections/AldoLeopold), I was able to trace the evolution of the essay from a nearly complete paper trail of manuscripts and correspondence (Table 1). In addition, there are the recollections of several individuals who heard Leopold's 1946 speech. Here, I describe the changes

Table 1. Timeline of the evolution of "On a Monument to the Pigeon" with references to key online documents in the University of Wisconsin Archives.

Date	Event and reference to key online document in UW Archives
4-6-1946	WSO meeting in Appleton; Leopold attends and delivers address. Leopold prepares first draft of essay as handwritten script.
8-25-1946	Revises the first draft through cut-and-paste. Then has it typed on 8/26 http://digicoll.library.wisc.edu/cgi-bin/AldoLeopold/AldoLeopold-idx?type=turn&id=AldoLeopold.ALMiscManPub&entity=AldoLeopold.ALMiscManPub.p0752&isize=L&title=Writings%3A%20Misc.%20Manuscripts%20%28published%29%2C%20Working%20Papers%2C%20p.%20%5B752%5D
2-14-1947	Walter Scott letter to Leopold requesting a manuscript for *Silent Wings* http://digicoll.library.wisc.edu/cgi-bin/AldoLeopold/AldoLeopold-idx?type=turn&entity=AldoLeopold.ALWildEcolWZ.p0206&id=AldoLeopold.ALWildEcolWZ&isize=L
2-21-1947	Leopold's response to Scott http://digicoll.library.wisc.edu/cgi-bin/AldoLeopold/AldoLeopold-idx?type=turn&entity=AldoLeopold.ALWildEcolWZ.p0205&id=AldoLeopold.ALWildEcolWZ&isize=L
4-19-1947	Leopold revises essay (for *Silent Wings*) http://digicoll.library.wisc.edu/cgi-bin/AldoLeopold/AldoLeopold-idx?type=turn&entity=AldoLeopold.ALMiscManPub.p0770&id=AldoLeopold.ALMiscManPub&isize=L
5-11-1947	Dedication of the Passenger Pigeon Monument. *Silent Wings* published.
7-31-1947	Essay incorporated into manuscript of A Sand County Almanac. http://digicoll.library.wisc.edu/cgi-bin/AldoLeopold/AldoLeopold-idx?type=turn&id=AldoLeopold.ALDeskFile&entity=AldoLeopold.ALDeskFile.p0796&isize=L&title=Writings%3A%20Unpublished%20Manuscripts%20—%20AL%27s%20Desk%20File%2C%20p.%20%5B796%5D

that Leopold made to the essay through three versions and multiple drafts, and I interpret those changes in light of what we know about the state of his mind and the state of the world at that period of time.

It all began with a request for Leopold to comment on the significance of the Passenger Pigeon's extinction on the occasion of the unveiling of the bronze plaque that was to be installed on the soon-to-be-constructed Passenger Pigeon Monument (Temple 2014). He was asked to give a 20-minute talk on "The Passenger Pigeon as a Symbol of Conservation" (Figure 1). The 6 April meeting was held at the Morgan School in downtown Appleton, and was attended by a relatively modest group of core WSO members. Leopold's talk followed A. W. [Bill] Schorger's reportedly rather matter-of-fact account of the history of the Passenger Pigeon in Wisconsin, a subject on which he was the acknowledged authority. Leopold was asked to put the pigeon story into a larger context. Later accounts of three attendees (Phil Sander, Walter E. Scott, and George Becker) agree that Leopold was not feeling well that day, and that his de-



Program

SATURDAY, APRIL 6

10:00 A.M. to 2:00 P.M.
Registration
Morgan School

Tickets for the banquet should be secured. Please leave names if transportation for the field trip is needed.

11:30 A.M.
Board of Directors Meeting
Candle Glow Tea Room

2 P.M.
Presiding, Clarence S. Jung, President
Address of Welcome, J. P. Mann, Superintendent of Appleton Public Schools.

"The History of the Passenger Pigeon in Wisconsin" — Dr. A. W. Schorger, Madison, Wis. (20 minutes).

"The Passenger Pigeon as a Symbol of Conservation" — Professor Aldo Leopold, Department of Wild Life Management, University of Wisconsin. (20 minutes).

"Providing Sites for Bush-Nesting Birds" — Dr. B. L. von Jarchow, Racine, Wis. (20 minutes).

"Garden Clubs Go Birding" — Mrs. R. A. Walker, Madison, Wis. (20 minutes).

Eric Prior, Appleton
"Birds of New York" (30 minutes)

4 P.M.
Business Session
Election of Officers, Committee Reports

6 P.M.
Banquet
Congregational Church
N. R. Barger, Madison, Wis., Toastmaster
Welcoming the Returned Service Men

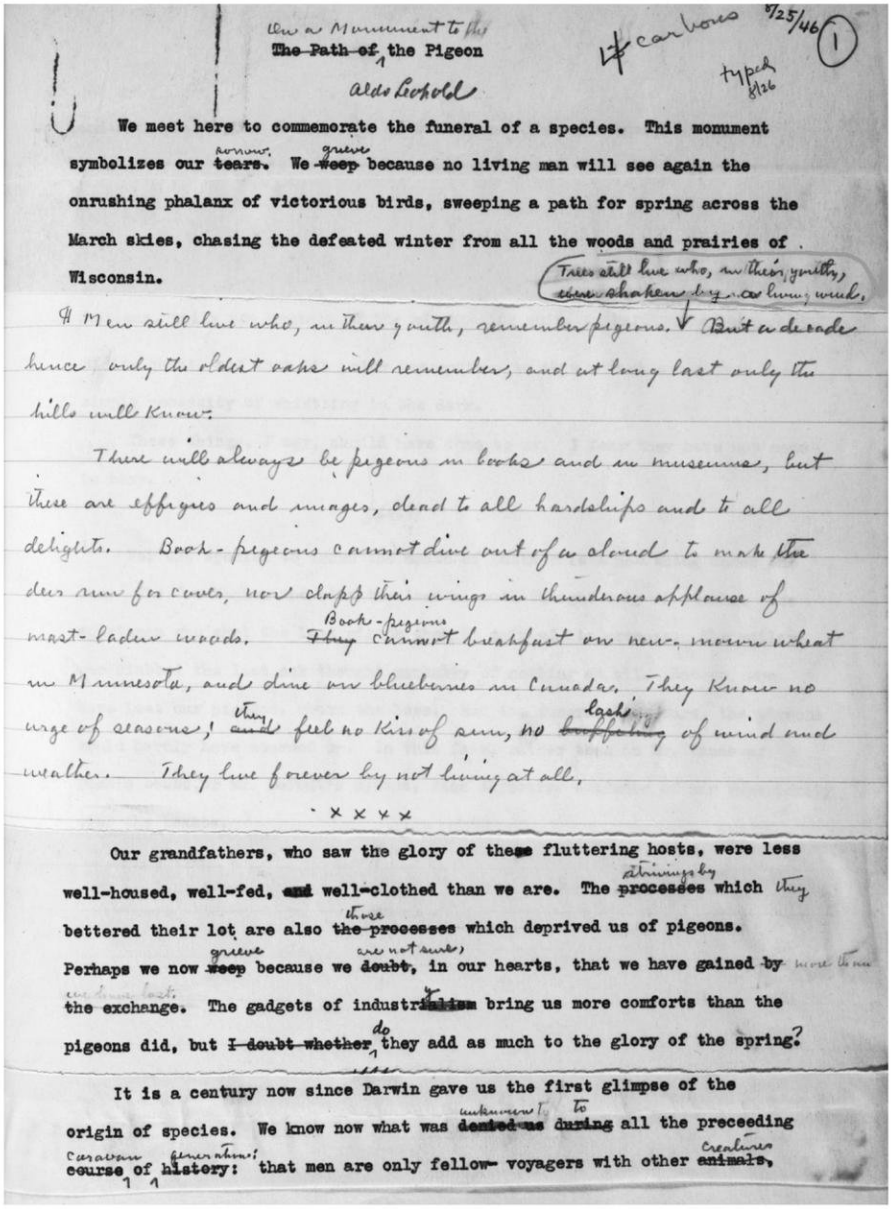
Figure 1. The program from the 1946 WSO Convention with Aldo Leopold's talk listed as "The Passenger Pigeon as a Symbol of Conservation"

livery was not as polished as some of his other addresses they had heard. Possibly it was because during this period he was experiencing debilitating bouts of trigeminal neuralgia (Meine 1988). Yet there was a consensus that Leopold was using the opportunity to "get a lot off his chest." His moving comments on the Passenger Pigeon segued into a much more expansive and passionate discourse on the role of science in modern society and how it was affecting our relationship with the natural world. According to Becker, Leopold's message was "overwhelming." Scott described the audience as "awe-struck" by what they had just witnessed and "moved" by Leopold's powerful message.

As was often his custom for freshly written public speeches (Meine 1988), Leopold read his pigeon talk from a hand-written script on yellow legal paper. Portions of that original script still exist in the Leopold archives (Table 1), but after the April WSO meeting Leopold cut and pasted the original script when he revised it on 25 August 1946 and had it typed. The result is that there is no complete version of the talk, but most of it survives in the pasted-up next draft (Figure 2). For starters, it is noteworthy that Leopold's chosen title for his talk, "The Path of the Pigeon," is much more poetic than the rather academic title on the program of the WSO Convention. That was perhaps the first indication that Leopold intended to go beyond an analytical accounting of how the pigeon's extinction affected conservation policy and practice. The initial portions of the talk contain some of Leopold's most beautiful prose describing the Passenger Pigeon and its extinction:

"There will always be pigeons in books and in museums, but these are effigies and images, dead to all hardships and to all delights. Book-pigeons cannot dive out of a cloud to make the deer run for cover, nor clap their wings in thunderous applause of mast-laden woods. Book-pigeons cannot breakfast on new-mown wheat in Minnesota, and dine on blueberries in Canada. They know no urge of seasons; they feel no kiss of sun, no lash of wind and weather; they live forever by not living at all." (Leopold 1946)

The vivid images Leopold paints of this most remarkable bird capture



On a Monument to the
The Path of the Pigeon
Aldo Leopold

1½ carbons 9/25/46 (1)
typed 9/26

We meet here to commemorate the funeral of a species. This monument symbolizes our ~~tears~~ sorrow. We ~~weep~~ grieve because no living man will see again the onrushing phalanx of victorious birds, sweeping a path for spring across the March skies, chasing the defeated winter from all the woods and prairies of Wisconsin.

Trees still live who, in their youth, ~~saw~~ shaken by ~~the~~ living wind,

Men still live who, in their youth, remember pigeons. But a decade hence only the oldest oaks will remember, and at long last only the hills will know.

There will always be pigeons in books and in museums, but these are effigies and images, dead to all hardships and to all delights. Book-pigeons cannot dive out of a cloud to make the deer run for cover, nor clap their wings in thunderous applause of mast-laden woods. Book-pigeons ~~They~~ cannot breakfast on new-mown wheat in Minnesota, and dine on blueberries in Canada. They know no urge of seasons; ~~and~~ they feel no kiss of sun, no lash of wind and weather. They live forever by not living at all.

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Our grandfathers, who saw the glory of these fluttering hosts, were less well-housed, well-fed, ~~and~~ well-clothed than we are. The ~~processes~~ stirrings by which they bettered their lot are also ~~the~~ those processes which deprived us of pigeons. Perhaps we now ~~weep~~ grieve because we ~~doubt~~ are not sure, in our hearts, that we have gained by the exchange. The gadgets of ~~industrialism~~ industry bring us more comforts than the pigeons did, but ~~I doubt whether~~ do they add as much to the glory of the spring?

It is a century now since Darwin gave us the first glimpse of the origin of species. We know now what was ~~denied us~~ unknown to during all the preceding course of history: that men are only fellow- voyagers with other creatures ~~animals~~, caravan generations

Figure 2. The edited first page of the script Aldo Leopold read at the 1946 WSO Convention with his original title "The Path of the Pigeon"

beautifully the essence of its life history and ecology, but the hard-hitting reflections that came next turned the mood of his speech from poetic to reflective and somber. He makes profound observations about the act of commemorating the pigeon's extinction:

> "To love what **was** is a new thing under the sun, unknown to most people and to all pigeons. To see America as history, to conceive of destiny as a becoming, to smell a hickory tree through the still lapse of ages, these things are possible for us, and to achieve them takes only the free sky, and the will to ply our wings. In these things, and not in Mr. Bush's bombs [Vannevar Bush helped develop the hydrogen bomb] and Mr. DuPont's nylons, lies objective evidence of our superiority over the beasts. That evidence would be more convincing if we had learned to foresee and forestall funerals, as well as to erect monuments to the dead. Such evidence is hard to find." (Leopold 1946)

The first 5 pages of the 1946 script remained largely intact through subsequent revisions, but the remaining parts of Leopold's 1946 talk were not included in either the 1947 or 1949 published versions. Hence, few know about those deleted comments that had left the 1946 audience so overwhelmed. What Leopold deleted is best described as a tirade, a rant against how science and technology were changing the world.

He disparages the exploration and desecration of wilderness in search of natural resources, ending the paragraph with the words he chose for title for his speech:

"At the present moment, hydroplanes are hovering over arctic lakes, sowing new Klondikes over the tundra, planting engineers and snowmobiles in the land of little sticks. These men have learned nothing from Darwin except the rule of devil-take-the-hindmost, nor do they feel nostalgic about auks or pigeons. To them, as to the Cro-Magnon, the caribou is a cutlet, the musk-ox a steak. To them the barren-ground grizzly and the whooping crane are beautiful to behold . . . through a peep sight. These and other species, heretofore secure behind a fortress of arctic solitude, must now soon follow the path of the pigeon." (Leopold 1946)

He focuses his ire on our quest for a higher standard of living, a theme he repeats in the Foreword of *A Sand County Almanac*: "Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild and free." (Leopold 1949). And he posits a basic premise of his land ethic: that we are members of a community of living things.

"The reason for all these developments is that they raise our standard-of-living. So they do—some of them. But surely there is also an esthetic standard-of-living which is impoverished for all time when a species is erased from the biota, or when no raindrop can run unfettered to the sea. I have never seen a musk-ox, nor will I have time to dip a paddle in the Willamette, the Salmon or the St. Francis, but all of them, by living, are standards to me. I suppose it is impossible to explain this to those who do not know it." (Leopold 1946)

In the closing section of his speech Leopold directs his most critical comments at the role of "power-science" and technology in shifting our relationship with nature in a dangerous direction. The historical context for his comments was the end of World War II and all the technologies developed for the war effort (e.g., nuclear

weapons and pesticides like DDT) that were then coming into general use:

"Time was when the aim of science was to understand the world, and to learn how man may live in harmony with it. If I read Darwin aright, he was more concerned with understanding than with power. But science, as now decanted for public consumption, is mainly a race for power. Science has no respect for the land as a community of organisms, no concept of man as a fellow-passenger in the odyssey of evolution. Science has developed a kind of cosmic arrogance which in turn determines the content and direction of scientific endeavor. We have cracked the atom, but we have not yet learned how to raise corn or cotton without selling the soil down-river. We make silk stockings out of a tree, but we cannot yet grow trees to compare with those in which the pigeon nested. We have taught science for a century without implanting in the mind of youth the concept of community with the land.

"I am not philosopher enough to know whether this preoccupation with power-science is good and wise, or bad and foolish. But I am scientist enough to know that any trend which is beneficial in one degree, may become lethal in another. Anyone can demonstrate this by applying heat, or arsenic, or oxygen to any plant or animal. No one doubts that a degree of power-science was what freed the human mind from the Cro-Magnon philosophy of steaks. But one may be entitled to surmise that a lethal degree of preoccupation with power-science is now in the making. All our wars, external and internal, deal with little else.

"We have learned in politics that preoccupation with the nation, as distinguished from mankind, defeats its own end. We label this fallacy isolationism. Perhaps we have now to learn that preoccupation with mankind, as distinguished from the community of which man is a member, defeats its own ends. Perhaps this monument is not merely a symbol of the dead past, but also a portent of a different future. Perhaps we learn more from the dead than from the living." (Leopold 1946)

Leopold closed his speech with a return to the esthetics of wild things and a question of values in a modern world, a theme that would eventually be so prevalent in *A Sand County Almanac*.

"Just why is it that wild things and wild places are beautiful to man? Philosophers have never answered this question, and the prophets (always excepting Isaiah) have given it a wide berth, but any unspoiled dog can tell you: it is because man is a predator, and his prey, in its likely habitat, excite him. Esthetics are a sublimation of this and other innate behavior patterns.

"The question at issue is whether more comforts are worth their cost in wild things. This in turn is a question of what comforts already exist." (Leopold 1946)

On 14 February 1947 Walter Scott asked Aldo Leopold if he would write up his 1946 speech for inclusion in the booklet Scott was editing for distribution at the formal dedication of the Passenger Pigeon Monument in May 1947. Leopold responded on 21 February that he would and began revising the manuscript from the previous August. In the Leopold archives there are several drafts of the essay that would eventually be finalized on 10

April and published a month later in *Silent Wings* under the title "On a Monument to the Pigeon" (Leopold 1947). The second half of the speech, however, was not included, and this version stayed more or less narrowly focused on the Passenger Pigeon. There are, however, a few heavily reworked reminders of his earlier rant. Although the wording of the essay suggests that Leopold was speaking at the 11 May dedication ceremony, he was not on the program, and there is no evidence that he was even present.

"We who erect this monument are performing a dangerous act. Because our sorrow is genuine, we are tempted to believe that we had no part in the demise of the pigeon. The truth is that our grandfathers, who did the actual killing, were our agents. They were our agents in the sense that they shared the conviction, which we have only now begun to doubt, that it is more important to multiply people and comforts than to cherish the beauty of the land in which they live. What we are doing here today is publicly to confess a doubt whether this is true.

"This, then, is a monument to a bird we have lost, and to a doubt we have gained." (Leopold 1947)

Over the course of 1947–48 Leopold continued to revise "On a Monument to the Pigeon" for inclusion in the collection of essays that would become *A Sand County Almanac*. The content of the essay becomes progressively more poetic and focused on the pigeon and the monument. But he adds a few flourishes that harken back to his earlier diatribe.

"Above all we should, in the century since Darwin, have come to know that man, while now captain of the adventuring ship, is hardly the sole object of its quest, and that his prior assumptions to this effect arose from the simple necessity of whistling in the dark.

"These thing, I say, should have come to us. I fear they have not come to many." (Leopold 1949)

How can we put Aldo Leopold's three versions of the essay into context? The 1946 speech was a handwritten first draft that was heavily influenced by Leopold's despair after witnessing the horrible devastation of World War II and by his growing concern over the new technologies that were being unleashed on the world in its aftermath. Nonetheless, his beautiful prose on the pigeon kept the speech from being too contemptuous. The 1947 version went through a couple of drafts and represents a considerable refinement. Perhaps because Leopold knew it would be published in conjunction with an event focused on the Passenger Pigeon Monument, he changed the title, made references to the newly erected monument, polished his comments about the pigeon and eliminated most of his rant on science and technology. When he decided to incorporate the essay into the "Sketches Here and There" section of *A Sand County Almanac*, which he must have hoped would reach many more readers than *Silent Wings*, he polished it even more, resulting in the masterpiece that is widely regarded as the most poignant essay ever written on extinction.

ACKNOWLEDGMENTS

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Stanley A. Temple is the Beers-Bascom Professor Emeritus in Conservation in the Department of Forest and Wildlife Ecology at the University of Wisconsin-Madison. For 32 years he held the academic position once occupied by Aldo Leopold. He is currently a Senior Fellow with the Aldo Leopold Foundation. He has received major conservation awards from The Society for Conservation Biology, The Wildlife Society, and The Wisconsin Society for Ornithology (Silver and Gold Passenger Pigeon awards). Among other recognitions, he is a Fellow of The American Ornithologists' Union, The Explorer's Club, The Wildlife Conservation Society, and The American Association for the Advancement of Science. He has been President of the Society for Conservation Biology, Chairman of the Board of The Nature Conservancy in Wisconsin, and Editor of The Passenger Pigeon.

American White Pelican coming in for landing by Jack Bartholmai

Further Trends in the List of Wisconsin Birds

Jim Frank

jcfbirddr@yahoo.com

Twenty-five years ago, John Idzikowski presented a discussion of the bird species added to the Wisconsin List in the prior 148 years. That list of 392 species has grown in the ensuing 25 years by 43 species. As predicted in that article 25 years ago, the List would reach 415 species by the year 2000 and now stands at 435 species).

The Wisconsin Bird List of 1988 of 392 species was presented in a Passenger Pigeon article from 1989, Vol. 51, No.1 in an article by John Idzikowski. In examining the 25 year interval of birding since then, there have been 33 new species identified in the state, 5 species added from the hypothetical list via a newer more satisfactory record, 3 others added from historical re-examinations, an additional 3 species found their way to the list through the splitting of species, and there was one subtraction from the list due to a question of origin of that bird (Table 1). Despite what might be assumed to be an ever-dwindling pool of species to draw new species from, the rate of increase of 1.8 per year for the Wisconsin List has been greater than any period since 1855 (Table 2). These periods in ornithological history reflect obvious changes in the rate of species additions to the state list. Early in the history, one would assume there was much to be learned about the species visiting the state. Later early researchers stepped up the ornithological additions through their increased activities. In more modern times the first field guides began to prompt more people to take an interest in birds and increase the observer pool. In the past 25 years, further increases in the observer pool might reflect "aging baby boomers" and their ability to spend more time and money in pursuing birds around the state. In the 12 year interval 1993–2004, the rate of new additions (without new species added from splits or historical rediscoveries) was 2.2 a year! Since that time interval, the rate of new species additions has decreased to 9 in 9 years, the overall historical average. One must also consider that with an ever-diminishing pool of new species to draw from, we may be witnessing the ultimately expected trend of a permanent long-term slowing in the rate of new species additions. Perhaps the dramatic increase in the number of people interested in birds and feeding them bears some credit for this change, given that 14 species were directly added through feeder visitation.

Table 1. Wisconsin State Bird List—new additions 1989–2013.

Year	Species	Date	County	Observer
1989	393 Fulvous Whistling-Duck	3 July 1989	Columbia	William Mueller
1990	394 Anna's Hummingbird	late August 1990	Waukesha	David Schmidt
1991	395 California Gull	29 November 1991	Sheboygan	Robert Hughes
1992				
1993	396 Swainson's Warbler (discovered by Tom Schultz)	9 May 1976		Lester Barnes
	397 Phainopepla	31 October 1993	Milwaukee	Marvin Calwart
	398 Townsend's Warbler	5 December 1993	Milwaukee	Melvina Ralston
1994	399 Brambling	17 January 1994	Winnebago	Kenneth Krake
	400 Harris's Hawk	25 October 1994	Sheboygan	Berger/Mueller
1995	401 Bullock's Oriole (added due to split of Baltimore Oriole)			
	402 Spotted Towhee (added due to split of Rufous-sided Towhee)			
	403 Scott's Oriole	late November 1995	Adams	R. & A. Newberg
1996	404 Glaucous-winged Gull	1 January 1996	Ozaukee	Tom Uttech
	405 Western Wood-Pewee (formerly on hypothetical list since 1981)	17 September 1996	Oconto	Tom Erdman
	406 Dusky Flycatcher	8 October 1996	Oconto	Tom Erdman
1997				
1998	407 Streak-backed Oriole	early January 1998	Iron	Mike Stevens
	408 Eurasian Collared-Dove	20 May 1998	Ozaukee	Noel Cutright
	409 Green Violetear	22 September 1998	La Crosse	John Hayden
1999	410 Blk-bellied Whistling-Duck	19 Oct. 1999	Trempealeau	W. Spencer
2000	411 Smew	24 March 2000	Douglas	Shaun Putz
	412 MacGillivray's Warbler	10 May 2000	Waukesha	Gene Albanese
	413 White-winged Dove	15 June 2000	Portage	Kent Hall
	414 Broad-billed Hummingbird	20 October 2000	Dodge	Dave Freriks
	415 Ash-throated Flycatcher	30 October 2000	Kewaunee	John Regan
	416 Rufous-crowned Sparrow	25 November 2000	Waukesha	Maureen Gross
2001	417 Vermilion Flycatcher (formerly on hypothetical list since 1950)	10 November 2001	Jefferson	Rozelle
	418 Ross's Gull	6–8 December 2001	Bayfield	Travis Mahan
2002	419 Black Rail (formerly on hypothetical list since 1956)	4 May 2002	Milwaukee	John Idzikowski
	418 Deletion of White-cheeked Pintail record from 1929, origin questions			
	419 Thick-billed Murre (discovered by John Idzikowski)	December 1896 ??	Milwaukee	
	420 White Ibis (formerly on hypothetical list since 1978)	10 September 2002	Burnett	Robbye Johnson
	421 Band-tailed Pigeon	24 September 2002	Waushara	Jerald Discher
2003	422 Black-tailed Gull	12 June 2003	Racine	Eric Howe
2004	423 Wilson's Plover	9 May 2004	Douglas	Sparky Stensaas
	424 Cackling Goose (added due to split of Canada Goose)			
	425 Hooded Oriole	15 December 2004	La Crosse	Tim Collins
	426 Slaty-backed Gull	13 November 2001	Milwaukee	Brian Boldt
2005	427 Cave Swallow	13 November 2005	Milwaukee	John Idzikowski
2006				
2007	428 Great-tailed Grackle	31 January 2007	Dodge	Larry Michael
	429 Rock Wren	1 May 2007	Milwaukee	Steve Lubahn
	430 Green-breasted Mango	18 Sept.–6 Nov 2007	Rock	Salzberg/Ramsden
2008				
2009	431 Pyrrhuloxia	22 October 2005	Milwaukee	Bob Matyas
2010	432 Prairie Falcon (formerly on hypothetical list since 1957)	31 October 1976	Vernon	William Smith
2011	433 Neotropic Cormorant	3–23 July 2011	Dodge	E. Howe/P. Fissel
	434 Inca Dove	28 Oct.-30 Nov. 2011	Ozaukee	Phil Arnholt
	435 Tropical/Couch's Kingbird	5 June 2011	Door	Sandy Peterson
2012				
2013				

Table 2. Eras of Ornithological Significance

Eras	Number of species discovered	Average species per year
1840–1855	28	1.8
1856–1868	5	0.4
1869–1890	23	1.0
1891–1958	38	0.6
1959–1988	34	1.1
1989–2013	44	1.8
1840–2013	172	1.0

More birders checking the known migrant traps along the Great Lakes shoreline improve the chances of someone catching a glimpse of these displaced birds.

The geographic origin of these new species is demonstrated in Table 3. As Idzikowski predicted, it is evident that the pool of southern species is shrinking, contributing only 6 of the new additions in this time segment. The majority of the new species, again as anticipated by Idzikowski, are vagrants from the western United States representing a striking 27 species with 14 perhaps attributable to the southwestern U.S. rather than the broader western U.S. Following a trend noted in the 1959–1988 additions, Eurasian species accounted for 5 of the new species (Brambling, Smew, Black-tailed Gull, Eurasian Collared-Dove, and Slaty-backed Gull). An old museum specimen from before 1900 adds the Thick-billed Murre in the pelagic category. One arctic addition came in the form of a Ross's Gull. It's hard to know how to categorize the Cackling Goose, given it has historically been migrating through Wisconsin under the guise of a Canada Goose subspecies, but it was placed under arctic species as well. Finally in a category not delineated in 1988, there have been 3 new species arriving in Wisconsin from Mexico. Green Violetear, Streaked-backed Oriole, and Green-breasted Mango were the unexpected surprises from south of the border.

The 2013 Hypothetical List of birds for Wisconsin retains 8 holdovers from the 1988 list (Table 4). Additions to this list in the past quarter century are Long-billed Murrelet, Virginia's Warbler, and Yellow-browed Warbler. Hypotheticals elevated to the State List in the past 25 years include White Ibis, Prairie Falcon, Black Rail, Western Woodpewee, and Vermilion Flycatcher, although none of the hypotheticals from 1988 was mentioned on ballots submitted in 1988 trying to anticipate the next additions to the State Bird List.

Table 3. Geographical Origins of New Species

Region	Historical Number of Species 1840–1988	1989–2013	Number of Species Hypotheticals	Predicted
Western U.S.	41 (32%)	27 (63%)	6 (55%)	15 (50%)
Eastern U.S.	7 (5%)	1 (2%)	0	0
Southern U.S.	42 (33%)	6 (13%)	1 (9%)	3 (9%)
Eurasia	7 (5%)	5 (11%)	3 (27%)	8 (27%)
Arctic	18 (13%)	2 (2%)	0	0
Pelagic	4 (3%)	0	1 (9%)	2 (7%)
South America	1 (1%)	0	0	1 (3%)
Mexico	0	3 (7%)	0	0
Introduced	9 (9%)	0	0	1 (3%)

Table 4. Wisconsin's Hypothetical List

Clark's Grebe	1987
Spotted Redshank	1960
Roseate Tern	1950
Long-billed Murrelet	1998 (24 Nov. Lubahn); 2000 (6 March, Domagalski)
Cassin's Kingbird	1969
Northern Wheatear	1952
Sprague's Pipit	1967
Painted Redstart	1965
Virginia's Warbler	2008 (10 May, Lubahn)
Yellow-browed Warbler	2006 (22 Oct., Frank)
Lesser Goldfinch	1984

In 1988, seven birders were asked to anticipate the next 10 species to be expected to make the State List. That list is reproduced in Table 5. Of the 43 species mentioned on that list, 14 actually did become additions to the state list in the past 25 years. In addition,the original premise of the balloting was to name the next 10 species added to the State List—and 4 of the next 10 species were successfully mentioned on those ballots. Of the 8 species receiving a majority (4 or more) of the 7 votes, seven of those birds did make the new list. The one species of that group that did not get added to the state list is the Yellow-billed Loon. Of the species receiving 3/7 votes, 2 of 6 species were actually added; those receiving 2/7 votes, 2 of 8 species were added; and among the 21 species mentioned on just one ballot, only three were added.

As was done 25 years ago, 6 additional birders have generated their own lists of what to expect as the next 10 additions to Wisconsin's List (Table 6). The origins of those 30 species still favor the western United States, still show a dwindling number of southern birds, but show an increasing expectation of Eurasian wanderers as well as pelagic birds. Increasing strengths of hurricanes with associated displacements of pelagic birds inland probably fuel this pelagic interest. Increasing sightings of Eurasian wanderers both from Europe and Siberia onto the adjacent North American coastlines and in recent years into the Midwest have led to predictions and hopes of more species from these long-distance origins.

Of the species unsuccessfully predicted from the 1988 ballots, the top four species that back then had 3 or 4 of a possible 7 votes were all retained in this year's balloting. The "top miss" from 1988, the Yellow-billed Loon, sits on top of this year's predicted additions, appearing on all 6 ballots. Of the 30 species on this 2013 prediction list, 13 appeared on multiple ballots. If the percentages hold from the 1988 predictions/additions, 40% (5) of these 13 species will be seen in the near future in Wisconsin. Of the remaining 17 singly balloted species, 14% (2) might make the list. Of the 11 species sitting on the Hypothetical List for Wisconsin in 2013, five of them were on the "predicted to be added list" for the 2013 balloting—the Clark's Grebe, Spotted Redshank, Sprague's Pipit, Painted Redstart, and Northern Wheatear.

Table 5. Species predicted to be added to the Wisconsin State Bird List after 1988. An * indicates a species actually added between 1989–2013.

Species	Year Added	Number of Votes
*California Gull	1989	7/7
*Ross's Gull	2001	5/7
*Great-tailed Grackle	2007	5/7
Yellow-billed Loon		4/7
*Wilson's Plover	2004	4/7
*Rock Wren	2007	4/7
*Ash-throated Flycatcher	2000	4/7
*Swainson's Warbler	1976/1993	4/7
Tufted Duck		3/7
Sharp-tailed Sandpiper		3/7
*Band-tailed Pigeon	2002	3/7
Carolina Chickadee		3/7
*Brambling	2004	3/7
McCown's Longspur		3/7
Garganey		2/7
Violet-green Swallow		2/7
Western Bluebird		2/7
*Townsend's Warbler	1993	2/7
*McGillivray's Warbler	2000	2/7
Hepatic Tanager		2/7
Cassin's Sparrow		2/7
Black-chinned Hummingbird		1/7
Mountain Plover		1/7
Broad-tailed Hummingbird		1/7
Brewer's Sparrow		1/7
*Fulvous Whistling-Duck	1989	1/7
Williamson's Sapsucker		1/7
Fish Crow		1/7
Gull-billed Tern		1/7
American Oystercatcher		1/7
Great Skua		1/7
Bachman's Sparrow		1/7
Heermann's Gull		1/7
*Black-bellied Whistling-Duck	1999	1/7
Common Greenshank		1/7
Black-tailed Godwit		1/7
Bar-tailed Godwit		1/7
Little Stint		1/7
Sandwich Tern		1/7
*White-winged Dove	2000	1/7
American Dipper		1/7

From lists supplied by S. Robbins, M. Donald, D. Tessen, J. Polk, R. Sundell, C. Sontag, and D. Verch

Table 6. Forecasted New Additions to Wisconsin State List—2013

Species	Number of Votes
Yellow-billed Loon	6/6
Sharp-tailed Sandpiper	5/6
Clark's Grebe	4/6
Violet-green Swallow	4/6
Calliope Hummingbird	4/6
Broad-tailed Hummingbird	3/6
Northern Wheatear	3/6
Fish Crow	3/6
Mottled Duck	2/6
Garganey	2/6
Tufted Duck	2/6
Black-chinned Hummingbird	2/6
Sprague's Pipit	2/6
Painted Redstart	1/6
Tropical Kingbird	1/6
White-throated Swift	1/6
Gray Flycatcher	1/6
Brewer's Sparrow	1/6
Gray Kingbird	1/6
Long-billed Murrelet	1/6
Kelp Gull	1/6
Cassin's Sparrow	1/6
Allen's Hummingbird	1/6
Red-necked Stint	1/6
Northern Gannet	1/6
Spotted Redshank	1/6
Barnacle Goose	1/6
European Goldfinch	1/6
Reddish Egret	1/6
McCown's Longspur	1/6

From lists submitted by Jerry DeBoer, John Idzikowski, Mark Korducki, Steve Lubahn, Janine Polk, and Jim Frank.

Based on records of rare birds in adjacent Midwestern states, other species with a reasonable expectation of being among the species added in the next 25 years, Idzikowski speculates these additional species should be looked for: Black Guillemot, Yellow-legged Gull, Heermann's Gull, Lesser Nighthawk, Virginia's Warbler, Wandering Tattler, Wagtail (sp.), Magnificent Hummingbird, Cassin's Finch, Costa's Hummingbird, Williamson's Sapsucker, Red-naped Sapsucker, and Lesser Goldfinch.

Table 7. Months of additions to new species to State List from 1989–2013.

Month	Number of Reports
January	4
February	0
March	1
April	0
May	6 + 1 hypothetical
June	3
July	2
August	1
September	5
October	9 + 1 hypothetical
November	6 + 1 hypothetical
December	4
Total	41 + 3 hypotheticals

Where might observers expect to find the next additions to the Wisconsin List? The geographic distribution of the past 25 years of additions offers the western shoreline of Lake Michigan as the best site. Of the 41 most recent species additions (the other 3 species were species splits), 15 occurred here. An additional 3 were located on the migrant trap of Lake Superior's shoreline. The three hypothetical additions to the hypothetical list in the past 25 years were also all Lake Michigan shoreline sightings. In addition, it should be remembered that 14 of the past 41 species added to the list were associated with bird feeders.

When is the optimum time to find a species new to the state list? Of those past 41 species additions, the temporal distribution can be found in Table 7. Twenty occurred in fall (September, October, November). The top two months overall, were October, with 9 and November, with 6. The next 2 months May (6) and September (5) may be expected due to the peaks of migration in these months, but perhaps what may surprise observers is that 8 of the new additions occurred in December and January (4 in each month), possibly further carryovers from the known vagrancy of fall migration. This would allow attributing 28 of the 41 most recent new species to fall migration. Shifting the focus from months to actual dates—it should be noted that 19 of the 41 additions to the state list occurred between October 19–December 15, as did 2 of the 3 additions to the hypothetical list.

Of final note, of the 44 species added to the Wisconsin State Bird List in the past 25 years, 27 of them (over 60%) are now represented by multiple sightings. Of the 435 species on the state list, 410 of them (94%) now have multiple observations. Of the 11 species on the hypothetical list, 3 of them (27%) have multiple reports listed. Thus a majority of the recent additions are not actually "once in a lifetime sightings," they seem to represent changes or trends in the population dynamics of these species. What the future holds will be eagerly anticipated by Wisconsin birders. If history repeats itself, those who don't put their binoculars, scopes, and cameras away after fall migration winds down in mid-October will be the birders most likely to document the next additions to the Wisconsin State Bird List.

Acknowledgments

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Bobolink by Sunil Gopalan

Once considered a rare visitor to Wisconsin, American White Pelicans have become a more common sighting in recent years. Photograph by Jack Bartholmai at Horicon Marsh.

Changes in the Status, Distribution, and Abundance of American White Pelicans (*Pelecanus erythrorhynchos*) in Wisconsin, 1850–2013

Sumner W. Matteson

Bureau of Natural Heritage Conservation
Wisconsin Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

William K. Volkert

W996 Birchwood Drive
Campbellsport, Wisconsin 53010

Paul W. Rasmussen

WDNR Bureau of Science Services
2801 Progress Road
Madison, Wisconsin 53716

Jon M. Krapfl

Horicon National Wildlife Refuge
W4279 Headquarters Road
Mayville, Wisconsin 53050

Thomas Erdman

Richter Museum of Natural History
University of Wisconsin-Green Bay
Department of Natural and
Applied Sciences
Green Bay, Wisconsin 54311

Wendy S. Woyczik

Upper Mississippi National
Wildlife and Fish Refuge
La Crosse District
N5727 County Road Z
Onalaska, Wisconsin 54650

Art Techlow, III

WDNR Bureau of Fish Management
625 E Cty. Rd. Y
Suite 700
Oshkosh, Wisconsin 54901

Michael L. Jones

USDA/APHIS/Wildlife Services
1201 Storbeck Drive
Waupun, Wisconsin 53963

Charles D. Lovell

USDA/APHIS/Wildlife Services
1201 Storbeck Drive
Waupun, Wisconsin 53963

Introduction

A. W. Schorger (1954) concluded his *Passenger Pigeon* paper on the historic occurrences of American White Pelicans in Wisconsin with this pronouncement: "Until better information is available, the white pelican

cannot be considered as a formerly breeding bird." Forty years later, pelicans began nesting in lower Green Bay, a fact that would have delighted and intrigued Schorger.

The American White Pelican ranges from southern Canada to Costa Rica (Keith 2005) and numbers well over 130,000 breeding birds in North America (King and Anderson 2005). (The Brown Pelican *Pelecanus occidentalis*, a bird of the East, West, and Gulf coasts, is the only other pelican species that occurs in North America.) White pelicans breed primarily in the western and central Canadian provinces, and in north-central and western U.S. states (Pacific Flyway Council 2012). A comparison of surveys conducted during 1979-81 and 1998–2001 at 20 colonies east and west of the North American Continental Divide indicated that the number of pelican nests in those colonies more than doubled (King and Anderson 2005).

In the eastern U.S., white pelicans have long been known to breed predominantly in the northern Great Plains, with wintering birds occurring in the Lower Mississippi Valley and along the Gulf of Mexico (Evans and Knopf 1993, Johnsgard 1993, King 1997, King and Michot 2002), but increases in the number of breeding pelicans over the past decade (2004-2013) in the Upper Midwest, largely in Minnesota and Wisconsin, have brought to light changes in interstate and intrastate breeding distribution and occurrences (Wires et al. 2006, Wires pers. comm., Matteson 2013).

Pelicans are nesting now (2013) in Wisconsin in unprecedented numbers, with the number of colonies and nesting pairs increasing markedly within a relatively short time frame, similar to the resurgence of the Wisconsin Double-crested Cormorant (*Phalacrocorax auritus*) population in the 1980s and 1990s (Matteson et al. 1999). Recruitment alone from Wisconsin colonies is not responsible for the large population increases observed. This paper summarizes all known occurrences for the American White Pelican—a species of Special Concern in Wisconsin, describes changes in status, distribution, and abundance, presents what is known about pelicans nesting in the state (and to some extent regionally) during 1994-2013, and concludes with a brief overview of limiting factors affecting breeding populations.

Methods

We examined all known historic records for occurrences of the American White Pelican in Wisconsin, examining the accounts of early explorers, Jesuit missionaries, and early Wisconsin naturalists. We also scrutinized all *Passenger Pigeon* volumes during 1939–1994 for pelican observations, and perused Wisconsin eBird reports from 1994 (when pelicans started nesting in Lower Green Bay) through 2012 for observations reported electronically. We consulted Robbins (1991) and the Wisconsin Breeding Bird Atlas (Cutright et al. 2006) for additional pertinent information. We identified potential breeding sites based on the input of state and federal wildlife managers and researchers, and by reviewing records of pelican occurrences. We also studied papers in the journal *Waterbirds* for relevant material related to the increase

in pelican numbers in the Upper Midwest during the past decade.

We present data from our own annual population surveys, conducted between 7 May and early June in lower Green Bay and east-central and southeastern Wisconsin during 1994–2013. We counted nesting pairs of American White Pelicans at all known colonies, counting on foot the number of nests and recording clutch sizes, and describing breeding habitat. For each colony, similar to estimating Double-crested Cormorant colony size (Matteson et al. 1999), the estimate of the number of nesting pairs was based on the highest number of active nests counted during a single visit. Accordingly, one active nest represented one pair of nesting/breeding pelicans, and a nest was considered active if it contained eggs and/or chicks, or if it was an apparently occupied nest, with fresh nesting material (Cuthbert and Wires 2011) or egg-shell fragments present.

In some years, complete counts were not carried out even though pelicans were known to be present, notably at the Horicon National Wildlife Refuge (NWR) in 2000–2002 and 2004. We made no attempt to estimate detection rates because no field procedures were used that would allow such estimation; pelicans are highly visible ground nesters, however, so detection rates were probably high in all years when pairs at all colonies were counted.

We did not estimate trends at individual colonies because of the large annual variability at the colonies, probably due to local changes in water levels or presence of potential predators. Pelicans are known to move among nearby colonies from year to year in response to such factors (Anderson and King 2005, Moreno-Matiella and Anderson 2005). Some of the large annual changes at eastern Wisconsin colonies suggest such inter-colony movement. For instance, a large drop in counts at Horicon NWR between 2007 and 2008 due to high water occurred simultaneously with a large increase at Lakes Butte des Morts and Puckaway colonies (Table 1). For this reason, we summed counts of nesting pairs within two regions: Green Bay (includes Cat Island, Lone Tree Island, and Hat Island) and Eastern WI (includes Horicon NWR, Beaver Dam Lake, Lake Butte des Morts, Lake Puckaway, and Lake Winnebago). We also computed statewide totals for each year. Because of the missing counts at Horicon in 2000-2002 and 2004, there were missing counts for the Eastern WI region and for the statewide totals in those years.

We estimated statewide and regional trends in counts of nesting pairs using a generalized linear model with a gamma error distribution and log link, with year as the predictor variable. This is very similar to linear regression of log-transformed counts on year and usually leads to the same conclusions (McCullagh and Nelder 1989). An advantage of the generalized linear model is that it provides predictions on the original scale without requiring adjustments in back-transformation (Venables and Dichmont 2004). The trend estimates from these analyses are most naturally expressed as a constant percent change per year in counts of nesting pairs. Equivalently, this can be considered multiplication by a constant factor each year (e.g., a 15% increase corresponds to multiplication of the

Table 1. Counts of nesting pairs of American White Pelicans in Wisconsin, 1994–2013. CI = Cat Island, LTI = Lone Tree Island, HI = Hat Island, GBay = Green Bay region; Hor = Horicon National Wildlife Refuge, BDL = Beaver Dam Lake; BdM = Lake Butte des Morts, Pkw = Lake Puckaway, Wbg = Lake Winnebago, EWis = Eastern Wisconsin Region.

	Green Bay Region				Eastern WI region						Total
Year	CI	LTI	HI	GBay	Hor	BDL	BdM	Pkw	Wbg	EWis	State
1994	2	0	0	2	0	0	0	0	0	0	2
1995	9	0	0	9	0	0	0	0	0	0	9
1996	56	0	0	56	0	0	0	0	0	0	56
1997	107	0	0	107	0	0	0	0	0	0	107
1998	168	0	0	168	0	0	0	0	0	0	168
1999	180	0	0	180	13	0	0	0	0	13	193
2000	207	0	0	207	?	0	0	0	0	?	?
2001	238	0	3	241	?	0	0	0	0	?	?
2002	220	0	0	220	?	0	0	0	0	?	?
2003	185	200	0	385	522	0	0	0	0	522	907
2004	334	314	0	648	?	0	0	0*	0	?	?
2005	345	249	0	594	494	0	13	0	0	507	1101
2006	191	333	0	524	777	0	48	0	0	825	1349
2007	397	421	40	858	501	0	386	17	25	929	1787
2008	376	544	3	965^	8	0	695	0**	27	730	1695
2009	254	463	76	793	3	0	1009	0	57	1159	1952
2010	255	381	69	705	0	?	1472	1	81	1554	2259
2011	760	704	139	1603	0	?	1263	0	189	1422	3026[y]
2012	1184	582	739	2505	611	30	802	0	0	1443	3948
2013	1065	1088	253	2406	433	382	754	0	148	1717	4123

*50 adults and 24 young counted in August on nearby Hope Marsh and may have nested there.
** 250 adults observed on 2 June 2008, but high water precluded nesting (D. Christensen pers. comm.).
^ Included in total for GBay: T. Erdman (pers. obs.) documented 42 nests on Willow Island.
[y] Total includes 1 nest reported on the Mississippi River.

counts by a factor of 1.15 each year). The significance of trend estimates was determined using Wald statistics (ratio of estimate to its standard error), which follow a standard normal distribution under the null hypothesis of no trend (Fox 2008). We examined residuals from models to determine if assumptions of the models were satisfied. We also visually compared results of the generalized linear model with a more flexible generalized additive model to determine if the form of the model (i.e., multiplicative change) was adequate. Computations were carried out in R.

We estimated multiplicative rates of increase for both regions (Green Bay and Eastern WI) and for the state as a whole. Because of the sudden increase in nesting pelicans in Eastern WI and the missing counts in 2000–2002, we analyzed trends for Eastern WI and for statewide totals beginning in 2003. The multiplicative model was intended to provide a reasonable summary of population change after establishment of pelicans in each region; we acknowledge that some patterns of annual variability may not be explained by the multiplicative model. Residual plots suggested assumptions of the model were satisfied. Generalized additive models produced very

similar predictions over the same time period, indicating that the form of the model was appropriate.

Finally, we examined the results of two Great Lakes-wide population surveys of colonial waterbirds conducted by the University of Minnesota (UMN) for the U.S. Fish and Wildlife Service during 1989–1991 and 1997–2001. The results of these surveys were discussed in a waterbird conservation plan for the Upper Mississippi Valley and Great Lakes (Wires et al. 2010). Additionally, we perused a summary of statewide Minnesota pelican census data for 2004/05 and 2010–2012 generously provided by L. Wires (pers. comm.).

Results and Discussion

Historic Wisconsin/Regional Occurrences—

American White Pelicans have been present in Wisconsin as migrants, for centuries perhaps, and Native Americans were the first to identify them (Schoolcraft 1855, Dablon 1899). Perrot, a French official, was among the first to live with Native Americans in the Upper Great Lakes during the latter half of the seventeenth century, and he described pelicans as "very common, but they have an oily flavor, whether alive or dead, which is so disagreeable that it is impossible to eat them" (in Blair 1911). Perrot did not provide any specific information on where he encountered pelicans.

The French explorer Pierre Radisson (in Kellogg 1917) was the first European to record pelican presence in Wisconsin. He observed them (with a bill 22 "thumbs" in length) in northwestern Wisconsin around 1655. In 1670, the Jesuit priests—notably Allouez and Dablon—also observed them foraging below the Kaukauna rapids, and on "small lakes" associated with the Fox River, en route to Lake Winnebago (Schorger 1954).

White pelicans were apparently "moderately common" along the Mississippi River prior to 1850, "numerous" as spring migrants on Lake Koshkonong, and frequently reported from Dane and Jefferson county lakes before 1870 (Kumlien and Hollister 1903, Robbins 1991).

The first change in pelican status in Wisconsin apparently occurred after 1870. Schorger (1954) pointed to that year as a likely turning point in the number of migrants, suggesting a downward trend in occurrence:

> "Schoolcraft on August 8, 1820, observed a flock on an island in the Mississippi below the mouth of the Wisconsin. In the same year Kearney mentions seeing pelicans on August 1 at La Crosse, and on August 4 below the mouth of the Wisconsin. While at Wabasha, Minnesota, September 7, 1835, Featherstonhaugh saw a flock crossing the Mississippi. Lapham wrote in 1844 that pelicans occasionally ascend the Mississippi and its tributaries far into Wisconsin. Ten years later Barry mentioned it as a common migrant along the Mississippi. King wrote about 1875 that, though formerly a common migrant, its movements were now confined to the Mississippi…. So large a mark was irresistible to gunners, and it is apparent that

the number of migrants declined sharply by about 1870."

Reviewing historical changes in distribution across North America, Evans and Knopf (1993) listed pelicans as occurring formerly in central Wisconsin. Elsewhere in the state, pelicans were uncommon in the nineteenth century (Robbins 1991). No conclusive evidence exists that white pelicans nested in the state historically, although some circumstantial evidence suggests they may have occurred as breeding birds. Kumlien and Hollister (1903) mentioned the possibility of an abandoned breeding site in western Wisconsin in 1883 and another location northeast of Merrill in 1884, but the information was inconclusive (Robbins 1991). Schorger (1954) thoroughly investigated the probability of a Wisconsin nesting and pointed to Pelican Lake in Oneida County as the only likely locale, but older residents at the time could only remember seeing pelicans as migrants. Therefore, there is no conclusive evidence historically of pelicans breeding in Wisconsin.

Recent Wisconsin Occurrences—

The American White Pelican was not among the 212 breeding bird species listed or discussed in the most recent analysis of the Wisconsin Breeding Bird Survey conducted during 1966–1991 (Robbins et al. 1996). Robbins (1991) noted that between 1939 and 1989, there were only 1–4 reports per year, with sightings occurring in about 8 of every 10 years.

Based on our analyses of observations published in the *Passenger Pigeon* during 1939–1994 (Appendix A) and reported online at Wisconsin eBird during 1994–2012, the number of pelican occurrences started to increase notably in the 1980s and dramatically in the mid-1990s.

In 1991, when Robbins' *Wisconsin Birdlife* was published, there were only two Wisconsin eBird observations represented. By 2012 (the most recent year for which we are relatively confident of complete eBird submissions), the number of eBird observations had mushroomed to 640 at 238 sites in 36 counties (Figure 1).

American White Pelican breeding occurrences during 1994-2013 can be partitioned into two main regions: Green Bay and Eastern Wisconsin. Breeding pelicans have almost exclusively (exception: 1 nest on a dredge spoil island, Mississippi River) occupied inland lakes in east-central Wisconsin, and sites at Horicon Marsh and in the Green Bay/Lake Michigan area. They have nested on isolated, permanent islands, dredge spoil islands, dikes, and edges of peninsular cattail (*Typha* spp.) stands. All colonies have occurred on the ground, either on bare ground, exposed dredge spoil or mud flat, on flattened cattail mats, or in the case of some Horicon nests, at the base of shrubs.

American White Pelicans are highly adaptable to changing habitat conditions and readily colonize new locations (e.g. islands, peninsulas) if they are isolated from human disturbance and provide (or appear to provide) protection from mammalian predators, particularly coyotes (*Canis latrans*) (Murphy 2005). Available and abundant food resources adjacent or near the colony site may also be important but are not deemed critical

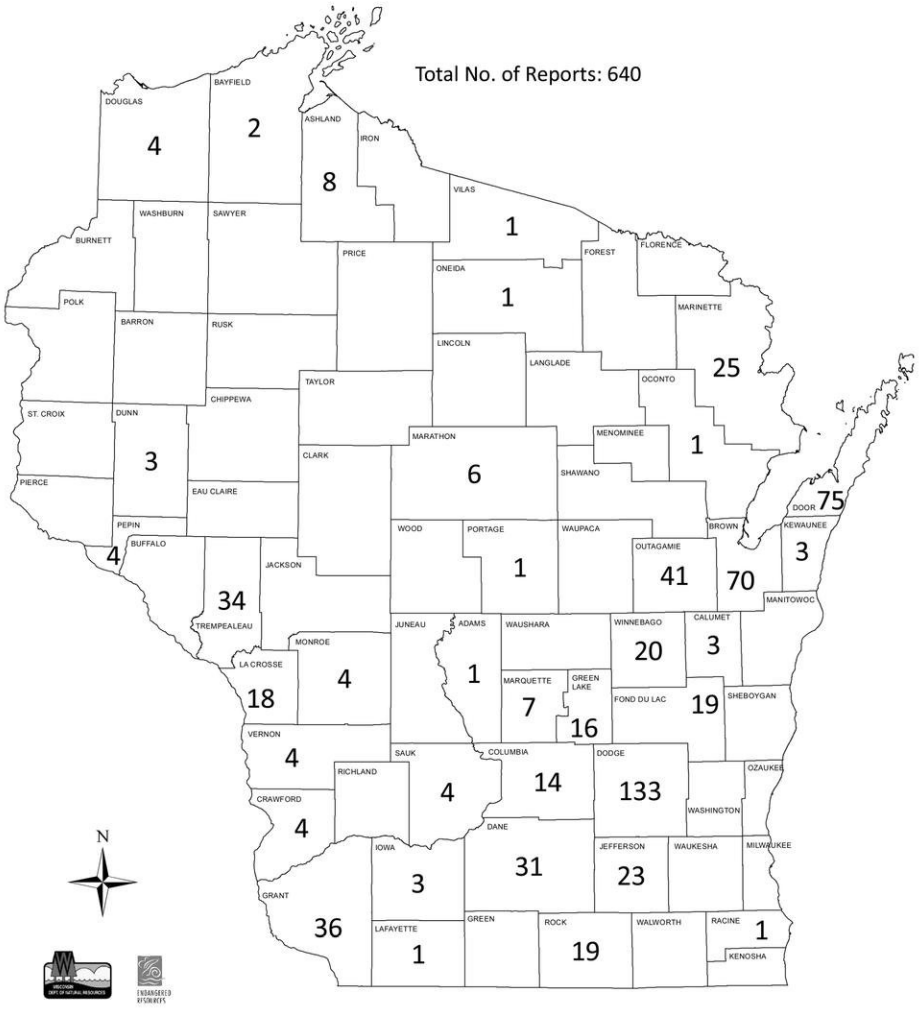

Figure 1. Distribution and Number of Wisconsin eBird Reports of AWPE by County, 1 March–31 May 2012.

because pelicans can forage several hundred km from the colony site and still breed successfully (Madden and Restani 2005, Murphy 2005). Prey abundance and landscape variables may affect how far pelicans go to forage (Pacific Flyway Council 2012), with breeding pelicans typically feeding <50 km from the colony site (Knopf and Evans 2004) but commonly known to fly >100 km to find food (King and Michot 2002, Kaeding 2002, Stapp and Hayward 2002, Idaho Fish and Game 2009, Pacific Flyway Council 2012).

In 1994, Erdman (Soulen 1995) documented the first known American White Pelican nests (2 on bare ground) in Wisconsin, at Cat Island in lower Green Bay. (Pelicans were pres-

Table 2. Estimates of % change in counts of nesting pairs of American White Pelicans based on a generalized linear model with gamma distribution and log link. The P-value is for a test of the null hypothesis that the trend equals zero.

Region	Time period	N (years)	% change	95% CI	P-value
Green Bay	1996–2013	18	21.1	18.3–23.9	<0.001
Eastern WI	2003–2013	10	13.8	10.0–17.8	<0.001
State	2003–2013	10	17.0	14.7–19.3	<0.001

ent here for 5 years in association with a Double-crested Cormorant colony prior to initial nesting attempts.) Both nests failed, but 9 pairs nested here in 1995, with 35 birds present throughout the summer (Soulen 1996), representing the known peak number of pelicans in Wisconsin during the breeding season.

Although counts at nesting colonies in Wisconsin began in 1994, we did not use the initial years of data collection in analyses because of large initial increases apparently due to immigration of pelicans from outside Wisconsin. These large increases were then followed by long periods of a relatively steady population increase (Table 2; Figure 2). In the Green Bay region, there were small numbers of nesting pelicans in 1994 and 1995, then a sudden jump in 1996 followed

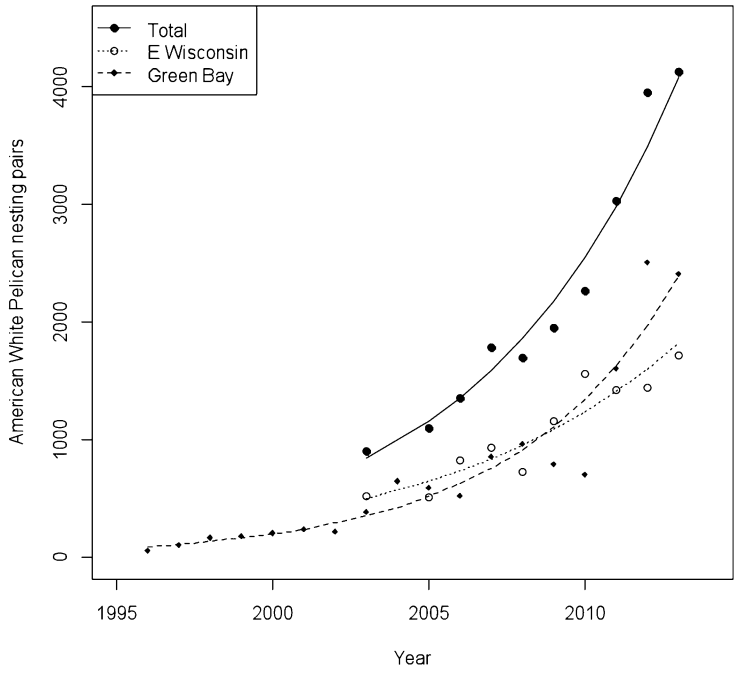

Figure 2. Counts of American White Pelicans for two regions in WI (Green Bay and Eastern WI) and statewide totals, 1996–2013. Lines show predicted values from generalized linear models described in the text.

by a steadier increase. In the Eastern WI region, no nesting pelicans were observed at any site until 1999, when 13 pairs nested at Horicon NWR for the first time.

For the period 2000–2004, we only have complete breeding information for both regions for one year: 2003. During this 5-year period, survey information was lacking for the Eastern Region, though we know that pelicans were nesting in growing numbers at Horicon NWR. By 2003, a major increase in the state's breeding population had occurred, with 907 nests recorded—a 370% increase since 1999. This substantial increase was largely a result of what we observed at Horicon NWR, where we documented 522 nests—at that time the largest colony in the state.

In 2005, the number of nesting pairs statewide continued to climb steadily to 1,101, with about 54% nesting in lower Green Bay on Cat and Lone Tree islands. And by 2005 and 2006, counts of nesting pelicans at Horicon NWR had grown markedly, reaching 777 nesting pairs in 2006. Large numbers of breeding pelicans at Horicon may have resulted from an influx of pelicans from outside Wisconsin, perhaps from Minnesota but likely from central North Dakota, where up to 30,000 birds mysteriously abandoned nesting sites at the Chase Lake National Wildlife Refuge in 2004 (S. Friess, *Where did all the pelicans go?/Birds abandon chicks, eggs at refuge where they usually breed*, San Francisco Chronicle, 13 July 2004). King and Andersen (2005) had described Chase Lake as the largest breeding colony in North America, with 14,900 nests recorded during the 1998-2001 continental American White Pelican Survey.

From 2005 through 2013, the state's pelican breeding population increased nearly 275%, reaching 4,123 nesting pairs at 8 Wisconsin colony sites in 2013 (Table 1, Figure 3), representing 6 distinct locales: Lower Green Bay (Brown County), Upper Green Bay (west of the upper northern Door County peninsula), Horicon National Wildlife Refuge (Dodge County), Lake Butte des Morts (Winnebago County), Lake Winnebago (Winnebago County), and a new site at Beaver Dam Lake (Dodge County). Pelicans have also nested intermittently at Lake Puckaway in southwestern Marquette County.

After the establishment of pelicans in each region, counts of nesting pairs increased throughout the study period (Figure 2). Estimates of breeding population change were large for both the Green Bay and Eastern WI regions (21.1% and 13.8%, respectively; Table 2), and statewide (17.0%). The estimate of breeding population change for the Green Bay region was somewhat larger than that for Eastern WI, but the data for Green Bay also covered a longer time period.

Differences in breeding population trends between the Eastern WI region and the Green Bay region were not significant during the later time period (2003–2013), when data were available for both ($P = 0.24$; the estimate of breeding population trend for Green Bay was 18.2% during this time, while for Eastern WI it was 13.8%). For the period 2003–2013 (Table 1), the number of pelican nests increased 524.9% in the Green Bay region and 228.9% in Eastern Wisconsin.

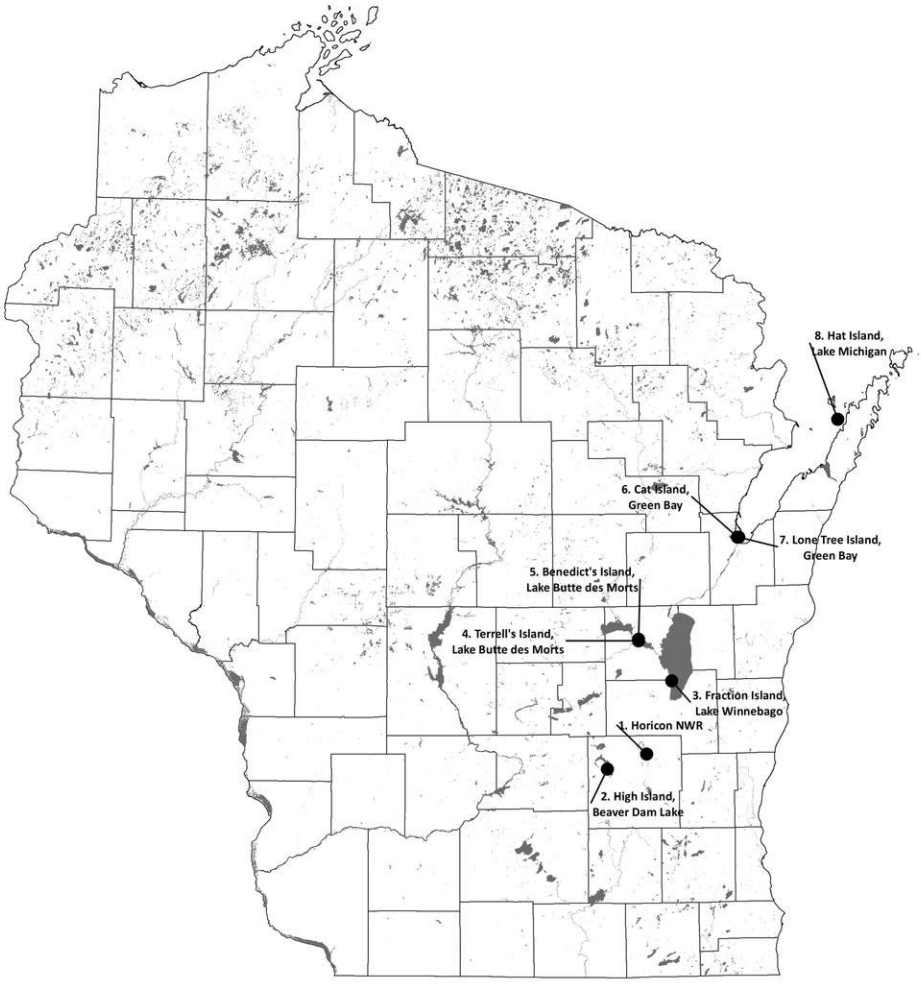

Figure 3. Distribution of Wisconsin American White Pelican Colonies, 2013

A summary by region is presented below, with annual counts of nests presented in Table 1.

Green Bay Region–Lower Green Bay—

Breeding pelicans occupied 2 sites (Cat Island and Lone Tree Island) during 1994–2013.

Cat Island (Brown County)—With the exception of Horicon Marsh NWR, where pelicans began nesting in 1999, Cat Island in lower Green Bay was the sole Wisconsin breeding site for pelicans from 1994 through 2002. The year 2013 marked the twentieth consecutive year American White Pelicans nested on the ground at Cat Island, an island formerly covered with eastern cottonwoods (*Populus deltoides*) but which today is largely barren in part due to the long-term presence of large numbers of nesting

Black-crowned Night-Herons (*Nycticorax nycticorax*), cormorants, and Ring-billed Gulls (*Larus delawarensis*), as well as the blowdown of trees from storm activity. Here, M. Jones (pers. obs.) and B. Maedke documented 1,065 nests on 24 May 2013—an increase of 319% over a 5-year period, but a slight decline from the peak of 1,184 nests reported in 2012.

Lone Tree Island (Brown County)—Beginning in 2003, breeding pelicans from Cat Island spilled over onto nearby Lone Tree Island, where breeding numbers increased from around 200 nesting pairs in 2003 to 314 in 2004, and these were presumed to be from Horicon NWR, where high water levels caused early colony abandonment. T. Erdman (pers. obs.) estimated that 360–380 young fledged from Lone Tree in 2004. By 2013, the number of pelican breeding pairs had exceeded the number on Cat Island, with 1,088 nesting pairs documented in 2013—an 87% increase between 2012 and 2013.

T. Erdman (pers. obs.) has monitored pelican production annually at Cat Island since 1994, and for both Cat and Lone Tree islands since 2003. For the period 2003–2010, he estimated that 4,941 young fledged from 5,241 nests (0.94 yng/nest; annual range = 0.82–1.18 yng/nest).

Green Bay Region—Upper Green Bay—

Pelicans have occupied 1 site infrequently (Hat Island) since 2001.

Hat Island (Door County)—The number of breeding pelicans here has changed erratically since 2001, when the colony was first documented. That year, K. Stromborg (pers. comm.) observed 3 nests on 21 June 2001. Two of these nests contained 3 live chicks each, and one had 2 live chicks. Pelicans were absent as breeders during 2002–2008. During 2009–2010, M. Jones (pers. obs.) reported about 70 nests. In 2011, M. Jones (pers. obs.) documented 139 nests, and in 2012 he recorded a record high of 739 nests on 22 May. In stark contrast to 2012, there were 253 nests here on 29 May 2013, a 192% decline from 2012. There is no known reason for the marked fluctuation in breeding pairs observed, particularly in recent years, but it is possible that availability of prey (fish) and/or degree of human disturbance may have affected colony stability.

Eastern WI Region—

Pelicans have occupied 3–5 main colony sites in any given year since 1999. There were, however, several subcolonies that occupied proximate sites within a locale (Horicon Marsh NWR, for example).

Horicon Marsh NWR (Dodge County)—For the fifteenth consecutive year, pelicans were present at the Horicon NWR. Pelicans began nesting at the refuge in 1999, when 13 nests were recorded. Due to disturbance concerns, no nesting surveys occurred in 2000 and 2001, but 16 fledglings and 152 fledglings, respectively, were documented. In 2002, pelicans nested in subcolonies on 7 islands within the refuge, along the Main Ditch, "just shy of W88°, 42.00/, and ranged from north to south, from N43°, 33.30/ to N43°, 32.45/ (D. Penttila pers. comm.). Penttila estimated the pelican population to be 1,000–1,400 adults (including breeders and non-

breeders), with at least 340 young produced.

In 2003, W. Woyczik, J. Krapfl, A. Techlow, and S. Matteson documented 522 nests at 8 subcolonies on 2 June. Each of these subcolonies occurred on dredge spoil islands, with all but two (characterized by broadleaved cattail *T. latifolia*) stands dominated by sandbar willow (*Salix exigua*). At the cattail-dominated sites, the pelicans had flattened *T. latifolia* along edges of the islands and laid eggs on top of the cattail mats. J. Krapfl (pers. obs.) reported that 727 young fledged in 2003.

In 2004, severe spring floods almost eliminated all nesting attempts, and several hundred breeding pairs abandoned the refuge. Refuge biologists estimated that 400-500 pairs attempted to nest here during April-May 2004 (J. Krapfl pers. obs.). A 1 June 2004 survey revealed that 6 of 8 former subcolony sites were under water, with only 21 adults and 17 young remaining at two sites. Apparently hundreds of breeding adults may have relocated to lower Green Bay because T. Erdman (pers. comm.) reported an influx of pelicans in early to mid-June 2004 at Lone Tree and Cat islands. He reported that a total of 700-750 young fledged from these colonies in lower Green Bay.

The refuge story was different in 2005. On 20 May 2005, J. Krapfl and S. Matteson documented 494 ground nests at 7 dredge spoil island sites (n = 30, 13, 4, 54, 77, 124, 192). These islands varied in the degree of vegetative cover from sparse and barren rock rubble to cattail and willow-dominated sites, with open areas for nests. J. Krapfl (pers. obs) reported that 940 young fledged in 2005.

The most number of nests and fledged young documented for any given year between 1999 and 2013 occurred in 2006 when J. Krapfl, W. Woyczik, and S. Matteson documented 777 pelican nests on 19 May at 6 dredge spoil sites and 1 peninsular (Fig. 4) *Typha*-dominated site (n = 57, 14, 73, 64, 333, 86, 150). J. Krapfl (pers. obs.) reported that 1450 young fledged. High water returned to become an issue for nesting birds in 2007, limiting the number of available sites, but on 17 May 2007, J. Krapfl, B. Hill, and S. Matteson documented 501 pelican nests at 5 dredge spoil sites and at a cattail-dominated peninsula (n = 1, 39, 83, 31, 324, 23). J. Krapfl (pers. comm.) reported that 946 young fledged in 2007.

High water levels and flooding were the central themes at the refuge during 2008-2011, significantly reducing or eliminating available breeding habitat, with only 8 pelican nests documented on a floating cattail mat in 2008. Water levels stabilized somewhat in 2012, allowing J. Krapfl, W. Woyczik, and S. Matteson to record 611 nests at three sites on 30 May: a flattened cattail island; the Main Ditch Spoil near Townline Ditch; and the Townline Ditch east of Main Ditch.

For the year 2013, J. Krapfl, S. ODell, and S. Matteson observed 427 abandoned nests on 31 May at a cattail-dominated subcolony site known as the West Townline Ditch. These nests had been heavily predated, likely by a mammalian predator. At a second subcolony site, Mid-Townline Ditch, in willow brush adjacent to cattail mats, they observed 280 active nests; these nests may have been re-nests that resulted from birds shifting from the West Townline Ditch. Another 8 nests

Figure 4. Breeding pelicans on matted, peninsular cattail stand, Horicon NWR. Photo by Jon Krapfl, 19 May 2006.

were documented on 31 May 2013 at a third subcolony site—a lone cattail island. Subsequent surveys on 13 June 2013 revealed a marked increase at the Mid-Townline Ditch site: 399 nests (J. Krapfl pers. obs.); and a new site called Mid-Townline Ditch – West, with 26 nests. We estimated conservatively that 433 nesting pairs occupied Horicon NWR in 2013 based on the peak number of known active nests.

High Island, Beaver Dam Lake (Dodge County)—C. Lovell (pers. comm.) reported that Wildlife Services personnel documented 382 nests on 3 June 2013. H. Bartholmai (pers. comm.) reported the following: "Patrick Clark owns the Island (about 1 acre in size) and has been aware of nesting there for the last 3 years. He found eggs in the grasses in July of 2010. At that time it was mostly covered with grasses (Timothy). The Island looked solid white from the road in 2011, and 30–40 nests were counted last year [2012]. Pat planted natives in 2009, and those still there include: brome grass, little blue stem, milkweed, marsh milkweed, wild bergamot, and Joe-Pye-weed. The island also has staghorn sumac, willow, and poplar growing on it. Back in the 1920s, when the dam in the city was lower, the bay between the island and west shore was pasture as the water was much lower than it currently is. The island was a pile of rocks with a few inches of soil at that time."

Pancake Island, Lake Puckaway (Green Lake County)—This site can be characterized as ephemeral or unstable for breeding pelicans. The year

2007 marked the first time pelicans were known to breed on the island, having been observed on or near the island for a few preceding years by D. Christensen (pers. comm.). On 1 June 2007, WDNR biologists R. Jurewicz and S. Matteson (pers. obs.) counted 17 nests on bare, eroded ground. They also counted 69 adults at the west end of the lake, with 6–7 inactive nests on a beaten-down cattail mat.

For the period 2008-2013, only 2 nests were documented. On 21 May 2010, M. Jones (pers. comm.) and P. Gettelman observed 2 nests containing 1 egg and 2 eggs, respectively. High water and flooding all but precluded nesting on the island during this 6-year period, though 250 adults were observed on 2 June 2008 by D. Christensen (pers. comm.).

Dredge Spoil Sand Islands # 1, 2, 3, 4, 5 (inside) Terrell's Island Breakwall, Lake Butte des Morts (Winnebago County)—Pelicans first started nesting in the area in 2005. A. Techlow (pers. obs.) found 13 nests in bare sand at one island on 17 May 2005, with 12 of these still active on 25 May. Techlow (pers. obs.) observed 48 nests on 26 May 2006. On 6 June 2007, A. Techlow and S. Matteson documented a total of 386 pelican nests at 3 of these dredge soil islands; many of these nests contained chicks in various stages of development reflecting asynchrony in hatching dates. A. Techlow (pers. obs.) counted 695 pelican nests in May 2008 at 4 dredge spoil islands, and on 12 May 2009, R. Jurewicz and S. Matteson (pers. obs.) documented 1,099 pelican nests on 4 islands. On 4 May 2010, A. Techlow and S. Matteson counted 1,071 nests on the islands. In 2011, there were 676 nests on the islands and 277 on the adjacent breakwall and dike.

In fall 2011, as part of a Department of Transportation (DOT) wetland mitigation project, A. Techlow and DOT personnel conducted island habitat management here to re-establish the original management objectives for the islands, which were aimed at benefitting nesting terns and waterfowl production. He graded (shaved) the four islands down to normal summer water levels and began to plant the newly formed 'shoals' with hardstem bulrush (*Schoenoplectus acutus*) and other emergent aquatic plants. As a result of island habitat management, no pelicans nested on 4 of the 5 islands in 2012; there were 24 nests counted by A. Techlow (pers. obs.) on 8 May 2012 at Dredge Spoil Island #1. There were, however, another 65 nests on the adjacent breakwall and dike.

In 2013, A. Techlow, A. Sabai, and S. Matteson surveyed Terrell's Island #1 and counted 77 nests with eggs on 8 May 2013. Along the adjacent dike, they documented 496 nests that included 196 active nests and another 300 abandoned nests with smashed egg shells and predated eggs, the work of unidentified mammalian predators.

Benedict's Island, Lake Butte des Morts (Winnebago County)—On 4 May 2010, S. Matteson (pers. obs.) discovered an incipient pelican colony of 50 nests (48 clutches with 1 egg) and counted 160 adults with breeding knobs. On 1 June 2010, S. Matteson counted 401 ground nests amidst flattened cattails and on bare soil. These nests apparently were some combination of re-nests and late nests of young breeding adults, perhaps spill-over from the sand islands described above. In 2011, with most pelicans

breeding at the nearby Terrell's Island breakwall and sand islands, S. Matteson (pers. obs.) recorded 197 nests here. The following year on 8 May 2012, A. Sabai, A. Techlow, P. Guckenberg, and S. Matteson documented 713 ground nests, reflecting an influx of birds that likely came from the modified and no longer suitable islands inside Terrell's Island breakwall.

On 23 May 2013, with most pelican nesting pairs attempting to colonize the Terrell's Island breakwall, M. Jones and C. Lovell recorded 181 ground nests scattered across the north, central, and southern portions of the island.

White's Island, Lake Butte des Morts (Winnebago County)—This site has only been occupied once: in 2011, when A. Techlow and S. Matteson recorded 113 active nests on gravel and bare soil.

Lake Winnebago, Fraction Island, (Winnebago County)—On 6 June 2007, A. Techlow and S. Matteson (pers. obs.) discovered a new colony of nesting pelicans. They found 25 nests on bare ground, with nests comprised of sticks, grasses, dried willow (*Salix spp.*) leaves and stems, and water smartweed (*Polygonum amphibium*) stems. This site was not used in 2008, except by loafing pelicans.

On 12 May 2009, A. Techlow and S. Matteson (pers. obs.) documented 17 nests with eggs on the island. On 1 June 2010, 19 pairs had apparently renested or nested late when A. Techlow, L. Patt, S. Matteson (pers. obs.) visited the island. There were 27 nests here in 2011 (S. Matteson pers. obs.). No breeding pelicans occurred here in 2012.

M. Jones (pers. obs.) documented 148 nests here on 21 May 2013.

Lake Winnebago, Long Point Island (Winnebago County)—On 14 May 2008, A. Techlow and S. Matteson noted 27 pelican nests (23 with eggs) in two subcolonies. On 15 May 2009, C. Lovell (pers. comm.) documented about 57 abandoned pelican nests on the island and noted 2 red fox pups in a den in the middle of the colony.

At least 80 of 81 pelican nests had been deserted by the time of a visit here by A. Techlow and S. Matteson (pers. obs.) on 4 May 2010. C. Lovell (pers. comm.) indicated at the time that USDA Wildlife Services' cormorant control activities here had likely resulted in colony abandonment.

There were 132 nests here in 2011 (S. Matteson pers. obs.). M. Jones (pers. comm.) did not observe breeding pelicans here in 2012 and 2013.

Breeding on the Mississippi River and Lake Superior?—

Although pelicans are routinely and regularly observed along the Mississippi River corridor and as far north as Lake Superior, only 1 pelican nest has been reported along the Wisconsin shores of the Mississippi River: in 2011 on an island in Pool 5 on the east side of the Main Channel, directly across from Minneiska, Minnesota (M. Stefanski pers. comm., D. Dieterman pers. comm.). No other breeding has been reported in Wisconsin Mississippi River waters, though pelicans have nested elsewhere on the Upper Mississippi on Iowa and Illinois river islands (see below).

Pelicans have yet to breed in Wisconsin and other U.S. waters of Lake Superior, but the first known nesting of American White Pelicans in the

Canadian Great Lakes occurred in 2007 on Granite Island, Lake Superior, as all indications point toward an eastward expansion of the bird's breeding range in Canada, where approximately 50% of the continental population breeds in Saskatchewan and Manitoba (Pekarik et al. 2009).

Regional and Continental Population Dynamics in Relation to Wisconsin's Burgeoning Population

Why the marked increase in breeding pelicans in Wisconsin? For an answer that is only partially satisfactory, we have to examine what has happened to the American White Pelican continentally and regionally.

Continentally, pelican populations were once threatened by some combination of habitat loss and degradation, changing water levels, human disturbance, and chemical contaminants (Knopf and Evans 2004). The species has recovered, is increasing at least at a rate of >3% annually, and is expanding its continental range eastward into the Great Lakes (Knopf and Evans 2004, Cuthbert 2011, Pacific Flyway Council 2012). Largely a bird of the West and South, habitat loss resulting from agricultural reclamation of marshes and water diversion projects resulted in western breeding populations shifting eastward to the central U.S. (Lies and Behle 1966, Murphy and Tracy 2005).

Additionally, pelicans continued their abandonment of colony sites in 2005 at the Chase Lake National Wildlife Refuge in central North Dakota for reasons unknown (J. MacPherson, AP News, 13 July 2005, *Officials Investigating Pelican Deaths*). These factors together with colonization of suitable/available habitat and apparently abundant prey (fish) populations, and an apparent high rate of recruitment from some growing colonies in the state, likely contributed to large-scale increases in numbers of breeding birds in east-central and northeastern Wisconsin.

The following synopsis presents an overview on pelicans breeding in other midwestern states, beginning with Minnesota, which has the largest number in the Upper Midwest. Also addressed is the influx of migrants in some midwestern states where breeding has yet to occur.

Minnesota—

Unlike Wisconsin, which had no documented history of breeding pelicans prior to the 1990s, pelicans were once common in large colonies throughout Minnesota, with the last known historic colony occurring in 1878 (Roberts 1932, Thompson 1933). One pair may have nested in 1904 (Roberts 1932), but breeding birds were absent until 1968. Human disturbance and the effects of pesticides and other persistent chemicals were factors identified by Wires et al. (2006) for the absence of breeding pelicans in Minnesota during much of the twentieth century and until 1968, when they were discovered nesting at Marsh Lake in western Minnesota, and since then they have been regular breeders.

In Minnesota's first statewide pelican breeding census in 2004, Wires et al. (2006) estimated 16,652 breeding pelican pairs occurred at 16 sites in northern, west-central, and southern

Minnesota, with over 80% of the state's breeding population nesting at Marsh Lake. Pelicans were observed loafing in virtually every county in western Minnesota, and Wires et al. (2006) speculated that these birds may have originated from the recently abandoned Chase Lake colony in North Dakota. In Minnesota, similar increases (but in far higher numbers) to Wisconsin's have occurred across a similar time period (2004/05, 2010-2012), but the rate of increase has slowed, and in 2011–2012 the Minnesota breeding population was essentially stable, with about 22,000 breeding pairs documented in 2012 (Wires et al. 2013).

Michigan—

In Michigan, the occurrence of breeding birds is a recent phenomenon that reflects the regional population expansion. Until the 1990s, the American White Pelican was a "rare straggler and summer visitant" in Michigan, a fact borne out by the first Michigan Breeding Bird Atlas, 1983-1988 (Wood 1951, Cuthbert 2011). But recent population increases in Wisconsin may have been responsible for Michigan's first breeding pelicans observed in 1999 (10 nests) and during the second Michigan Breeding Bird Atlas, 2002-2008, when at least 17 nests were recorded in 2007, with nonbreeding birds observed at a handful of other sites in northern Lake Michigan (Cuthbert 2011).

Iowa and Illinois—

In Iowa and Illinois, an influx of large numbers of pelicans occurred after 2005 that led to established breeding colonies on Mississippi River dredge spoil islands. In Illinois, about two dozen pelicans began frequenting sand bars along the Mississippi River in 1991. By 2006, there were about 1,000 birds. The first known Mississippi River colony of American White Pelicans in the Upper Midwest, however, occurred in 2007 in Iowa on 2 dredge spoil islands called the "Cormorant Islands," located north of Clinton in Pool 13, with about 50 young produced. These islands are also known as "Island 303" and "Island 304," and are located at River Mile 528. Birds returned to nest on these sand islands in 2008, despite spring floods, and produced 200 young (Britton 2010).

By 2009, there were 2,500 pelicans in Pool 13, and about 20 breeding pairs moved across the river into Illinois and established Illinois's first known pelican colony at Woodruffs Island, River Mile 526.7, in the Upper Mississippi River National Wildlife & Fish Refuge in northwestern Illinois (Britton 2010). Refuge biologist E. Tomasovic (2013) found that the first nests were built in "willow saplings and button bushes on the periphery of the island." He noted that nesting on the Iowa islands followed a similar pattern, with birds "nesting first in low cover, which also included sedges with the shrubbery, followed by nesting near fallen trees in the interior."

In 2010, 167 pelican nests were documented by S. Dinsmore and M. Griffin on Woodruffs Island (S. Dinsmore pers. comm.). At Iowa's Islands 303 and 304, there were 653 and 452 nests, respectively (R. Egelke pers. comm., S. Dinsmore pers. comm.).

For 2011, breeding pelicans returned to Woodruffs Island in Illinois and colonized a new site (Gomers Is-

land or Island 306—E. Tomasovic pers. comm.) at River Mile 529.0 that contained "400 chicks and 500 flighted birds [including young]" in late June (R. Engelke pers. comm.). In Iowa, S. Dinsmore (pers. comm.) returned to Islands 303 and 304 and counted 200 active nests, 800 adults, and 650 chicks at Island 303, and 65 active nests, 400 adults, and 300 chicks at Island 304.

In 2012, S. Dinsmore (pers. comm.) recorded 28 nests on Illinois's Woodruffs Island, with 400 adults and 300 young observed. Pelicans also nested on three Iowa islands: 286 nests on Island 303, with 600 adults and 400 chicks observed; 68 nests, 500 adults, and 360 young observed on Island 304; and on Island 306 there were 63 nests, 180 adults, and 100 young noted (S. Dinsmore pers. comm.).

In 2013, Woodruffs Island contained no birds (because it was under water for much of the breeding season due to spring floods), but on nearby Pelican Island—an Illinois dredge spoil island created in 2006 (E. Tomasovic pers. comm.)—there were as many as 91 pelican nests, with 325 adults and 270 young observed (S. Dinsmore pers. comm.). Also, in 2013, breeding pelicans expanded to Illinois's Smith Bay Island, an island with fresh dredge spoil in 2012. Here, E. Tomasovic (pers. comm.) observed initial nesting "under a lower canopy in stinging nettle and on the edges in button bush." An aerial survey on 13 May 2013 revealed about 250 nests; high water likely affected the site and on 19 June E. Tomasovic (pers. comm.) counted 160 nests. The site, however, was abandoned at the time of Tomasovic's visit, likely due to human disturbance from camping on the dredge spoil. In Iowa, birds returned to the same three islands observed the previous year: 52 nests, 400 adults, and 225 young recorded at Island 303; 57 nests, 900 adults, and 520 young observed at Island 304; and nests and adults not counted at Island 306, but 55 young observed here on 1 July 2013.

Indiana—

In Indiana, no breeding has occurred to date (2013) but the number of migrants (first reported in 1994) increased dramatically during 2008–2013 (K. Brock pers. comm., J. Castrale pers. comm.) from 275 in 2008 to 5,216 in 2013, with far more birds reported in spring than in fall (e.g. in 2013: 3,970 vs 748).

Ohio—

In Ohio, spring and fall migrants have been increasing in number in recent years, but no nesting has been reported to date (M. Shieldcastle pers. comm.).

Band Recoveries: Limited Supporting Evidence of Range Expansion

T. Erdman (pers. comm.) has unpublished data for 35 or more band recoveries, including birds banded elsewhere (western states) and subsequently nesting on Cat and Lone Tree islands. A sample of 7 available records since 2006 is provided in Table 3.

These band recoveries, together with Erdman's unpublished records, give some credence to the prevailing

Table 3. American White Pelican band recoveries provided by Tom Erdman.

Band Number Metal	Banding Location Date	Encounter Data Recovery Location	Date
0559-95943	7/7/2001—Appleton, MN	LTI, Green Bay WI	5/11/2011
0669-61447	6/26/2010—Marsh Lake WC, MN	Near Bailey's Harbor WI	7/24/2013
0649-03139	6/27/1998—Medina, ND	Cat Is., Green Bay WI	6/9/2010
0649-19292	7/8/1999—Medina, ND	LTI, Green Bay WI	5/18/2010
0609-13803	7/13/2007—Cat Is., Green Bay, WI	Cat Is., Green Bay WI	5/13/2008
0609-13061	6/27/2002—Cat Is.,Green Bay, WI	LTI, Green Bay WI	5/21/2009
0609-13703	6/8/2006—Cat Is., Green Bay, WI	Cat Is., Green Bay WI	9/13/2006

LTI = Lone Tree Island; WC = West Central

view that the influx of breeding pelicans in Wisconsin was likely due to birds originating from the Dakotas and Minnesota, further supporting the notion of an eastward expansion of the bird's breeding range. We also know that some of our banded lower Green Bay pelicans have been recovered in the Dakotas, indicating that population interchange has occurred. (Interestingly, many of Erdman's unpublished band recoveries come from Florida—Sanibel Island NWR—during winter, with several recoveries of Wisconsin-banded birds shot at fish farms in Mississippi, Arkansas, and Louisiana. Wisconsin pelicans likely winter from Louisiana to Florida.)

In Illinois, E. Britton (pers. comm.) reported that during the summer of 2013 a banded pelican observed at Illinois's Pelican Island was originally banded as a chick in 2001 at the Chase Lake colony near Medina, North Dakota. The mean average life span for an American White Pelican is 12-14 years old, with the oldest banded pelican surviving to age 26.4 years (Clapp et al. 1982).

Limiting Factors Affecting Pelican Populations

Habitat loss/degradation nationally, competing demands for water use in the West, and to some extent contaminants continue to be a threat to breeding populations (Pacific Flyway Council 2012). There has been considerable interest in the impacts of the 2010 Deepwater Horizon Oil Spill on nesting colonial waterbirds (L.Wires pers. comm.). In 2012, Upper Mississippi NWR staff collected addled eggs from Iowa and Illinois pelican colonies and submitted them for contaminant analyses. Preliminary results indicated egg contamination from DOSS (soap agent used for oil dispersal); PAHs (polyaromatic hydrocarbons); and from mercury, DDT, dieldrin, chlordane, mirex, and PCBs (E. Britton pers. comm.). Also, deformed pelican chicks have been recorded from time to time at both Cat and Lone Tree islands, though the source of contamination is unknown.

Disease transmission in recent decades is another limiting factor, with the bird especially susceptible to avian botulism (the primary cause of

death in the U.S. during 1978-2003, especially in the West; Murphy 2005, Rocke et al. 2005), and with West Nile Virus, avian cholera, aspergillosis, and Newcastle Disease also causing mortality (Pacific Flyway Council 2012). Botulism Type E was found in a lower Green Bay pelican one year, with a possible link to consumption of round gobbies (*Neogobius melanostomus*), which now comprise part of the pelican diet (T. Erdman pers. obs.).

Of all limiting factors, however, predation and persistent human disturbance (by foot, boat, plane) at breeding colonies constitute the major threats to pelican breeding success (Pacific Flyway Council 2012), with chicks <3 weeks of age especially vulnerable to predators such as red fox (*Vulpes vulpes*), coyote, badger (*Taxidea taxus*), raccoon (*Procyon lotor*), gulls (*Larus spp.*, especially Herring Gulls *L. argentatus*), Common Raven (*Corvus corax*), Great Horned Owl (*Bubo virginianus*), and in some areas Bald Eagle (*Haliaeetus leucocephalus*; Thompson et al. 1979, Koonz 1987, Idaho Fish and Game 2009, Pacific Flyway Council 2012). We have observed periodically entire subcolonies lost in Wisconsin due to predation events, usually where birds have selected nests on dikes or accessible peninsular sites. Typically during a breeding season when predation is not a factor, a female begins egg-laying in her third year, 2 eggs are the mean clutch size, and 1 young survives (Sloan 1982, Knopf and Evans 2004).

Finally, shooting historically—and to some extent today—has been a significant mortality factor as humans have taken pelicans for their feathers, for sport, or "to alleviate suspected impacts to fisheries" (Pacific Flyway Council 2012). Parenthetically, pelican diets are composed predominantly of *Cyprinidae* and *Catostomidae* spp. of low economic value (Derby and Lovvorn 1997, Findholt and Anderson 1995, Knopf and Evans 2004), with sport fishes comprising a small percentage of fish consumed (Knopf and Evans 2004, Pacific Flyway Council 2012). Breeding American White Pelicans, however, are opportunistic feeders, shifting to what is most easily accessible, and in so doing can impact to some degree localized fish populations, creating conflicts (Knopf and Kennedy 1981, Knopf and Evans 2004, Teuscher 2004, Teuscher et al. 2005, Pacific Flyway Council 2012).

Summary

Wisconsin is the apparent beneficiary of an eastward continental American White Pelican range expansion that has occurred during the past two decades, with regional increases notably evident since 2005. From 2005 through 2013, Wisconsin's pelican breeding population increased markedly to 4,123 nesting pairs at 8 Wisconsin colony sites in east-central and northeastern Wisconsin. Will numbers of pelicans colonize island sites in the Mississippi River, as has occurred recently in Illinois and Iowa? As the state's breeding population continues to grow—a likely trend in the foreseeable future—pelican colonies in Wisconsin waters of the Mississippi (and elsewhere) seem probable.

Editor Bettie Harriman (2006) concluded her pelican account in the Wisconsin Breeding Bird Atlas by ruminating on the bird's future:

"Whether the American White Pelican will continue to nest in Wisconsin or disappear again as it apparently did in the past depends on human behavior." With a greater understanding of its past and current status and distribution, as well as a more comprehensive grasp of its breeding biology here in the years ahead, we hope that this ancient piscivorous bird, with its extraordinary 9-foot wingspan (rivalling the California Condor in North America), will continue to be a regular feature of Wisconsin's avifauna.

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Appendix A.

American White Pelican Observations, *Passenger Pigeon*, 1939–1994; dates are given month, day, year; source is given as volume # (issue number): page number(s). Compiled by William Volkert.

Date	Number Reported	Location	Observer(s)	Source
6-20 to 7-23-1940	3	Lake Pepin	Aliesch	2(10): 118
4-20-1941	1	Babcock	Grange/Cole	3(5): 43
4-28-1941	28	near Hudson	Hope	III(8): 76
4-10-1942	1	Madison	Chase	V(2): 47
11-7-1942	17	Horicon Marsh	Burrows	V(4): 91
11-8-1942	37	Milwaukee Co.	Duesing	V(4): 91
Summer, 1945	4	Koshkonong	Maxson	VII(1): 21
6-5 to 7-10-1946	2	Horicon Marsh	Mathiak/Hopkins	VIII(4): 125
4-24 -1948	27	St. Croix/Polk	Jonas	X(2): 71
4-25-1948	48	St. Croix/Polk	Hope	IX(3): 112
6-12-1948	3	St. Croix & Polk	unknown	X(2): 71
5-4-1948	a few	Koshkonong	Traxler	X(2): 71
9-16-1948	4	Koshkonong	Dallman	X(1): 33
10-27-1949	1	Black River	Marcon/Regenfuss	XI(2): 81
4-20-1950	9	Menominee	Mattison	XII(3): 137
5-7 to 12-1950	8	Maiden Rock	Campbell	XII(4): 172
No date 1951	1	Bayfield Co.	Keener	XIV(3): 103
6-22-1953	1	Koshkonong	M. Donald	XV(4): 175
Early Nov 1954	3	Allouez Bay	Hofslund	XVII(2): 88
6-14 to 9-18-1955	1	Horicon Marsh	multiple	XVII(4): 164
5-16 & 30-1956	4	Petenwell Flo.	S. Robbins et al.	XVIII(3): 128
June to Nov 1-1957	2	Petenwell Flo.	multiple	XIX(1): 35
9-9-1957	1	Cornucopia	Willis	XIX(1): 35
11-7 to 23-1957	1	Two Rivers	multiple	XX(1): 32
4-24-1958	4	Ashland	Thompson	XX(3): 124
11-23 & 24-1958	7	Dane Co.	multiple	XXI(2): 82
10-5-1959	1	Marquette Co.	Soulen	XXII(2): 19
10-22 to 11-1-1959	1	Dane Co.	Ashman	XXII(2): 19
5-28 to 30-1960	1	Bayfield Co	Bratley/Dryer.	XXII(4): 195
11-8 to 22-1961	1	Bayfield Co.	Klugow	XXIV(2): 49
5-18-1963	1	Douglas Co.	Bernard	XXV(4): 162
10-23-1963	1	Racine Co	Prins	26(2): 97
5-29-1964	1	Douglas Co.	Bernard	27(1): 28
6-3-1964	1	Superior	Bernard	27(2): 82
7-22-1964	1	Burnett	Stone/Caldwll	27(2): 82
9-26-1964	1	Crawford Co.	Bierbrauer	27(3): 122
10-20-1964	2	Columbia Co.	Field	27(3): 122
10-25 to 28-1964	1	Superior	Bernard	27(3): 122
11-1-1964	1	near Freedom	Vander Logt	27(3): 122
6-24-1966	18	La Crosse	unknown	29(2): 39
8-28 to 11-22-1966	1	Milwaukee Co.	Donald	29(3): 86
10-4-1966	3	Buffalo Co.	Everson	29(3): 86
10-26-1966	1	Grant Co.	Krumm	29(3): 86
5-9-1968	16	La Crosse Co.	Lesher	30(1): 37
6-28 to 7-4-1967	35	Vernon Co.	Lesher	30(2): 93
11-4-1967	1	Milwaukee Co.	Gustofson	30(3): 131
11-6-1967	1	Brown Co.	Delsart	30(3): 131
11-13-1967	1	Clark Co.	Hansen	30(3): 131
11-15-1967	1	Washburn Co.	unknown	30(3): 131
10-16-1969	2	Collins Marsh	Olson	32(4): 164
11-15-1969	2	Winnebago Co.	Roehr	32(4): 164
4-25 to 5-31-1970	1	Jefferson Co.	multiple	33(1): 19

Date	Number Reported	Location	Observer(s)	Source
8-12 to 9-11-1971	7	Grand Rr. Marsh	Tessen	34(2): 75
9-27-1971	11	Ashland	Roy	34(3): 108
10-1-1972	4	Madison	Scott	35(3): 136
10-14-1972	3	Oconto Co.	Erdman	35(3): 136
Oct 17-1972	2	Cedar Grove	Berger et al.	35(3): 136
10-7 to 25-1973	1	Price Co.	Vincent	36(3): 121
10-16-1973	16	Cedar Grove	Berger	36(3): 121
11-16-1973	3	Ozaukee Co.	Donald/Erickson	36(3): 121
5-11-1974	22	Barron Co.	Faanes	37(2): 70
11-11-1974	6	Ashland Co.	Miller	37(3): 121
6-12-1975	1	Door Co.	Trick et al.	38(2): 73
10-20-1975	2	Wood Co.	Follen	37(4): 188
11-2 to 6-1975	2	St. Croix Co.	Faanes	38(3): 114,127
11-20-1975	1	Green Bay	Erdman	38(3): 114
Fall 1976	unk	Lake Onalaska	Lint	39(2): cover
8-23-1976	23	La Crosse Co.	Lesher	39(3): 286
7-24-1977	7	La Crosse Co.	Lesher	40(2): 407
7-18 to 30-1977	11	Tomah area	Epstein	40(2): 407
7-3-1977	1	Milwaukee	Cutright	40(2): 407
7-31 to 8-23-1977	11	Tomah area	multiple	40(3): 455
Sept 10 to 14-1977	14	La Crosse Co.	unk	40(3): 455
10-20 & 21-1977	1	Racine Co.	Erickson	40(3): 455
6-18 to 7-4-1978	19	Grand Rr Marsh	multiple	41(2): 82
7-4-1978	1	Green Bay	Trick	41(2): 82
8-12-1978	3	Adams Co.	Kjos	41(4): 162
10-24-1978	1	Door Co.	Lukes	41(4): 162
10-27-1978	—	Sheboygan Co.	Berger	41(4): 162
No date 1978	1 inj/capture	La Crosse Co.	Lesher	41(4): 162
4-16 to 21-1979	32	Pepin Co.	Kemper et al.	42(1): 32
4-22-1979	6	Burnett Co.	Evrard	42(1): 32
4-26 to 5-24-1979	—	La Crosse Co.	Rosso	42(1): 32
4-29 to 5-31-1979	—	Ashland Co.	Verch	42(1): 32
4-30 to 5-27-1979	23	Douglas Co.	Johnson et al.	42(1): 32
6-11-1979	2	Douglas Co.	Johnson	42(2): 77
9-19-1979	1	Wood Co.	Follen	42(3): 105
6-10 to 7-1-1980	2	Brown Co.	Erdman/Trick	43(2): 52
Late October, 1980	1	Douglas Co.	Johnson	43(4): 120
6-17-1981	1	Burnett Co.	Hoefler	44(2): 75
3-18 to 5-31-1982	—	Chippewa Co.	Polk	45(1): 27
3-31 & 4-16	—	Trempeleau Co.	Polk	45(1): 27
4-14 to 4-27-1982	4	Bayfield Co.	Verch	45(1): 27
4-17-1982	—	Green Lake Co.	DeBoer	45(1): 27
4-18 to 22-1982	40	Burnette Co.	Hoefler	45(1): 27
5-12-1982	—	Price Co.	Hardy	45(1): 27
9-4 to 10-2-1982	—	Dunn Co.	Polk	45(3): 88
10-1-1982	1	Sheboygan Co.	Berger et al.	45(3): 88&110
10-16-1982	1	Columbia Co.	Lange	45(3): 88
11-14 to 20-1982	1	Columbia Co.	Hoffman/Tessen	45(3): 88
4-23-1983	—	Dane Co.	Tessen	46(1): 25
5-12-1983	—	Dunn Co.	Polk	46(1): 25
5-29-1983	—	Marathon Co.	Heig	46(1): 25
6-1 to 7-13-1983	3	Marathon Co.	multiple	46(2): 83
6-4-1983	4	Ashland Co.	multiple	46(2): 83
6-30-1983	—	Winnebago Co.	Carpenter	46(2): 83
7-19-1983	3	Dunn Co.	Polk	46(2): 83
5-10 to 31-1984	—	Brown Co.	multiple	47(1): 18
5-11-1984	—	Green Lake Co.	Mossman	47(1): 18
5-19-1984	—	Winnebago Co.	multiple	47(1): 18

Date	Number Reported	Location	Observer(s)	Source
5-27 to 29-1984	—	Door Co.	Lukes	47(1): 18
7-13 to 24-1984	1	Winnebago Co.	Carpenter/Ziebell	47(2): 75
7-28 to 31-1984	4	Ashland/Bayfield	Verch	47(2): 75
Early September, 1984	—	Trempeleau Co.	Polk	47(3): 104
10-25-1984	17	Ashland/Bayfield	Verch	47(3): 104
10-27-1984	—	Price Co.	Hardy	47(3): 104
No date	—	Burnett Co.	unknown	47(3): 104
No date	—	Manitowoc Co.	unknown	47(3): 104
4-19 & 28-1985	—	Dunn Co.	Polk	48(1): 27
4-28-1985	—	Burnett Co.	Hoefler	48(1): 27
5-7-1985	—	Ashland Co.	Verch	48(1): 27
9-20 to 27-1985	2	Winnebago Co.	Ziebell	48(3): 133
10-22 to 31-1985	1	Dunn Co.	Polk/Tessen	48(3): 133
4-20-1986	7	Burnett Co.	Hoefler	49(1): 25
4-28-1986	5	La Crosse Co.	Lesher	49(3): 144
5-30-1986	14	Iron Co.	Rilin	49(1): 25
7-8-1986	1	Vilas Co.	Spahn	49(2): 107
9-6-1986	3	Dodge Co.	Baughman/Tessen	49(3): 144
9-27-1986	2	Grant Co.	Thiessen	49(3): 144
10-8 to 10-1986	1	Milwaukee Co.	multiple	49(3): 144
10-11-1986	11	Douglas Co.	Johnson	49(3): 144
5-19 to 25-1987	18	Bayfield Co.	Multiple	50(1): 61
5-24-1987	4	Douglas Co.	DeBoer	50(1): 61
6-11-1987	1	Douglas Co.	Johnson	50(2): 161
4-30-1988	—	Douglas Co.	Johnson	50(4): 344
5-7 to 22-1988	—	Green Lake Co.	multiple	50(4): 344
No date	—	Manitowoc Co.	Sontag	50(4): 344
6-18-1988	1	Winnebago Co.	Ziebell	51(1): 113
4-8-1989	—	Monroe Co.	Epstein	51(4): 382
4-20-1989	—	Ashland Co.	Verch	51(4): 382
5-5-1989	—	Douglas Co.	Johnson	51(4): 382
5-9 & 25-1989	—	Dane Co.	Thiessen	51(4): 382
11-4-1989	2	La Crosse Co.	Soulen	52(2): 181
4-22 to 5-23-1990	25	Burnett Co.	Hoefler	52(4): 361
5-26-1990	—	Douglas Co.	Johnson/Semo	52(4): 361
No date	—	Ashland Co.	unknown	52(4): 361
No date	—	Dane Co.	unknown	52(4): 361
No date	—	Green Lake Co.	unknown	52(4): 361
No date	—	Taylor	unknown	52(4): 361
No date	—	Trempeleau	unknown	52(4): 361
7-21-1990	1	Barron Co.	Goff	53(1): 86
7-19-1990	2	Winnebago	multiple	53(1): 86
7-21 to 27-1990	—	Douglas Co.	Johnson/Semo	53(1): 86
8-24 to 9-16-1990	7	Brown Co.	multiple	53(2): 171
10-17-1990	3	Douglas Co.	Semo	53(2): 171
11-19-1990	5	Polk Co.	Hudick	53(2): 171
4-5-1991	33	Trempeleau Co.	Hunter	53(4): 358
4-27-1991	—	Douglas Co.	Johnson	53(4): 358
4-28-1991	12	Buffalo Co.	Lesher	53(4): 358
4-29-1991	—	Ashland Co.	Verch	53(4): 358
5-11-1991	—	La Crosse Co.	Lesher	53(4): 358
6-1 to 7-7-1991	2	Brown Co.	multiple	54(1): 87
7-22-1991	—	Milwaukee Co.	Domagalski	54(1): 87
9-9 to 16-1991	12	Vernon Co.	Dankert	54(2): 155
10-1-1991	—	Trempeleau Co.	Hunter	54(2): 155
4-11-1992	2	Dane Co.	Holzheuter	54(4): 311
4-16 to 27-1992	3	Green Lake Co.	Schultz	54(4): 311
4-19-1992	35+	S Lake Michigan	Idzikowski	54(4): 311

Date	Number Reported	Location	Observer(s)	Source
5-1 to 31-1992	3	Douglas Co.	multiple	54(4): 311
5-3-1992	11	Grant Co.	Burcar/Shea	54(4): 311
5-6 to 8-1992	33	Dunn Co.	Polk	54(4): 311
5-17-1992	10	Chippewa Co.	Polk	54(4): 311
5-19& 20-1992	4	Ashland Co.	Verch	54(4): 311
5-29-1992	1	Burnett Co.	Korducki/Tessen	54(4): 311
6-28 to 7-4-1992	103	Vernon Co.	Dankert	55(1): 83
No date	—	Adams Co.	Tessen	55(1): 83
No date	—	Juneau Co.	Tessen	55(1): 83
No date	—	Burnett Co.	Hoefler	55(1): 83
No date	—	Dodge Co.	multiple	55(1): 83
No date	—	Door Co.	Lukes	55(1): 83
No date	—	Douglas Co.	Johnson/Semo	55(1): 83
No date	—	Green Lake Co.	Schultz	55(1): 83
8-1-1992	—	Burnett Co.	unknown	55(2): 180
8-1-1992	—	Dodge Co.	unknown	55(2): 180
8-1 to 18-1992	250	La Crosse Co.	Dankert/Lesher	55(2): 180
8-1-1992	—	Brown Co.	unknown	55(2): 180
8-1-1992	—	Chiewa Co.	unknown	55(2): 180
8-1-1992	—	Green Lake Co.	unknown	55(2): 180
8-1-1992	—	Trempealeau Co.	unknown	55(2): 180
8-1-1992	—	Vernon Co.	unknown	55(2): 180
10-14-1992	—	Dodge Co.	Domagalski	55(2): 180
4-18-1993	—	Trempealeau Co.	Hunter	55(4): 316
No date	—	Recorded in 8 western counties		55(4): 316
No date	—	Door Co.	unknown	55(4): 316
Through 5-31-1993	—	Brown Co.	unknown	55(4): 316
Through 5-31-1993	—	Douglas Co.	unknown	55(4): 316
Through 5-31-1993	—	Trempealeau Co.	unknown	55(4): 316
6-11-1993	6	Marquette Co.	Foster/Robbins	56(1): 75
6-18 to 24-1993	215	Vernon Co.	Dankert	56(1): 75
6-20-1993	4	Dane Co.	Burcar	56(1): 75
6-21 to 7-31-1993	—	La Crosse Co.	Dankert	56(1): 75
7-7-1993	16	Door Co.	Lukes	56(1): 75
7-30-1993	—	Brown Co.	Nussbaum	56(1): 75
8-1-1993	—	La Crosse Co.	unknown	56(2): 159
8-1 to 11-23-1993	240	Vernon Co.	Dankert	56(2): 159
No Date	—	Brown Co.	unknown	56(2): 159
No Date	—	Door Co.	unknown	56(2): 159
No Date	—	St. Croix Co.	unknown	56(2): 159
4-17-1994	—	Trempealeau Co.	Hunter	56(4): 266
No date	—	Reported in 13 scattered counties		56(4): 266
5-3-1994	183	Buffalo Co.	Hunter	56(4): 266

Some Conclusions Regarding Wisconsin Pelican Sight Records in the Passenger Pigeon, 1939–1994

Prior to the advent of Wisconsin eBird records, the *Passenger Pigeon* was the only comprehensive source of Wisconsin bird records. Data for the Table were taken from seasonal reports and other articles. Since observations were recorded quarterly, pelicans that remained from one quarter to the next may have been recorded in more than one issue, and therefore the above records were in some instances listed

twice for the same bird in two consecutive seasons. The dates of sightings in these instances ended with 31 May and began on 1 June for late spring records that remained into summer, or began on 1 August for summer sightings of pelicans that remained into fall.

The following are some conclusions from the sight records of American White Pelican as tabulated above.

1. In the 1943 issue of the *Passenger Pigeon*, sightings on 7 November at Horicon Marsh, and a wounded bird picked up there on 11 November, were reported as the first November records for this species in the state. (5(4): 91).

2. In the 1953 "Field Notes" of the *Passenger Pigeon,* it was reported for Lake Koshkonong that "this rare visitor was formerly common in this area; now only one or two are reported here annually." (XV (4): 175).

3. Reports of white pelicans in Wisconsin from 1940 through the 1960s were primarily of single birds, with the exception of larger flocks observed in the spring of 1948, 1950, 1966, and 1967. There were only a few records of pelicans observed in summer (23 July 1940; summer 1945—no details given; and 10 July 1946) during this period.

4. In 1955 and 1957, pelicans—apparently non-breeders—remained throughout the summer at Horicon Marsh and Petenwell Flowage.

5. From 1939 through 1969, there were 49 reported observations of white pelicans in Wisconsin; 13 in April and May, 9 in June and July, and 26 in September through November. There were summer records of pelicans, but most all of the earliest records involved sightings of 1–3 birds. Many observations covered a single day, but in some instances pelicans remained for as many as 4 weeks, without any evidence of nesting attempts. These latter records all appear to have been non-breeding birds that remained on Wisconsin waters for varying lengths of time during the breeding season.

6. By 1966, we see the first substantial flocks sighted in summer, with 18 pelicans on 24 June 1966, and 35 reported for the period 28 June to 4 July 1967. During the 1970s, white pelicans were reported every year, but not always in both spring and fall migration. Records of larger flocks, however, became more frequent. Of the 36 records for the decade, 10 involved single birds, 12 were of 2–10 birds, and 10 records constituted flocks of 11–35 birds, with a maximum of 32 pelicans reported for the spring of 1979. There were another 4 records of an unknown number of pelicans, but these likely involved single birds.

7. In the 1980s, sight records of white pelicans increased dramatically, with 56 records for the decade. Many of the seasonal reports in the *Passenger Pigeon* no longer listed the number of birds observed, and infrequently the date sighted, except in the case of particularly large flocks. Records instead typically focused on the statewide distribution of observations. This trend was also noted for the 1990s as a result of an ever-increasing number of sight records. For the period 1990 through 1994, there were 69 records, with numerous occurrences reported in consecutive issues resulting from individual birds or flocks remaining from one season to the next. More pelicans remained into the summer months, and stayed for longer periods

of time, which appeared to be a precursor to eventual nesting efforts.

Sumner W. Matteson, an Avian Ecologist with WDNR's Bureau of Natural Heritage Conservation (formerly Endangered Resources), specializes in colonial waterbird and shorebird conservation and management, and is working closely with the Natural Resources Foundation of Wisconsin on protection of the Osa Penisula in Costa Rica and in coordinating the Great Wisconsin Birdathon. He led the successful initiative to reintroduce Trumpeter Swans to Wisconsin during 1989–2013. He is a past president and vice-president of WSO and has been a regular contributor to The Passenger Pigeon.

William K. Volkert worked as the wildlife educator and naturalist at Horicon Marsh for 27 years where he conducted more than 3,700 education programs for over 210,000 people. Since his retirement he has been working on publishing a number of books and papers (see www.billvolkert.com). He has been watching birds for 42 years and has sighted over 2,600 species.

Paul W. Rasmussen is a statistician for the WDNR Bureau of Science Services, where he applies statistical methods in addressing management problems related to fisheries, forestry, water quality, and wildlife management. Paul has Master's degrees in Zoology and Statistics from the UW-Madison.

Thomas Erdman, Curator of the Richter Museum of Natural History, Cofrin Center for Biodiversity at UW-Green Bay (www.uwgb.edu/biodiversity) has spent over four decades conducting research on mammals, herps, and birds in northeast Wisconsin. Birds have been his main focus. As founder-director, of the Little Suamico Ornithological Station, he has banded over 45,000 individuals representing close to 180 of Wisconsin's bird species. He was heavily involved in research on toxics and their effect on colonial nesting birds on Green Bay and Lake Michigan which has eventually led to PCB cleanup of the Fox River. He has authored and coauthored many publications on Northern Goshawk population biology, Toxics, Raptor Migration, Development of an audio-lure for Saw-whet Owls, Saw-whet Owl Migration, and numerous surveys. He continues colonial bird research on Green Bay and longterm Goshawk research in northern Wisconsin. He is a past president and vice-president of WSO.

Jon M. Krapfl is a wildlife biological science technician with the USFWS at Horicon National Wildlife Refuge. He assists with marsh management; controlling invasive species and managing water levels. He conducts various bird surveys including waterfowl, rail, colonial waterbird, and shorebirds. He assists with various research projects that include working on remote islands off Door County.

Wendy S. Woyczik, a Wildlife Biologist with the US Fish and Wildlife Service, conducts wildlife surveys with her main focus being waterfowl and other waterbirds. She also monitors both upland and wetland vegetative responses to habitat management strategies. She works closely with agency personnel and partners to restore and manage wetland and upland habitats within the refuge system.

Art Techlow III, a Senior Fisheries Biologist with the Wisconsin Department of Natural Resources, specializes in fish and wildlife habitat restoration on the Winnebago pool lakes. He has been involved with colonial waterbird management on the Winnebago pool since 1981.

Michael L. Jones is a Wildlife Biologist with USDA—Wildlife Services with a main

focus of addressing wildlife damage concerns caused by avian species, particularly Double-crested Cormorants, Canada Geese, and gull species. He received his Bachelor's degree in Fish and Wildlife Biology from Iowa State University and a Master's degree in Wildlife Ecology from the University of Wisconsin-Madison.

Charles "Chip" D. Lovell is a wildlife biologist with the U. S. Department of Agriculture's Wildlife Services program in Waupun, Wisconsin. He received his B.S. in Fisheries & Wildlife Management from Michigan State University and his M.S. in Wildlife Ecology from Mississippi State University. Chip is the District Supervisor for southern Wisconsin and oversees management actions in 43 counties involving nuisance and depredating wolves, black bear, Canada Geese, deer, Wild Turkey, European Starlings, Mute Swans, gulls, cormorants, and other wildlife species.

Portrait of an American White Pelican by Jack Bartholmai

Timing of Sharp-shinned Hawk Fall Migration

Helmut C. Mueller

Department of Biology and Curriculum in Ecology
University of North Carolina
Chapel Hill, NC 27599-3280
hmueller@live.unc.edu

Nancy S. Mueller

409 Moonridge Road
Chapel Hill, NC 27516

Daniel D. Berger

1806 Grevelia Street
South Pasadena, CA 91030

There are numerous publications that show that the times of spring migration in birds have become earlier in recent years (e.g. Miller-Rushing et al. 2008). Rosenfield et al. (2011) have shown that Sharp-shinned Hawks (*Accipter striatus*) migrated later in the fall in recent years at Duluth, Minnesota. In this paper we see whether this holds true for Cedar Grove, Wisconsin.

We counted, and attempted to trap, migrating hawks at the Cedar Grove Ornithological Station on the western shore of Lake Michigan, 70 km north of Milwaukee, Wisconsin. The number of observation days per autumn was 90.8 ± 14.7. We usually watched for migrants from before sunrise until after sunset, although on days with little or no migration our observations occasionally became sporadic, particularly in 1960s. We suspended observations completely only during continuous rain or dense fog. We conducted observations from spacious and comfortable blinds, which offered an extensive view to the north, west, and east. Although many observers were involved in this study, all were closely supervised by at least one of the authors. We used SYSTAT (Wilkinson 1989) on a Macintosh computer for statistical analysis. Unless otherwise stated, the level of significance was $P < 0.05$.

Sharp-shinned Hawks observed migrating in the fall at Cedar Grove did not show a significant increase in the date of migration in the years 1960–2010 (Fig. 1). This was an unexpected result. Adults migrate consid-

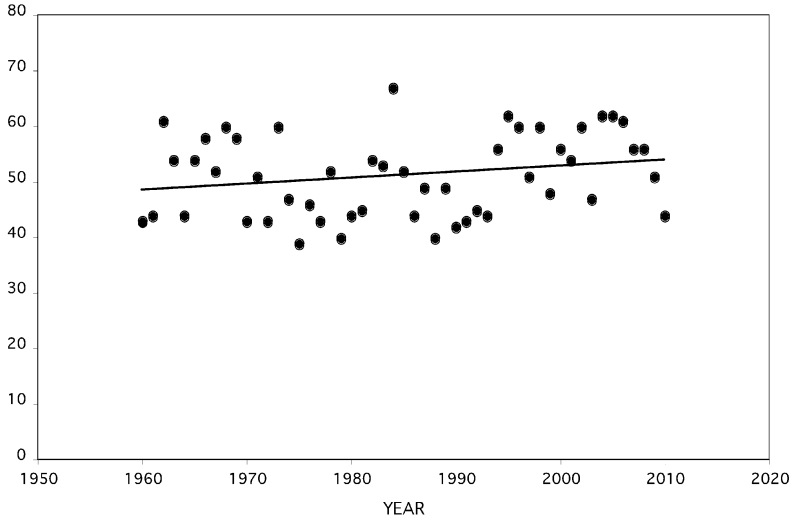

Figure 1. Median date of all Sharp-shinned Hawks observed in fall migration at Cedar Grove. 0 = 15 August, 50 = 3 October, 80 = 2 November. The dots show the median date for each year. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.309, which indicates that there is not a significant change in the timing of migration.

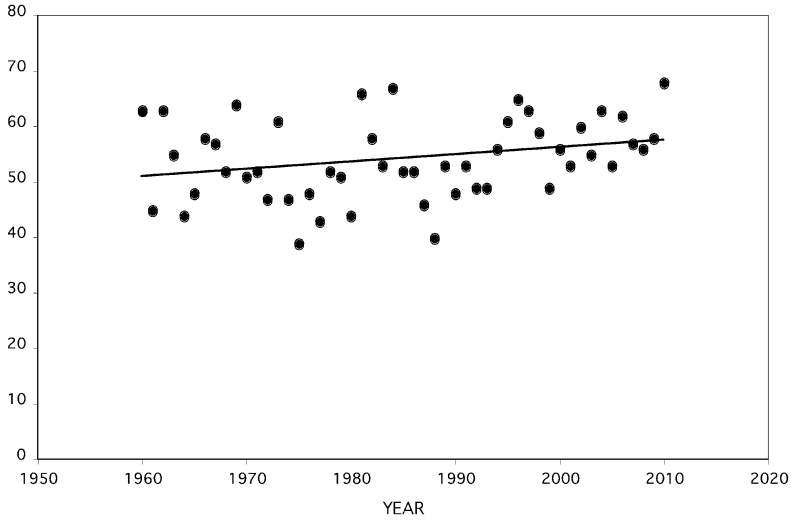

Figure 2. Median date of adult female Sharp-shinned Hawks trapped at Cedar Grove. 0 = 15 August, 50 = 3 October, 80 = 2 November. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.054, which indicates that there was almost a significant increase in the average date of migration.

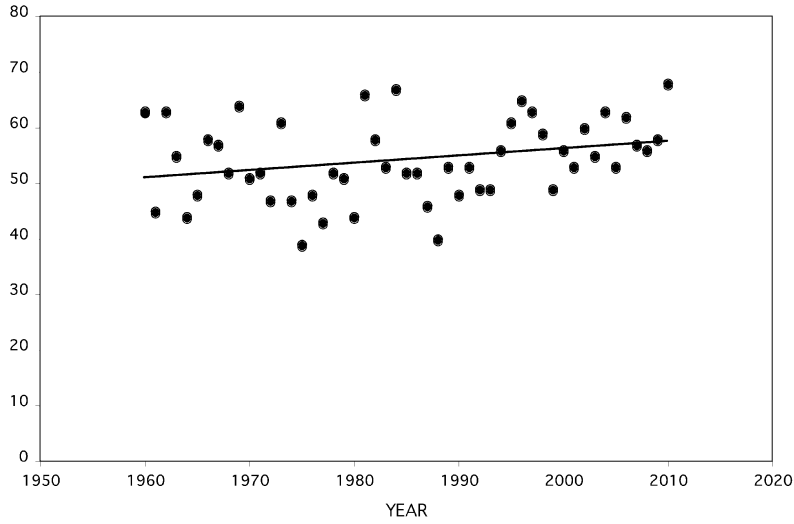

Figure 3. Median date of adult male Sharp-shinned Hawks trapped at Cedar Grove. 0 = 15 August, 50 = 3 October, 80 = 2 November. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.073, which indicates that there was almost a significant increase in the average date of migration.

erably later than juveniles (Mueller et al. 2000), and we decided to look at our trapped birds, where age and sex are always determined. Adult females showed an almost significant increase in the median date of migration (Fig. 2), adult males also showed an almost significant increase (Fig. 3), but juvenile females (Fig. 4) and juvenile males (Fig. 5) showed no significant trend. This suggests that the juveniles are not tending to migrate later and are reducing the later trend in the hawks observed.

There were no significant trends in the sex ratio (*P=0.608* in adults and *P=0.292* in juveniles). There was a significant decline in the proportion of adults (Fig. 6), and this probably explains why there was no trend in median dates in the Sharp-shinned Hawks observed since adults migrate later than juveniles (Mueller et al. 2000).

Hawks in migration are concentrated at Cedar Grove by westerly winds (Mueller and Berger 1961, 1967). The decrease in the incidence of adults is most likely the result of changes in weather patterns resulting in reduced concentration of migrants at Cedar Grove late in the season rather than some change in the population. The reduced concentration of migrants late in the season may also explain why the adults showed only marginal increases in median dates of migration.

The changes in weather patterns are probably the major cause of the decline in Sharp-shinned Hawks and in many other species of hawks observed at Cedar Grove in the years 1991–2010 (Mueller et al. 2011). Eleven of 14 species declined and in seven species this decline was statistically significant.

The reason for the difference between our findings and those from

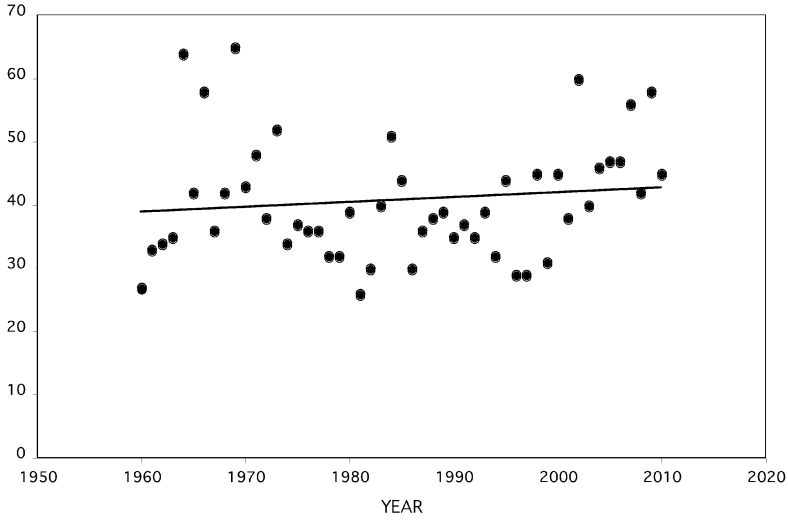

Figure 4. Median date of migration of juvenile female Sharp-shinned Hawks trapped at Cedar Grove. 0 = 15 August, 50 = 3 October, 70 = 23 October. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.399, which indicates that there was no significant change in the timing of migration.

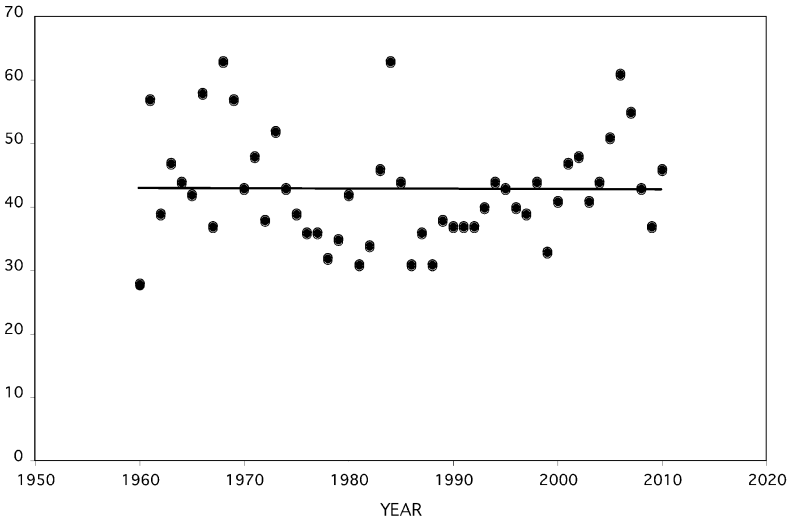

Figure 5. Median date of migration of juvenile male Sharp-shinned Hawks trapped at Cedar Grove. 0 = 15 August, 50 = 3 October, 80 = 2 November. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.954, which indicates that there was no significant change in the timing of migration.

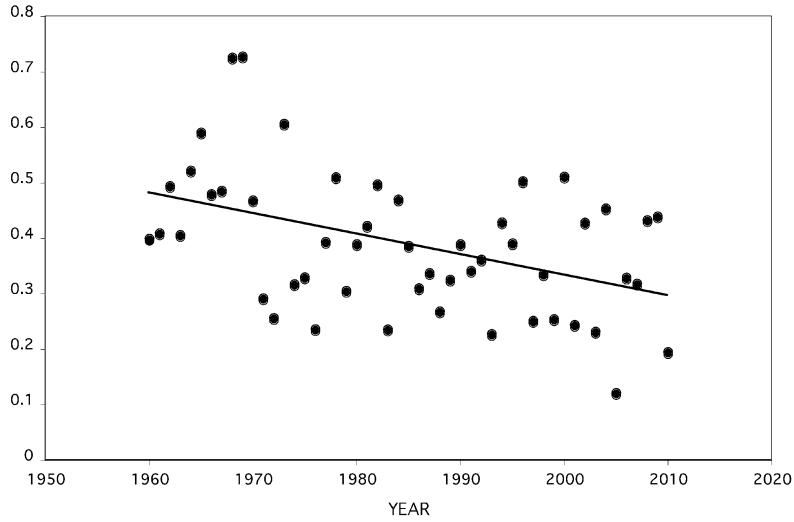

Figure 6. Proportion of adult Sharp-shinned Hawks trapped at Cedar Grove. 0 = 15 August, 50 = 3 October, 80 = 2 November. The line is a calculated fit for the trend shown by the dots. The probability of this line is a good fit for the data are P= 0.003, which indicates that there was a highly significant decrease in the proportion of adults over the years.

Duluth (Rosenfield et al. 2011), lie in the differences in geography. The shoreline at Duluth extends at 50 degrees east of North, about 30 degrees east of that at Cedar Grove, and Duluth is much less dependent on westerly winds to produce concentrations of southbound migrants. At Duluth northerly, or even winds slightly east of North, will produce migrants, but at Cedar Grove there will be very few. Changes in weather patterns will have much less of an effect at Duluth than at Cedar Grove. A few good days of weather can often make up much of the annual total of migrant Sharp-shinned Hawks at Cedar Grove, and if the few days occur early (or late), the median date would be similarly shifted. The median dates of migration at Cedar Grove varied between 22 September and 20 October or 28 days, almost twice as great as the 16 days at Duluth. The greater variance at Cedar Grove results in an increase in the probability calculation of the regression and decreases the significance of any trend. In all, it appears likely that Sharp-shinned Hawks migrated later at Cedar Grove as well as Duluth, and that the primary reason for a downward trend in Sharp-shinned Hawks observed at Cedar Grove since 1991 (Mueller et al 2010) is a change in weather patterns.

ACKNOWLEDGMENTS

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Barred Owl by Bob Larson

A Study of Bird and Bat Mortality at a Small Wind Turbine Facility During Fall and Spring Migration Seasons, 2010–2012

James Knickelbine and Charles Sontag

Woodland Dunes Nature Center and Preserve, Inc.
PO Box 486
Two Rivers, Wisconsin 54241
920. 793. 4007
woodlanddunes.org

ABSTRACT

A survey was done during five avian migration periods, fall of 2010, 2011, and 2012, and spring of 2011 and 2012, at a small wind facility at Orion Energy Systems in Manitowoc, Wisconsin, where two wind turbines were installed in 2010. Delineated areas beneath and around the turbines were searched on most mornings from 1 September through 1 November and from 1 April to 31 May, along with areas beneath windows at the office building on site. During those periods, 7 bird carcasses, were found beneath the wind turbines, while 52 bird carcasses were found beneath windows at the office building. Due to the location of some of the carcasses beneath the turbines on driveway and parking lot surfaces, the cause of death was difficult to determine (automobiles vs. turbine collisions). No bat carcasses were found.

INTRODUCTION

Woodland Dunes Nature Center and Preserve is a more than 1,300 acre wildlife preserve and environmental education facility located near Lake Michigan in east central Wisconsin between the cities of Two Rivers and Manitowoc. Founded in 1974, Woodland Dunes, a non-profit corporation, strives to protect and manage a complex of habitats, in particular forested ridges (dunes) and swales which are remnant shores of post-glacial stages of what is now Lake Michigan. Great Lakes forested ridge and swale habitat is considered to be of global significance in terms of wildlife and opportunity for conservation activity. Hundreds of species of plants and animals have been found at Woodland Dunes, including more than 260 species of birds, many of which migrate seasonally along the shore of Lake Michigan and use the preserve as stopover habitat. During migration, often the closer one is to the shore of Lake Michigan in the preserve, the more migrant landbirds and raptors one is likely to see (pers. observation).

Installation of wind turbines (Figures 1 and 2) at Orion Energy Systems, located adjacent to the

Figure 1. Location of Study Area—Orion property is directly above the word "Orion" in this caption.

Woodland Dunes preserve and only about 1/3 mile from the shore of Lake Michigan in 2010, provided an opportunity to study the possible effects posed by these structures to birds and bats. When Orion Energy Systems came to Woodland Dunes to discuss their intent to construct two wind turbines, both as a demonstration project and to generate electricity for their facility, we discussed our desire to ensure the welfare of wildlife in the preserve. Subsequent review of available research appeared to indicate that in many studies, few birds were documented as being killed by colliding with wind turbines, but none of the studies found were conducted near a known migratory stopover site close to the shore of the Great Lakes. We proposed conducting a study of the role of the proposed turbine (at that time only one was planned), on migrating birds and bats. Orion agreed to allow us access to their property to conduct searches and other activities. The first turbine, a 20kW model 115 ft. in height, was installed in August 2010, and a second larger (50kW) turbine 176.5 ft. in height was installed in September. This study was designed for, and focused primarily on, the smaller turbine, although the accessible area beneath the larger one was also searched.

We thought the most important periods to monitor the wind turbine effects were during the migratory periods during spring and fall when birds move along the shore of Lake Michigan in large numbers.

METHODS

Preliminary Survey—From April to August 2010, the site was visited nine times, during which five-minute point

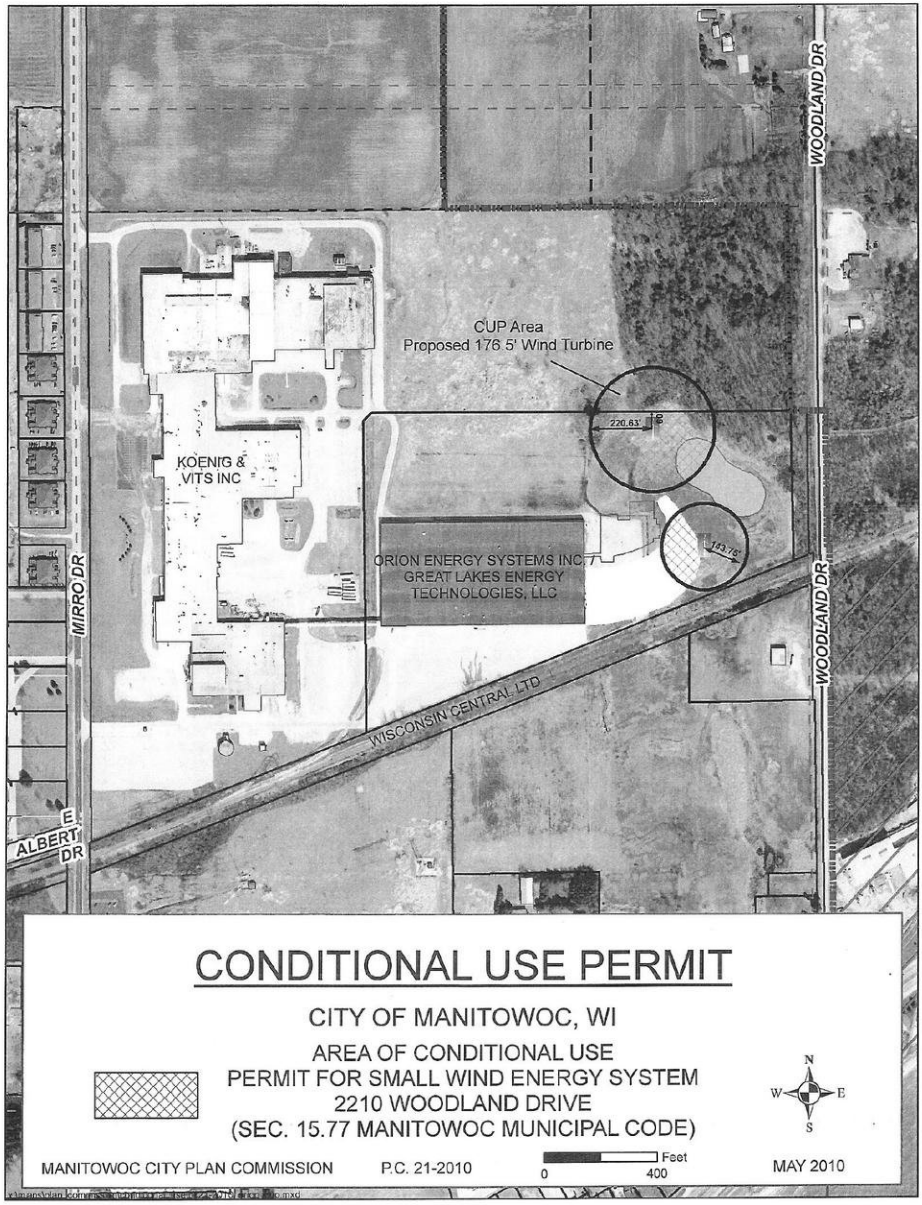

Figure 2. Location of turbines on Orion property

counts, centered on the proposed small turbine location, were conducted. All birds seen or heard during the five minute intervals were recorded without differentiation as to distance. The site was visited in the morning, usually between 7:30 and 10 am. In addition, a bird banding station operated by Woodland Dunes less than a mile from the study site was ac-

Figure 3. Small turbine search area

tive during the fall study periods, serving to document the bird species present in that area at that time, many of them fall migrants.

Search Area—After researching criteria used to evaluate other sites, initially a square search area with each side 206 feet (180% of the turbine height) in length was delineated and marked with flags. After the first season, the search area (Fig. 3) was modified to be slightly larger—a circular area with a radius equal to the turbine height. The small turbine (Fig. 4) was centered in the search area. Almost all of the search area was either lawn or parking/driveway paved with asphalt. A small area along the south side was vegetated in wet meadow (reed canary grass, Canada goldenrod) and shrub carr (red-osier dogwood and willow) species. After the larger turbine was erected partway through the study period, a roughly 200 by 200 foot area from the turbine to the south was also searched. The area north of the turbine was not owned by Orion, and was either wooded or wetland/wet meadow and was not searched. Much of the search area was mowed by Orion staff or was unvegetated as a result of recent construction. Mowed grass facilitates more effective searches, as short grass does not conceal carcasses to the degree that taller vegetation does.

Search Methods—three people participated in training to search for bird carcasses. All were familiar with birds of our area: one a Woodland Dunes staff member, one a nature center volunteer, and one was Professor Emeri-

Figure 4. Small wind turbine

Figure 5. Orion office windows

tus in Biology and a past president of the Wisconsin Society for Ornithology. Searchers were instructed to walk the search area on a north-south axis, doing transects at five-meter intervals. If bird carcasses were found, their location was noted along with time and date and a photo obtained if possible. The east and south sides of the office building were also searched, and carcasses of birds which presumably had collided with windows (Fig. 5) were also recorded. Participants were asked to search as early in the day as possible.

Scavenger Study—It was anticipated that scavengers may locate and remove carcasses before searchers could find them, so a control study was also done to document the degree that they might influence study results. On two occasions during the first study period, five marked bird carcasses were placed at various locations within the turbine and building search areas. The locations were recorded and checked daily to determine how long carcasses would remain on the site before being removed by scavengers. Orion was contacted and informed of this, and it was requested that employees be careful not to disturb or remove any birds.

Searcher Efficiency—On two occasions carcasses were placed on the site and the locations withheld from searchers, who were then asked to search the site as usual. The first involved the carcasses placed for the scavenger study, the locations of which were not given to searchers. For the second trial, a staff member not involved in the study

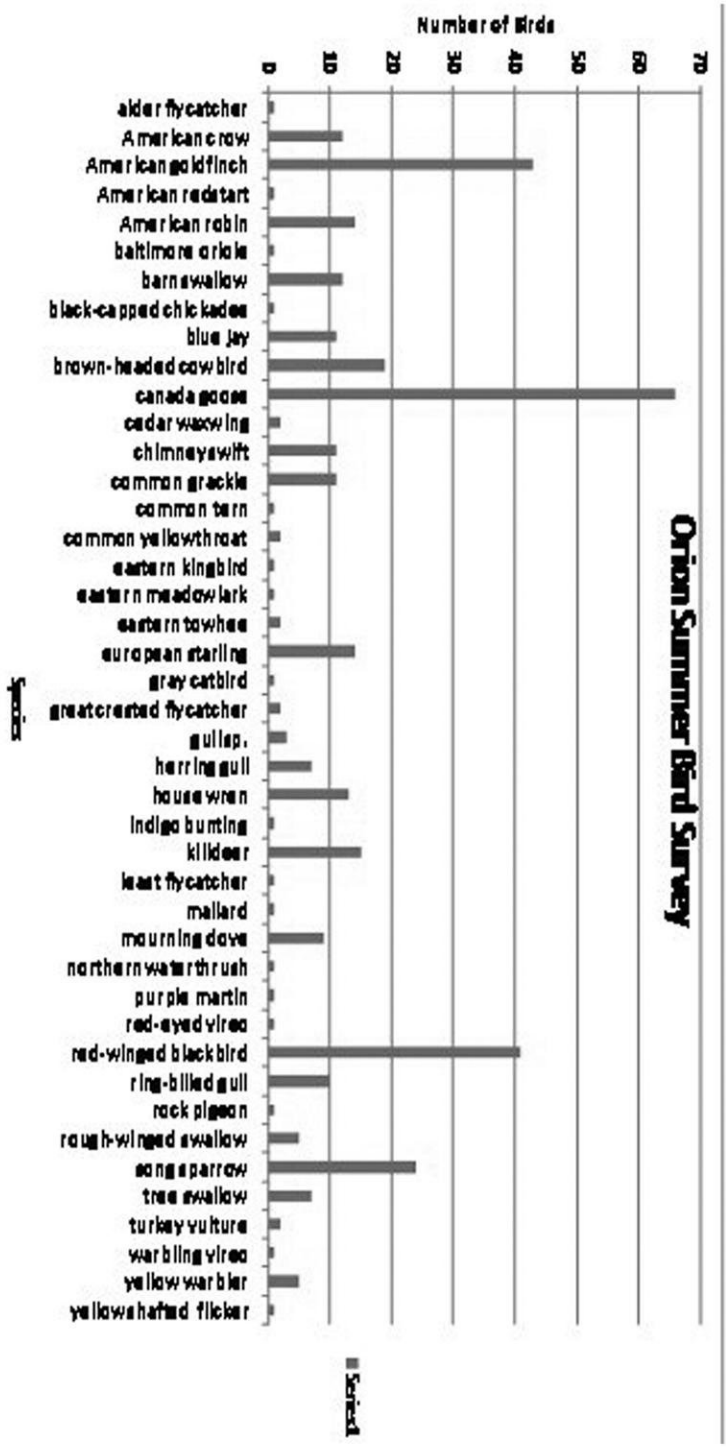

Figure 6. Bird species recorded on pre-construction surveys

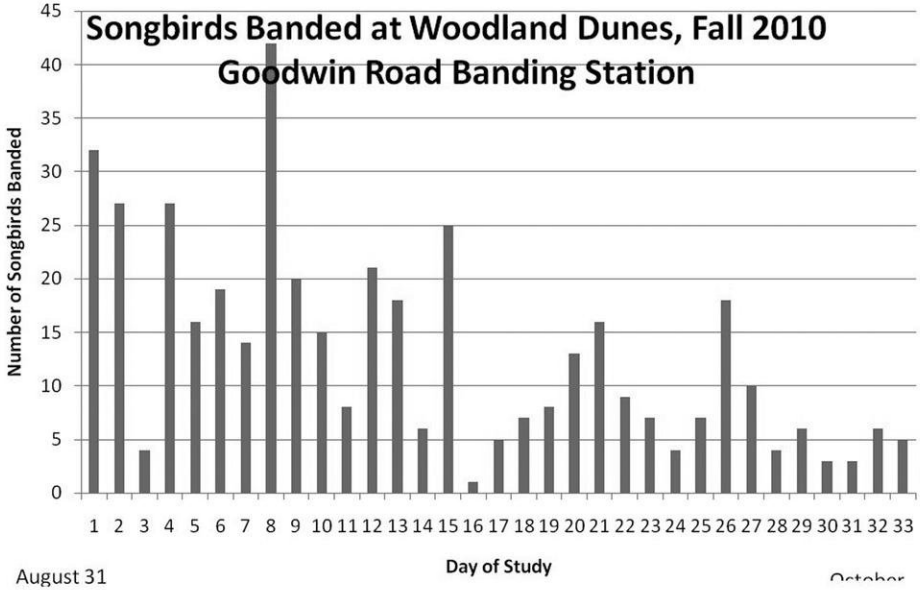

Figure 7. Songbirds banded at Woodland Dunes, Fall 2010

placed five carcasses on the site. Searchers were then asked invidually to search as usual.

Results

Preliminary survey—Two hundred forty-two birds of forty-three species were recorded during the spring and summer on or around the study site (Fig. 6). The most numerous species were Canada Goose, followed by American Goldfinch and Red-winged Blackbird. Two ponds are located on the property, one natural and one constructed for stormwater retention. Three Black Swans (non-native and unable to fly) were kept there by Orion to theoretically discourage presence of Canda Geese.

Bird Banding—In addition, during the study period, 462 songbirds of 43 species were caught, banded, and released at the Woodland Dunes banding station (Fig. 7) near Goodwin Road less than a mile from the turbine site.

Carcass searches—Seven carcasses (Table 1), all songbirds, were found beneath the two turbines over the five study periods. We were not able to determine the cause of death of the birds, whether from collision with the turbine or its tower, or automobiles using the driveway and parking areas. During the period, fifty-two birds of

Table 1. Songbird carcasses recovered at Orion wind trubines.

Species	Date
Chipping Sparrow	1 October 2010
Orange-crowned Warbler	5 October 2010
Northern Cardinal	11 April 2011
unidentified Empidox	29 May 2011
Mourning Dove	11 April 2012
American Robin	21 April 2012
Red-eyed Vireo (old)	24 September 2012

twenty-three species were found near the office building beneath windows. No bat carcasses were found.

Scavenger Effects—In the first trial, five carcasses were placed on the site, and all remained as placed for five days. On the sixth day, two of the carcasses were missing. The remaining three were present throughout the remainder of the study period, more than four weeks. One consisted of a wing only, the other two were intact carcasses placed near the buildings. Both carcasses that had been removed had been placed on the lawn in the small turbine search area. On the second trial in early November five carcasses were placed only within the small turbine area, none were removed after 24 hours, after which time they were collected. During migration periods, carcasses found beneath the windows were moved to the turbine search area, and the duration of time they remained there recorded.

Searcher efficiency—In all the trials, searchers located 60% of the carcasses placed on the site.

Discussion

This study examined small wind turbine and wildlife interactions at a specific site and specific time period, is limited in scope, and is considered by the authors to be informative but not definitive in nature.

The study site is frequented by a relatively large number of birds of dozens of species. Interestingly, only two of the species recorded during spring and summer were among the carcasses recovered during searches either at turbines or windows. As a result, we surmise that most of the birds in this study, either at turbines or windows, were migrants.

During the study period, more bird carcasses were found near the windows of the building than were found near the wind turbines.

All of the carcasses found in the turbine search areas were reported, and no attempt was made to determine exact cause of death. Part of the search area for the small turbine is driveway and parking lot and sees frequent traffic. Although found in the turbine search area, some of the bird carcasses found may have been the result of collisions with vehicles.

Some carcasses were being removed, probably by scavengers, in this case 40% after five days. This could have reduced the number of carcasses recovered by searchers. However, searches were conducted almost every day, with few exceptions, and it does not appear to us that scavenger activity alone could account for the low number of carcasses recovered at the turbines. Substrate was also considered as a factor in search success. Of the carcasses removed in the turbine areas one was from lawn and one from mulch near a tree. All of the window carcasses were on mulch either near the building or a tree and were mostly untouched by scavengers.

Searcher efficiency was modest, even though the site was relatively easily searched (mowed lawn and asphalt). Late in the season when the efficiency trials were run, leaves and other dead vegetation observed may have hampered searchers. However, considering frequency of searches, searcher efficiency, and scavenger removal, it appears likely that most carcasses should have been detected.

It was observed that at this location,

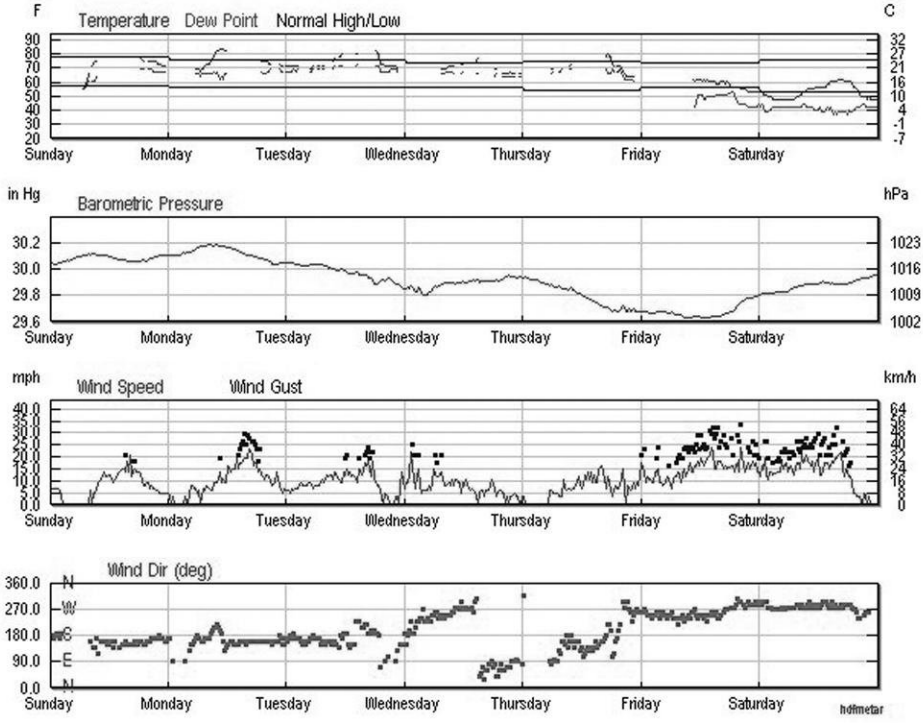

Figure 8. Weather data for week of 1 September 2010 from Weather Underground

during the study period, winds were often light to calm at night, and early in the morning (Fig. 8) and the small turbine was not in operation. When the turbine blades are not rotating, it is assumed that the potential for bird collisions is reduced. It is not known if this is related to season or this location, or is consistent annually.

Both wind turbines were initially unlighted, and later a light was installed on the ground to illuminate the large turbine. Lights were not installed on the turbines themselves. The lack of lighting may reduce their attractiveness to birds during nocturnal migration.

Conclusion and Recommendations

The hazards which wild birds face are generally well known. Tall buildings and other structures, windows, free-roaming cats, motor vehicles—all take a toll on birdlife over and above the natural hazards birds face daily. The number of birds that we observed which may have collided with the wind tubines was low in comparison to the numbers which appeared to have collided with windows at the bulding nearby. However, only one location (Orion) was studied over five migration seasons, and additional monitoring at other sites is recommended as a

larger data set will increase confidence in the results. We do not attempt to interpret the results we found to be applicable to other sites or to wind turbines of other sizes, and recommend further study of sites as wind generation facilities are proposed, both pre and post construction.

Acknowledgments

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Study Participants

Kelly Eskew, James Knickelbine, Richard Luchsinger, and Charles Sontag participated in the study as searchers. Bernie Brouchoud collected bird banding data during the study period. Jessica Johnsrud and Geri Berkovitz assisted with searcher efficiency trials.

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Wisconsin DNR, Considering natural resources issues in windfarm siting in Wisconsin: A Guidance. Captions for Woodland Dunes study.

Willow Flycatcher on cattail by Davor Grgic

Successful Nesting of Loggerhead Shrikes at Buena Vista Grasslands in Portage County, Wisconsin, 2013

Alyssa DeRubeis

6701 Glenwood Avenue
Golden Valley, Minnesota 55427
612. 419. 7979
alderubeis@gmail.com

ABSTRACT

During the summer of 2013, a pair of Loggerhead Shrikes (Lanius ludovicianus) *nested and successfully fledged 3 young at Buena Vista Grasslands (BVG) in Portage County, Wisconsin, marking only the second breeding record for the county. As a State Endangered species, it is important to take note of its nesting attempts. I have documented the phenology of this Loggerhead Shrike family from observations over the course of 11 visits to their nesting site between 29 May and 7 August. I also describe the breeding biology and habitat use of the adult Loggerhead Shrikes in BVG and compare it to pertinent studies and articles.*

RANGE AND BREEDING HISTORY

The Loggerhead Shrike (*Lanius ludovicianus*) is a predatory songbird that inhabits a variety of open habitats containing thick or thorny woody vegetation. The distribution includes most of the United States, southern Canada, and central Mexico. A northeast and north central expansion from its core range—the southern and western United States—was noted in the late 1800s, when deforestation and agriculture became increasingly common practices and created suitable habitat for Loggerhead Shrikes (Terbough 1989). Before 1940, this shrike was identified as a common summer and nesting resident in Wisconsin, with a range spanning across the lower two-thirds of the state (Robbins 1991, Wisconsin Department of Natural Resources 2013a). However, since the 1940s, the northeast and north central regions of the United States have documented a decrease in abundance or a range contraction of the Loggerhead Shrike (Bull 1974, Graber et al. 1974, Brooks and Temple 1990, Smith and Kruse 1992), perhaps aligning with changes in habitat structure and habitat loss (Cade and Woods 1997). The abundance throughout Wisconsin has decreased to "less than 5 nesting reports on an annual basis" (Wisconsin Department of Natural Resources 2013a). Nesting birds have

Figure 1. Adult Loggerhead Shrike hunting from a barbed wire in Buena Vista Grasslands, Portage County, Wisconsin, on 1 June 2013.

been documented in the central and west-central regions of the state, as well as Door County, since 1980 (Wisconsin Department of Natural Resources 2013b). Possible reasons for the decline of the Wisconsin Loggerhead Shrike population include habitat loss, pesticide application, and changes in farming practices within breeding and wintering grounds (Knutson et al. 2001, Wisconsin Department of Natural Resources 2013b).

Phenology

26 May—

A pair of Loggerhead Shrikes was discovered by Jerry and Karen Smith along Taft Road in BVG (where the GPS coordinates are approximately N44°21≤8.75≤ W89°32′50.08≤), located northwest of Bancroft and east of Wisconsin Rapids in Portage County.

29 May–1 June—

Upon receiving the news, I drove down and found one of the birds perched on a bush windbreak and the associated "Windbreak Planting" sign. I revisited the site multiple times a few days later, only to find one shrike perching on a common mullein (*Verbascum thapsus*) stalk, telephone wire, and fence while actively hunting (Figure 1).

16 June—

I did not check on the site again until over two weeks later, which is when Dan Phillips and I observed both adults for the first time perched

Figure 2. One of 3 Loggerhead Shrike fledglings found in Buena Vista Grasslands, Portage County, Wisconsin, on 19 June 2013.

on a telephone wire. One of the birds flew down to the ground, then immediately flew into the tree windbreak next to the road. We then heard unfamiliar chattering calls from within the tree windbreak that we thought were the vocalizations of some well-developed offspring being fed by an adult. After hearing these calls, an adult Loggerhead Shrike flew out of a blue spruce (*Picea pungens*) and perched within the windbreak quietly for a few moments before returning to the telephone wire.

19 June—

Feeling confident that there was a nest with young in the tree windbreak, I contacted the landowner, Bob, and asked for permission to look for the nest on his property. After he gave me approval to walk on his land, I explored the tree windbreak. Across the road, one of the adults was dive-bombing a Red-tailed Hawk (*Buteo jamaicensis*) perched on a telephone pole. The hawk soon flew away with no prey. There were five planted blue spruces, but I quickly located a messy robin-sized nest next to the trunk approximately 2.75 m up in one of the spruces. When I stepped in further to investigate, the shrike pair suddenly appeared with food in their bills. I recall one of them carrying a large green caterpillar. They then both started vocalizing, confirming that this was their nest. As I tried to reposition myself, a small gray bird flew out from under my foot at the base of the spruce. Sure enough, it was one of the shrike fledglings (Figure 2). I peered into the nest bowl and found 2 more chicks, which both fled from the nest.

One ended up on the ground while the other stayed on a nearby blue spruce branch. I snapped a few photographs of the first fledgling I found and then left the site.

25 June—

By this date, the family had moved to the nearby bush windbreak, located about 70 m southeast the nest. One adult and all three fledglings were present. The young birds had grown considerably, now being strong—albeit hesitant—flyers. Young Loggerhead Shrikes typically start flying about a week after fledging, which is consistent with this shrike family's schedule (BirdWeb 2002). All the birds perched prominently and, as I would learn later, favored a clump of several dead bushes within the bush windbreak. I assume that these perches had better visibility or were used to impale prey items. I inspected the bushes closely a few times and found no evidence of impaled prey.

28 June–20 July—

During this period, I observed only one adult and one juvenile Loggerhead Shrike. These birds used both windbreaks while I visited. I surmise that the other half of the family moved further east down the bush windbreak or elsewhere within BVG. On two occasions during this period, I saw the adult and juvenile shrikes pumping their tails. Interestingly, this behavior is characteristic of Northern Shrikes (*L. excubitor)* but no literature mentions tail pumping for Loggerhead Shrikes (New Jersey Department of Environmental Protection). I witnessed the juvenile begging for food between 28 June and 3 July, which fits the following statement from BirdWeb (2002): "The parents continue to feed and tend the young for another 3-4 weeks [after fledging]."

7 August—

This was the last day I saw any Loggerhead Shrikes. A single bird was calling and foraging along the bush windbreak. Although I couldn't clearly observe the bird, its call was not as harsh as an adult's call, so I believe it may have been a juvenile. I drove 0.8 km north and 0.8 km south of the nest site and found no other shrikes.

The adult Loggerhead Shrikes arrived at BVG before 26 May, as evidenced by this excerpt: "The female incubates 5–6 eggs for 15–17 days . . . both parents feed the young, which leave the nest at 17–20 days" (BirdWeb 2002). Given these time frames, the eggs were likely laid between 13 May and 17 May and hatched between 30 May and 2 June.

Nesting Habitat

The site selected by this nesting pair of Loggerhead Shrikes included a tree-dominated windbreak, a bush-dominated windbreak, an unmown (mowed after the young fledged) short grass and forb patch between cornfields, and bare (plowed) ground, all within 100 m of Taft Road. (Figure 3.)

While this habitat is primarily man-made, evidence suggests that Loggerhead Shrikes and other bird species have densities 10-30 times greater in fencelines—which are similar to windbreaks—compared to natural habitats (Basore et al. 1986). Apparently, vegetative, landscape, and structural char-

Figure 3. Adult Loggerhead Shrike hovering in the short grass and forb patch portion of its nest site in Buena Vista Grasslands, Portage County, Wisconsin, on 1 June 2013.

acteristics of these man-made habitats are suitable for Loggerhead Shrikes. For example, Loggerhead Shrikes in Alberta select nesting sites with a higher percentage of grass taller than 20 cm (Prescott and Collister 1993), which was a feature of this nest site. Bare ground is another component of suitable Loggerhead Shrike nesting habitat and was also present at this site (Dechant et al. 2002). In a Minnesota study, the hedgerow length in nest sites was longer compared to nearby non-selected nesting sites, suggesting that longer hedgerows are more appropriate for nesting loggerheads. Fledgling success was contributed to higher percent cover of grassland and herbaceous vegetation (Brooks and Temple 1990). The windbreaks at this site were between 0.40 and 0.80 km long each, and the areas where I observed the shrikes had much more herbaceous vegetation compared to bare ground. Two dead bushes, telephone wires, and fences were all used in the nest site. All of these would function as "elevated perch sites," which have been identified as an important factor for Loggerhead Shrike habitat suitability in the upper Midwest (Brooks and Temple 1990).

Loggerhead Shrikes have been documented nesting along roadsides, like this pair. However, it should be noted that the nesting success of Loggerhead Shrikes along roadsides is as low as half of that in more natural sites (Luukkonen 1987, Yosef 1994), perhaps because both birds and avian predators are attracted to linear habitats (DeGeus 1990). Since the eggs were never found, the nesting success between the number of eggs laid to the number of chicks fledged for this shrike pair remains unknown.

Figure 4. Nest used by Loggerhead Shrike pair in Buena Vista Grasslands, Portage County, Wisconsin during Summer 2013.

The area where I observed Loggerhead Shrikes throughout the season encompassed roughly 1.2 ha, which is lower than the low end of the range for territory size (2.7 ha in Alberta, Canada, Collister 1994). It is possible that the shrikes were using other undetected areas.

The Nest and Nest Tree

The nest was located approximately 2.75 m high in a blue spruce within the tree windbreak. The tree itself was roughly 6.10 m tall and had a diameter of 22.85 cm. It was about 15.25 m away from Taft Road. Nest vegetation with concealment, like thick or thorny trees (i.e. blue spruce) or bushes, fledges more Loggerhead Shrikes (Poole 1992, Collister 1994, Yosef 1996). A shrike nest typically consists of a "bulky cup of twigs, grass, weeds, and bark lined with rootlets, hair, and feathers" (BirdWeb 2002). As shown in Figure 4, the nest contains mostly twigs, needles, and plant fibers, in addition to some black plastic strips. A shrike pair may reuse previous years' nests of other Loggerhead Shrikes and several other songbird species (Haas and Sloane 1989). Since no one reported nest-building observations of this shrike pair, it is unknown as to whether the pair built their own nest or reused another songbird's nest.

Nest Site Reuse

While Loggerhead Shrikes exhibit a lower return rate to specific sites compared to site-faithful migratory songbirds (Haas and Sloane 1989), it is possible that another pair of shrikes

may inhabit this site later. Sixty-nine percent of nest trees or shrubs were reused by Loggerhead Shrikes, and one third of those nest structures were used again in Indiana (Burton 1990). Therefore, birders should pay attention to this area in the late spring and summer of 2014 to see if a pair of Loggerhead Shrikes reuses the nest site.

Acknowledgments

I would not have had access to the nest without permission from the landowner, Bob. I thank everyone who passed along information to me regarding this nesting pair of Loggerhead Shrikes, along with other Loggerhead Shrike observations within Wisconsin. Lastly, I want to thank Joe Schaufenbuel for encouraging me to write this article and reviewers who gave me feedback about my writing. All photographs were taken by me.

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Sandhill Cranes from Alyssa DeRubeis

Outside the Fence—MSN Airport: A Study of Goose/aircraft Strike Risk, Goose Flight Patterns, Heights, and Diurnal Timing

Philip C. Whitford

Professor Emeritus, Biology Department
Capital University
5491 Schuman Road
Cross Plains, Wisconsin 53528

ABSTRACT

15 January 2009 US Airways flight 1549 struck a migrating flock of Canada Geese and landed in the Hudson River, leading to a media frenzy and calls for reducing resident Canada Goose populations to improve air travel safety. Madison Wisconsin residents near Warner Park protested proposed culling of park geese to supposedly reduce airport risks from geese, and involved me in hearings. The question of whether the Warner Park geese were a serious threat to local aviation safety, what airport risks realistically existed, and how they could be reduced led me to design and perform a study to answer those questions. Study results indicated Warner park geese constituted < 6.4% of geese flying through airport flight paths. Migrant geese that stayed 2–4 months in fall, attracted to local resident geese and feeding areas near the airport, were contributors to evidence of 10440 instances of potential risks for aircraft from geese moving through airspace within 2 nautical miles of the airport from 7 October–7 December 2010. Immediately turning over crop stubble of harvested corn fields near the airport that attracted feeding geese was predicted to reduce goose risk to planes by > 95% and be more effective, and cheaper, than culling geese.

INTRODUCTION

More than 1,350 Canada Geese strikes with civil aircraft have been reported in USA, 1990–2008 (Dolbeer 2008) with 42% of these strike events involving multiple birds, as did "Miracle on the Hudson" Flight 1549. This and other strikes have focused concern on ways to reduce risks to aircraft from goose strikes, especially those occurring at low altitude in airport approach and departure patterns where planes are particularly vulnerable to engine damage or loss of power leading to emergency situations with potential human life loss consequences.

Dane County Regional Airport is located 5 nautical miles from downtown Madison. It serves military planes based there, general aviation, and

commercial air traffic, serving over 1.5 million passengers, with over 100 arrivals and departures daily in 2010. Following the flight 1549 incident and media calls to "do something to make the skies safer," growing goose numbers in Warner Park 3.4 km from the airport drew attention. This led to suggestions from USDA Wildlife Services, Waupun, Wisconsin, to MSN Airport Officials and Madison Parks Department for lethal removal of geese to reduce danger to aircraft. While many works have suggested alternatives to lethal removal of geese in urban parks (Whitford 2002, 2004, and Smith et al. 1999) these options were not considered. Proposed lethal removal of geese from Warner Park met with resistance from many local residents. Wishing to see both people and geese as safe as possible, induced me to see the need for an unbiased study to determine:

1) Did the geese of Warner Park constituted a major threat to MSN airport travelers; and,
2) Could study of the local geese movement identify patterns of behavior or local attractions that could be altered to permit geese and planes to coexist more safely?

I began by looking at past research on geese to see what it offered about goose behavior that might be of use in attempting to reduce goose risks to planes at MSN airport. Past use of radar equipment near Horicon Marsh, installed to help predict migrating goose flight passage by Madison, Milwaukee, and Chicago airports in the 1950s and '60s, had defined fall migration times, flight paths, and triggers for migration of Canada Geese from Horicon Marsh to southern Illinois (La Marche 1972) with many of those geese passing within < 50 miles (80.5 km) of Madison. His work was done before the major expansion of transplanted resident Giant Canada Geese (*Branta canadensis maxima*) in the upper Midwest, at a time when most Canada Geese were obligate Canadian hatched migrators wintering in southern Illinois, Kentucky, and Tennessee (Raveling 1969). As a result, La Marche concluded that "all Canada geese have left Wisconsin by December 26 annually," a conclusion which is very obviously not valid today, since resident geese can now be found in abundance in the state all winter long.

Further studies in Wisconsin showed that collared migrating geese residing at Horicon Marsh before moving on south evidenced daily flight movements that, when studied more closely, were highly predictable, even with 450,000 geese present. This evidence helped demonstrate that subflock management was needed there, as geese from various breeding grounds were being harvested at different rates by hunters because geese flew the same flight paths for feeding daily, some over hunters' blinds and others did not fly over hunters daily (Craven 1978). This was a first insight into our understanding that daily goose movements just appear chaotic to humans in unstudied populations, but actually are highly predictable. This understanding was further advanced by radio tagging of Canada Geese at Horicon Marsh, which made possible identification of daily locations and movements of tagged geese and their families to researchers. Radio-tagged geese studies revealed

that most geese returned to the same small area in the marsh annually, and used the same nightly roost locations for families, and followed the same daily flight paths to food all fall long, going farther out as nearest food resources were exhausted in the local Waupun environment, an area surrounded by large areas of fairly uniformly distributed agricultural land (Bartelt 1987). This confirmed similar results for daily movements of geese from a smaller sample of geese wintering on refuges in Southern Illinois which had also identified that daily goose movements in late autumn and winter were primarily movements from the night roost area to the nearest available corn residue in stubble, and back (Raveling 1969, Anderson and Joyner 1985). More recently this same movement pattern information has been echoed for spring staging of migrant Canada Geese along the Platte River in Nebraska, "Geese usually go to the nearest food (corn residue) from roost sites" (Anteau et al. 2011). One final very useful bit of information gleaned that can help understand goose movement near Madison Airport is the following: "Tilling (disking) corn stubble reduces residual corn waste available for geese by 92 % from a mean of 234.1 kg/ha to 23.7 kg/ha in Nebraska studies, making such fields far less attractive to geese" (Sherfy et al. 2011).

The stated basis for the proposed kill of Canada Geese in Warner Parker was that it consistently had the highest goose counts for any Madison City Park, and was closest to MSN airport (pers. com, Russ Hefty, Wildlife Officer for Madison Area Parks). When asked when those counts were made, it was revealed that they were done during late May and early June—the flight-less period when Canada Geese with freshly hatched goslings bring them to traditional brood rearing areas. It was known many goslings were brought in from the Yahara River Marsh area and Cherokee Marsh areas, since intensive egg addling efforts in Warner Park failed to eliminate as many as a hundred goslings appearing there for brood rearing (Russ Hefty pers. com.). Brood rearing/traditional adult molting areas for Canada Geese are areas with short highly fertile grasses, or emerging crops, immediately adjacent to rivers or lakes. These sites provide high protein foods needed for rapid gosling growth, and for feather regrowth for molting adult geese, plus providing adults and goslings quick access to water needed to escape land-based predators while unable to fly (Sherwood 1966, Whitford 2008). Geese often come to these sites from as much as 14 km away and form large groups which return year after year (Whitford 2008, White and Combs 2004). They may cause significant issues of dropping contamination of parks and beaches, but are relatively short-term gatherings. The majority of these geese and goslings leave these areas and return to well-scattered feeding areas as soon as their flight feathers form/regrow and they can fly (Whitford 2008, White and Combs 2004). Also, it is common for geese to take newly hatched goslings away from the hatch site to another area for brood rearing, even if adequate habitat for brood rearing is present at the hatch site (Whitford 1987, Sherwood 1966). This means geese rounded up for culling while flightless on the brood rearing area may very well not

include any of the geese/goslings that would utilize that area (i.e. Warner Park) during the non-brood-rearing 10 months of the year. As such, culling of adults and goslings at this time of year at such sites may have, at best, a limited impact on goose presence there the rest of the year.

Based on this past research information I was convinced that study of local Canada Goose daily movements in fall, by both resident and migrant geese that joined them, could inform us about actual numbers of geese posing a risk to aircraft and what were the origins of geese that were primarily involved. It could further define the night roost and resting sites and most importantly the flight paths used by the various geese in daily feeding movements. Together this information could help indicate the attraction sources that caused the geese to fly close enough to the airport to present possible danger to aircraft, and thus possibly present an option for reducing that attraction in future and thereby options to reduce potential goose strike risks. The main goals of the study were to: 1) quantify goose risk to air traffic by providing observation-based hard data of numbers of geese moving through/near the airport flight zones; 2) define the specific unit(s) of the local fall goose population dwelling in Madison and their relative contribution to those risks; and 3) define the daily flight patterns of geese to identify local attractions drawing them to/past the airport.

Methods

The original plan for the study was to involve local residents and volunteers in observations of daily goose flights near the airport, and to have pilots fill out reports of goose observations, goose avoidance actions, and goose strikes near MSN airport for October 2010–December 2011. Forms needed only to have number of geese and location marked on the printed map on the form, and a one line description of what happened and date and time. The forms could be handed in directly at the adjacent service counter at MSN General Aviation Service terminal. Though posters and report forms (designed by Lt. Col. Chad Milne, Air National Guard MSN) were placed in both military and general aviation pilot briefing areas, and numerous examples of goose avoidance were observed by the author during airport observations, not one of these report forms was filled out and returned during that year. No local volunteers came forward despite advertising assistance from local Madison Audubon Society President, Peter Cannon,Wisconsin Society for Ornithology members, and the UW Wildlife Graduate students that had originally involved me in the hearings about the proposed Warner Park goose culling. Given the lack of voluntary assistance from others, the research became a single volunteer effort. With other time commitments I could only spare significant parts of 6 days per month for these observations and designed the study as such.

The study design used a single observer, (the author) and a fixed observation site off the NE corner of MSN airfield at the intersection of Hansen Road and State Highway 51. Given the low terrain to the south, this site permitted unobstructed vision of the horizon to east, south, and west, per-

mitting observation of goose flights at distances up to 15 km. To the north a slight rise reduced vision of any flights below 70 m height beyond 3 km distance, but permitted visual following of flights moving at higher elevations out to 15 km to the northeast and 10 km to the north. For fall of 2010, I planned 5 full-day cycles of goose flight/aircraft observations extending from 1/2 hour before dawn to full dark to be carried out at approximate 2 week intervals. Each full cycle of observation was extended over two to three days to cover morning, mid-day, and evening hours and reduce possible influence of any single day's variation in migrating goose numbers in the area. Exact dates used for observations were opportunistic in timing due to the need for 10 statute mile (16 km) visibility conditions to make maximum visual distance observations, allowing counts of geese in flights and height estimation possible, and thus daily surveys were uniform in sample area and visual potential.

Observations were conducted 7 October–7 December 2010. Frequency of airport observations and timing for the study was based on several factors. The decision to use multiple cycles of full-day observations across the fall was made to permit evaluation of changes in local goose numbers across the fall migration period and thus better assess airport risk influence of both resident Canada Geese and migrant Canada Geese that stayed for weeks or months in Madison in the fall. Timing of beginning and ending observations was based on an effort to start before significant migration of geese to Madison began and to end when the majority of temporary resident migrant Canada Geese had left for the winter. By using two cycles per month, the observations met the standards required by the FAA for Airport Wildlife Hazard Assessments, "standardized counts of birds shall be made at least twice monthly" (Protocol for the conduct and review of WHA, WHMPs, WHSVs, and Continual monitoring; FAA Regulations, Advisory and Certalerts AC No: 150/5200 2012).

My observation methods were to select days with 10+ statute mile visibility, and continually visually scan the sky for bird movement, using either my unaided eyes, or 7–15× Bushnell binoculars when needed, to identify, count, and estimate height of Canada Geese seen. I recorded daily weather, temperature, wind, and cloud cover on an hourly basis. In addition, I recorded the location where the birds were first seen above the horizon (and probable source if known), estimated distance from the airport, and height, direction of flight and number of birds in the flight. I tracked each individual flight visually until they landed or disappeared from sight in the distance, and made my best determination of where they had departed from and where they had landed. Before and/or after the daily observations I drove to the sites the geese were believed to be landing at/departing from, to ground truth origins, and destinations, identify attraction sources, and count geese numbers at feeding sites and prominent accessible roosting/resting sites such as Warner Park and Ponds near Rieder Road and Hy 151 on the south edge of Sun Prairie, 7 km northeast of MSN airport.

In recording goose observations, I listed all flights observed as either

"risk geese," those presenting a potential risk to aircraft by their presence in aircraft airspace, or "non-risk geese," for geese flights moving outside of what I defined as critical airspace. My criteria for designating geese as an "Airstrike Risk" in this study were as follows:

> Any goose flight passing over the airfield or within 3.4 km (2 nautical miles) of the airfield outer margins below 800ft (approx. 243.8 m) above ground level (hereafter AGL); and,
> Any geese flying through or within .5 km of any ILS approach/departure glide slope at any height below 800 ft (243.8m) AGL to a distance of 3.4 km (2 nautical miles) from the ILS inner marker which is set 1000 ft (340m) from the runway threshold.

The rationale I used to select a 2 nautical mile range from the outer margins of MSN airport as criteria for assigning "risk" status to geese moving below 800 FT AGL is as follows: FAA guidelines call for ILS (Instrument Landing Systems) glideslopes to be set to establish a 3 degree slope landing glide path and is set such that planes should pass over the runway threshold at 50 ft (15.2 m) AGL. Planes flying the glide slope should be 300 ft (90.1 m) AGL when passing over the inner marker 1000 ft (304.8 m) from the threshold and should be at 600 feet (182.8 m) AGL when 2 nautical miles (3.4 km) from the threshold. (http://flightsimaviation.com/aviationtheory.25.ILSNAVIGATIONpart2.TheGlideSlope)

As such, all aircraft landing at MSN (a class C airspace airport requiring all planes landing there to be on instrument flight plans and perform ILS instrument approaches) should be well above 600 ft (180.2 m) AGL when they are beyond 2 nautical miles from the airport perimeter fence. This means the aircraft should only have significant goose strike risk during the final approach/touch down to landing and during departure until climbing above goose feeding flight levels.

Goose flight height estimates were made by a single observer recording estimates in feet AGL (later converted to meters) since all airport aircraft pattern flight heights, heights of known terrain and local structures (as used in Randall et al. 2011) used as reference were based in English yard or foot measures. The author making these estimates has 40 + years hunting and research experience with Canada Geese of most subspecies and is able to determine Canada Goose size/subspecies (necessary to estimate height and distance accurately) by proportions of neck to body length and also by call pitch and duration based on extensive prior Canada Goose vocal research (Whitford 1987, 1999). Height estimates were made and recorded as follows: <100 ft to nearest 25ft; 100–500ft to nearest 50 ft; 500–1200 ft to nearest 100 ft; and >1200 to nearest 200 ft.

The percentage of total geese moving through/near the airport from each identified origin point and to each identified destination point was calculated for each observation cycle. Pre- and/or post-observation counts of geese at accessible roost/resting sites were recorded and maximum number present for each site for each cycle was recorded to help track changes in total local goose popula-

tions across the fall migration, and for comparison with changing numbers of geese flights traveling near/though the airport. Overall average flight heights were calculated for 100 randomly chosen flights of geese, using only those whose flight paths and heights indicated they were on feeding flights and not in high altitude migration (> 1200 ft up) as "transient migrants" (based on data reported in Bellrose 1980) that were not stopping in Madison but merely overflying the town. Such information was thought to give a better idea of average goose daily flight heights and where those heights were in relation to standard airport aircraft flight heights and flight paths, thus shedding more light on what constituted risk versus non-risk flights for geese. Graphs of daily movements versus time of day were calculated from all goose flights observed other than transient migrant flights at high altitudes, to provide a better picture of actual times of greatest numbers of geese incursions into airport airspace, thus predicting times of greatest and least risk of geese to aircraft by both date and time of day.

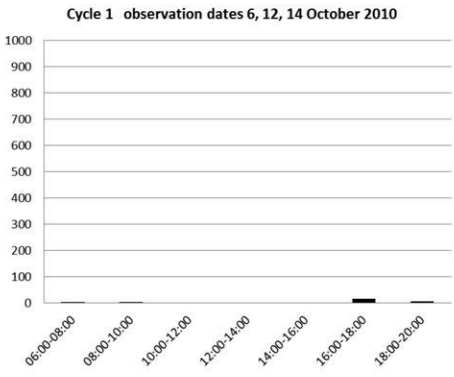

Figure 1. Geese seen observation cycle 1. Dawn to dark total = 31; risk geese 23. Source and number of geese considered risks: Warner Park 16; Cherokee Marsh 7. Times/number of geese in graph blocks: 0600–0800 = 5; 0800–1000 = 11; 1600–1800 = 15.

RESULTS

During the course of the 5 observation cycles, 2772 geese were observed within 3.4 km of the airport, of which 939 were classified as risks to air traffic based on the criteria previously defined. It was immediately clear in looking at those data that goose risk to aircraft was not uniform across either time periods of the day or across the duration of the study (Figures 1–5). Risks were lowest during cycle 1, with only 31 geese seen for the cycle and only 23 being considered risks. Low goose numbers observed indicated that this first cycle of observation predated the arrival of significant numbers (if any) of migrant Canada Geese. Local goose numbers seen within the 3.4 km zone surrounding the airport peaked during cycle 3, 10–12 November 2010, with 1263 geese observed (149 risk) for that full day observation period (45.6% of all geese seen for the study and 40.74 times the number of geese seen in all of cycle 1). That figure did not include some 2500 additional geese from Sun Prairie seen circling over fields in the American Family Corporate Park (AFCP) just outside the 3.4 km range. After that date, goose numbers began to decline as many migrants left, but daily goose strike risk levels reached their peaks during the following two cycles, 257 and 439 risk geese per cycle for cycles 4 and 5, respectively. No geese were observed in self- induced flight near the airport between 12:00 and 14:00 hours in any observation cycle. The only goose movements observed to occur between 12:00 and 14:00 and

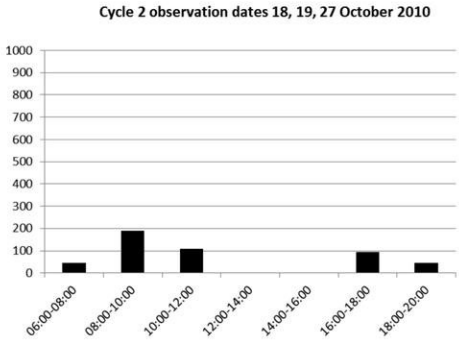

Figure 2. Geese seen observation cycle 2. Dawn to dark total = 478; risk geese 71. Source and number of geese considered risks: Warner Park 54; Cherokee Marsh 7; other 10. Times/number of geese in graph blocks: 0600–0800 = 44; 0800–1000 = 188; 1000–1200 = 108; 1600–1800 = 94; 1800–dark = 44.

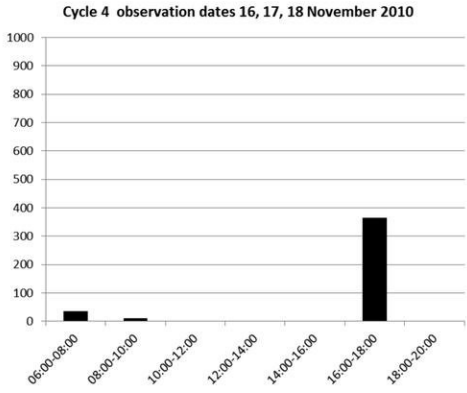

Figure 4. Geese seen observation cycle 4. Dawn to dark total = 511; risk geese 257. Source and number of geese considered risks: Warner Park 4; Cherokee Marsh 54; Sun Prairie 124; other 75. Times/number of geese in graph blocks: 0600–0800 = 36; 0800–1000 = 110; 1600–1800 = 365.

14:00 and 16:00 were seen in cycle 5 when the MSN airport wildlife personnel scared 78 geese out of the corn stubble near runway 21 where they had been feeding since before my arrival. Those geese and others returned to the corn stubble throughout the afternoon, totaling 291 birds during the hours which followed. Virtually all geese seen moving in these time periods were considered extreme strike risks as they continued to work over and in the corn stubble and circled into and across the ILS glide slope path of runway 21. Only cycle 2 evidenced goose movements between 10:00 and 12:00 hours. Greatest numbers of geese and risks were observed from 16:00–18:00 hours during the final 3 cycles. A total of 1430 (55.2%) of all geese observed within/near airport airspace occurred during that time frame for the 5 cycles. It should be noted that this timing coincides with one of the heaviest daily periods of inbound air traffic for the Madison airport—thus raising the threat level these geese posed by virtue of more planes landing, and thus more exposure to risks. The time period from 06:00–08:00 evidenced 10.8% of all goose movements, the majority of that in cycle 3. The time period from

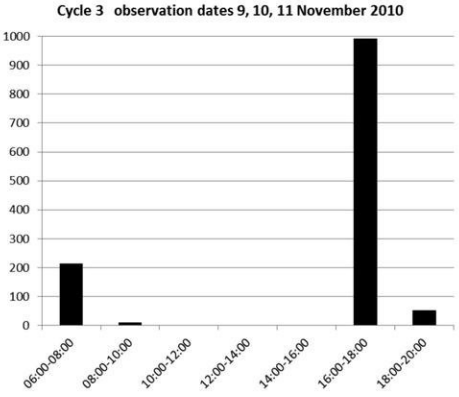

Figure 3. Geese seen observation cycle 3. Dawn to dark total = 1263; risk geese 149. Source and number of geese considered risks: Warner Park 5; Cherokee Marsh 144. Times/number of geese in graph blocks: 0600-0800 = 210; 0800–1000 = 12; 1600–1800 = 991; 1800-dark = 50.

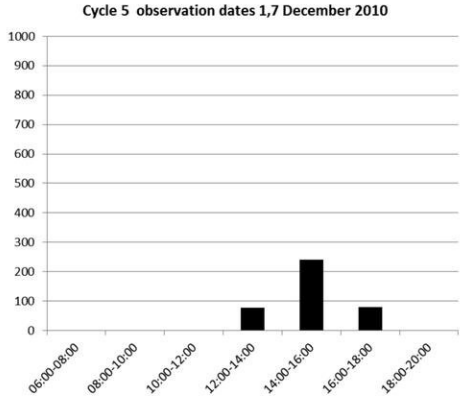

Figure 5. Geese seen observation cycle 5. Dawn to dark total = 449; risk geese 439. Source and number of geese considered risks: Warner Park 52; Cherokee Marsh 163; Sun Prairie 159; other 65. Times/number of geese in graph blocks: 1200–1400 = 78; 1400–1600 = 291; 1600–dark = 80.

08:00–10:00 evidenced 11.3% of goose movement almost exclusively seen in cycles 2 and 4. Only 3.8% of movements were observed between 10:00 and 12:00 and only seen in cycle 2.

Daily flight paths observed to be followed by geese helped identify local roosting and resting areas as origination points for feeding flights. Most flights began from either Cherokee Marsh, 4.2 km west of the airport or from Sun Prairie ponds at the corner of Reiner Road and Highway 151 some 4.5 km NE of the airport. Lesser numbers began from Warner Park 3.4 km WWS of the airport and scattered points 12–15 km away along the east, south, and southwest shores of Lake Mendota. Those numbers make sense because they reflected relative numbers of geese observed roosting at Warner Park versus Sun Prairie. In 2010 the average of highest numbers of geese observed at Warner Park in pre- or post-observation counts was 87.5 (N= 4, range 0–200 while counts at Sun Prairie ponds Highway151 and Reiner Road found a daily average of 950 (N=4, Range 0–1800). The large numbers of geese at the latter site were outside the airport sampling area and generally stayed beyond 3.4 km from the airport until later in the season when some of them they began feeding just north and east of the airport in large numbers.

Visually following the flights to landing sites identified the most frequently used feeding areas, and ground truthing those areas helped determine what crops attracted the geese to them. Primary feeding areas identified with high goose risks to aircraft were exclusively harvested, undisked corn crop stubble on fields within and adjacent to the AFC Park 3.4 km NE of the airport; similar fields along Hoepfker Road east of Highway 51; and, corn stubble fields < 200 m north of the airport fence between the north ends of runways 36/18 and 03/21. Major and minor flight paths were identified and mapped to reflect these daily goose movements (figure 6). The percentage of geese considered to be risks that were visually followed from known origins to destinations was calculated and helped reflect best options for reducing goose/aircraft risks in future (Table 1). A much greater percentage of risk goose presence (93.3 %) is predicted by looking at destinations of flights (attraction sources) than by origin of flights, meaning that removal of the attraction should make a much greater overall reduction in potential risk than removal of geese from a given point of origin. Extrapolation of risks from a one day cycle to account for all 15 days in each cycle yielded projected total risks of 14,085 potential risk geese

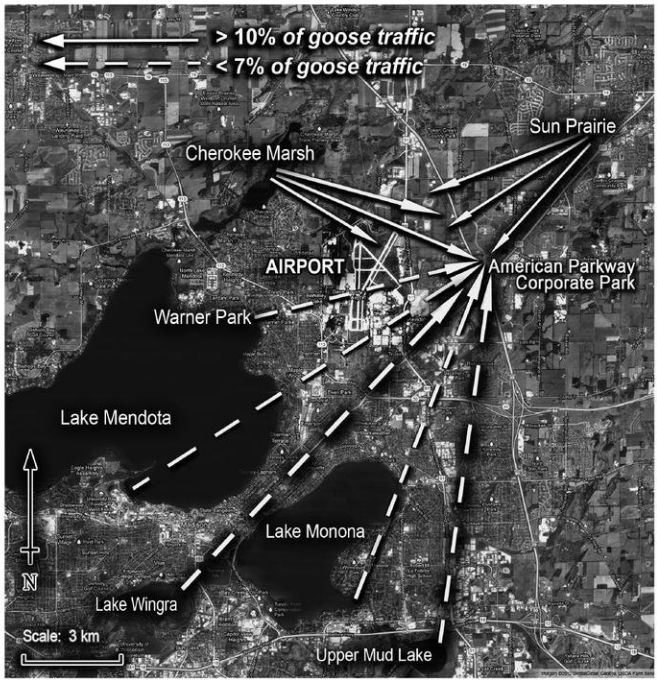

Figure 6. Feeding flight paths from roost and resting sites to feeding locations near MSN airport. Three solid arrows from upper left are from Cherokee Marsh; three solid arrows from right are from Sun Prairie ponds. Dashed arrows from middle left is from Warner Park, other dashed arrows from site south edges of Lake Mendota. Each solid arrow indicates > 10 of all geese observed used those flight paths. Dashed arrows indicate < 6.5 % of all flights observed. Geese using three most easterly paths never enter the airport risk zones and don't fly high enough to be a problem to aircraft approaching the airport.

present in the airport airspace 1 October–15 December 2010 (Table 2). This table demonstrates an exponentially rising level of risk as the fall progressed, based almost entirely on the influence of movement of geese to feeding heavily on unturned corn stubble residue just north of the run-

Table 1. Percentage Goose Aircraft Risks by Flight Origin and Destination. Total geese observed— 2772*: total considered risk geese— 939. Percentage of all observed goose risks associated with known flight origins versus with known feeding destinations to determine which best explained sources of risk to aircraft.

Origin	Number of Geese	% of Risk Geese
Warner Park	61	6.4 %
Cherokee Marsh	378	40.2 %
Sun Prairie	322	34.2 %
Other/Unknown	259	27.5 %
Feeding Destination		
American Family Corporate Park	180	19.1 %
Hoepfker Road fields	257	27.4 %
Corn N runway 21	439	46.8 %
Total— All Destinations	**876**	**93.3 %**

* does not include those remaining outside 2 km distance from airport, such as roughly 2500 geese circling landing at American Parkway during all observations of Cycle 3. Yet, these geese served as major attractions bringing geese from Warner Park, Cherokee Marsh, Lake Wingra, and Squaw Bay.

Table 2. Goose Strike Risk Extrapolation from data (Daily risk X 15 days). Extrapolation of daily average risk of geese to aircraft in each observation cycle multiplied by the 15 days of each cycle to approximate risks for all of fall while migrant geese were present in the Madison area.

	1–15 Oct. Cycle 1	15–30 Oct. Cycle 2	1–15 Nov. Cycle 3	15–30 Nov. Cycle 4	1–15 Dec. Cycle 5
1 day risk	23	71	149	257	439
15 day risk	345	1065	2235	3855	6585

Total estimate risk projection 1 October–15 December 2010 = 14085 risk geese within "risk criteria" airspace.

way 21 threshold. Given that 4 instances of pilot abrupt maneuvering of aircraft for avoidance of flying geese (one commercial jet liner, 1 regional commuter jet, and two corporate-type twin prop aircraft) and involving 148 geese occurred in only 40 minutes of observation here 18 November 2010, this has to be considered the most dangerous goose attraction area and time in the study. As such it was considered to be a critical area to attempt to reduce attraction of crop residue for geese in the area to improve airport safety. All pilot avoidance actions observed took place in the final 20 minutes of post-sunset daylight with aircraft less than 200 feet above the ground and while pilots needed to be focused on keeping planes centered on the runway, and maintain proper altitude and landing speed for a safe landing. In the fading light, where dark backs of geese below the plane were not visible against the ground below, and only become visible as the plane reached their level, it constituted a recipe for disaster waiting to happen daily.

Madison sunset times for evening time blocks of the five observation cycles moved from 1830 hours on 6 October, to 1618 hours on 1 December 2010, with loss of one hour in early November when daylight savings time ended. Times of major geese feeding movements shifted to track those time changes, becoming earlier as the year got later. While the graphs in figures 1–5 relate time of goose movements, the arbitrary use of two-hour time blocks for the graph diminishes the true nature of the synchrony of goose feeding flight/roost return movements around sunset timing. A close look at actual times geese were seen indicated that for the 365 geese observed in the 1600–1800 hour block of cycle 4, 231 of them were seen in the narrow window of time from 10 minutes before to 10 minutes after sunset at 1633 hours that day. For cycle 5, on 1 December 213 of 291 geese observed for the 1600–1800 hour time block were seen in a window of 20 minutes before to 20 minutes after sunset at 1618 hours. For cycle 3 evening observations on 9 November 2010 Madison sunset was 1749 hours and 991 geese were seen in/near the airport from 1600–1800 hours. Of those geese, 730 (73.7%) were observed from 10 minutes before to ten minutes after sunset, and 913 (92.1%) of the geese were seen from 20 minutes before to 20 minutes after sunset. This makes it very clear that until something is done to reduce goose attraction sites near the airport, changing arrival timing of flights into and

Table 3. Goose Estimated Flight Height Relative to Known Flight Distance. Average and range of flight heights (meters) for feeding flights of known distance to determine whether there was any initial evidence to support the possibility of a predictable relationship existing that might help identify roost sites serving as feeding flight origins in future studies.

Flight Origin	Flight Destination	Estimated Observed Height (m)				# geese
		Distance	mean	range	N	
Cherokee Marsh	Stubble 03	4.2 km	38.7	20–70	8	133
Cherokee Marsh	AFCP*	7.6 km	51.6	20–100	12	127
Sun Prairie	Stubble 03	7.6 km	72.3	30–150	15	385
Lake Wingra	AFCP	15.0 km	148.0	120–200	5	139

AFCP = American Family Corporate Park

out of MSN airport to avoid the period 30 - 40 minutes before to 30–40 minutes after sunset can potentially reduce overall goose strike risk by more than 80 percent.

Looking at flight height data from 684 geese in 40 flocks traveling from known origins to known destinations, and therefore flying a known distance for total flights in each case, there was a clear trend toward increasing flight height with increasing distance (Table 3). Mean flight height increased from 38.7 to 148.0 meters as length of flight distance went from 4.2 to 15 km. With more data, knowledge of this relationship of flight height to flight distance may make it possible to estimate more precisely the roost sources of geese and their distance from the feeding areas. This knowledge might make possible long-term dispersal of geese from a night roost with spotlights, alarm call playback (Whitford 2008), or lasers (Blackwell et al. 2002) that would result in elimination of a flight path from there to a food source through airport airspace.

Discussion

Initial numbers from this study indicate that the Madison airport has some very serious risk factors making aircraft goose strikes very probable during the fall when migrants swell local goose numbers. Based on cycle 1 figures of only 31 geese seen for the observation day, the strike risks appear very low even with 23 of those birds considered to be seen in possible strike locations; 16 of them from Warner Park. However, they were only a risk because they were crossing the airport enroute to corn stubble at AFCP as were most geese from Cherokee Marsh roosts seen in later observation cycles. Knowing that disking of corn stubble reduces corn kernel residue from 234.1 Kg/ha to 23.7 Kg/ha and makes fields less attractive for geese feeding (Sherfy et al. 2011), it should be easy to end the attraction that brings geese through the airport airspace. If the areas of corn residue at AFCP can be turned under by plow or disk immediately after harvest, there will be little attraction for geese to cross the airport from Cherokee Marsh or Warner Park. Without the attraction at AFPC, the nearest corn fields to Warner Park and Cherokee Marsh roost sites would be found to the north and west of the airport. Geese flying to those sites would not enter the MSN airport airspace.

Following the logic that geese go to the nearest available source of adequate corn residue (Raveling 1969, Anteau et al. 2011) and the fact that Madison, unlike the areas surrounding Horicon Marsh, are not uniformly agricultural we can control directions of goose movement by eliminating accessible corn residue near the airport. To the south and west of MSN airport lies Lake Mendota and a large urban complex extending 15+ km to Highway 12/18 beltline. Urban landscapes extend to the south and east as well. Thus, fields to the north and west > 4km from the airport, near De Forest and Windsor, would be the logical closest autumn feeding sites for corn residue for geese. Geese from the Sun Prairie ponds would find ample corn to the north and east as the closest for their needs, if corn near the airport were turned immediately after harvest, geese would not be drawn near the airport from either Warner Park or Sun Prairie. Given the flight height data from this study, geese moving distances of < 15 km for feeding flights should remain below aircraft flight levels and present no risk to aircraft as long as they remain outside of ILS glide slope corridors, as they should if not drawn near by corn stubble.

Based on reports from many 100s of pilots to the FAA traffic control centers, most flocks of fall migrant Canada Geese were flying at an altitude of 2000 feet; and 65% were at heights between 750 and 3500 feet, but may fly lower under heavy low cloud ceilings (Bellrose 1980 p. 154) These data support my assumption in the methods section that geese observed above 1000 feet were far more likely to be migrants than local geese. Bellrose also stated on the same page that "the altitude at which Canada Geese migrate varies with weather conditions and apparently with the distance between points of departure and arrival." The latter seems to hold for feeding flights as well as migration flights, based on my data from this study that indicate shorter goose feeding flights are carried out at lower mean elevations than longer feeding flights observed. In addition, I have recorded more than 100 feeding flights near my farm in Marquette County (unpublished research data). The shortest 50 flights were < 200 m from Silver Lake to a large combine-harvested cornfield mentioned several pages hence, and the many flights of geese barely reached tops of immature oak trees < 40 ft height (13 m) getting there. It only makes sense, at two levels, that geese would save energy by not flying higher than needed initially to reach a destination only several kilometers or less away. On one level, evolution is all about saving every calorie of energy gained for investment in future reproduction, so any energy wasted by unnecessary effort would reduce reproductive fitness of the individual. At the same time, I and any other pilot who has relied on ground-based landmarks for navigation, as geese are suggested to do (Wege and Raveling 1984) can tell you that flying several hundred feet higher expands the view ahead and minimizes chances of deviating unintentionally from a straight flight path to your destination, thus potentially saving energy if involved in a longer flight. Having established a basis that reflects the presence of a relationship of feeding flight distance to height of those flights, further research and evidence may find this to be a strong

enough relationship to be used to help identify origins of feeding flights at other airports, and thus help find solutions to reduce goose aircraft strike risks elsewhere.

Anteau et al. (2011) reported that spring staging geese along the Central Platte River Valley did select disked fields of corn for feeding at rates above those with unturned and unmowed (untreated) corn stubble, which differs from the results seen in this study. As a possible explanation for this difference, I would offer that most geese in this spring staging movement are small arctic nesting geese, Lesser Snow Geese (*Chen c. caerulescens*), Ross's Geese (*C. rossii*), and the smallest and the most northerly nesting of central Canadian province Canada Geese subspecies. All these birds have short stature and short necks which means they can't see over tall stubble to watch for predators. In addition, they all have short bills and often grub for food in soft soils near arctic nesting territories (Ankney 1996), and like ducks and other geese increase soil invertebrates in the diet to increase protein reserve for egg laying and nesting seasons (McLandress and Raveling 1981). Spring soils of turned fields along the Platte should be damp soils between spring rains and snow melt, and many areas are low lying and marshy lands where cranes feed as seen in driving along them at this time of year. In contrast, our geese in autumn in Wisconsin are large long necked subspecies, primarily resident Giant Canada Geese and migrating/visiting Todd's Canada Geese (*B. c. interior*). These subspecies are able to see over stubble, and Madison area soils in autumn are likely to be dry and hard, thus more suited for searching for waste corn kernels than grubbing for invertebrates. Whatever the explanation, it is clear that geese here are strongly attracted to unturned corn residue and appear to avoid use of turned corn residue when both are available to them.

It should also be noted that corn harvest by chopping for silage production appears to leave very low corn residue, though I could find no precise studies of kg/ha residue, even after checking with authors of the Sherfy et al. 2011 and Anteau et al. 2011 papers. Personal experience with such fields abutting our farm in Marquette County, Wisconsin, indictated only one visit by 20–30 geese, and lasting fewer than 20 minutes following September corn silage cutting. There was no return to these fields observed by any of the 250+ geese roosting on the adjacent lake which had used these fields extensively in prior years. The same fields in prior years were harvested by combine and attracted heavy feeding activity for weeks after harvest. Discussion with a number of experienced waterfowl hunters that regularly decoy ducks and geese while field hunting in lay out blinds in harvested corn fields found a consensus that they considered corn fields cut for silage to be unproductive hunting sites, with little attraction for geese and ducks. This probably results from the fact that little residual kernel corn is produced in the silage chopping process as contrasted to combining and use of old row pickers that drop many small cobs and individual corn kernels as they pick and process the crop.

While this study documented a very high risk of goose strikes by aircraft,

particularly during autumn evening hours, it should be mentioned that these airstike risks were mostly associated with aircraft landing at MSN airport. Location of probable strikes put the planes near the ground, but in locations and at speeds where those planes should be able to land safely even if an engine is damaged, as long as the pilot is not injured. In contrast, aircraft departing the airport with engines on high rpm settings, climbing at best rate of climb airspeeds and below 3500 feet AGL are extremely vulnerable to the risk of a catastrophic event, if geese are engulfed by one or more engines. Flight 1549 only made it to the Hudson River by having been above 3000 FT AGL when it impacted the geese (NSTB Airstike Report Documents). It was fortunate that the geese hit were spring migrants returning to Labrador and flying at migration altitudes (Smithsonian bird strike analysis lab report to FAA). Had the airplane been lower and moving even slightly slower at impact, it could not have glided far enough to reach the river, and the passenger survival outcome would have been very different. That worst-case scenario happened in the crash of a military AWACS surveillance plane 23 September 1995 at Elmendorf Air Force Base, Alaska, when geese were hit by the departing aircraft at low altitude and airspeed, killing all 24 crew on board.

This study only looked at goose strike risks during autumn period of high visiting goose numbers and cannot claim to address the full year's cycle of goose risks to aircraft at the airport. Yet, I think it is important in that it looks at and quantifies goose strike risks at the absolute worst time of the year. During the coldest period of winter, especially if snows are deep, the majority of geese move farther south to where they can feed more efficiently and conserve body energy while rebuilding energy stores for migration and breeding. This means goose numbers are lower and hence strike risks are lower. In extreme cold, days < 0 degrees Fahrenheit, and/or with subzero windchills, geese delay daily feeding flights until later in the morning or skip them entirely to stay hunkered down in snow with beaks under their wings to conserve body heat (Whitford 1987) and present no flight risks at all. As weather warms up, geese begin their northward movements, but the geese don't tarry at any one site but follow the 31 or 35 degree F isotherm north (depending on reference source cited), staying at the southern edge of the ice and snow, and open water line. Numbers of geese may be large near Madison as geese move through quickly and decline quickly, unlike fall when migration is more leisurely and not driven by breeding instincts (Bellrose 1980). So again, goose numbers are lower than in fall and geese themselves are often involved in hyperphagia—heavy continual feeding bouts to gain energy for nesting and egg laying, and seldom leaving the fields (McLandress and Raveling 1981). By late March geese are fighting for territories in the Madison area and most fly very little lest their territory be taken by others while they are away. Once eggs are laid, the pair will seldom leave the territory and the female will stay on the nest > 23 hours/day while the male stays near to guard her and the nest (Brakhage 1965, Sherwood 1966) which means no flying by breeding birds as the clutch nears completion.

Thus only nonbreeding geese offer much risk to aircraft from April until July, for once eggs hatch adult geese do a synchronous molt of wing and tail feathers, and become flightless. Neither they nor their goslings will have the ability to fly until early July at the soonest, later if they must renest following nest loss (Whitford 1987, Brakhage 1965). All this means goose flight risk to aircraft is really minimal until the beginning of another fall migration, at least here at Madison where flying geese counts indicated a 40+ fold increase in geese numbers moving near the airport between early October (prior to migrant arrival based on ground counts of geese at Warner Park and Sun Prairie) and early November 2010.

Clearly, one of the weak points in getting a full view of the goose air strike potential at MSN airport from this study is the lack of data after nightfall when direct observation is not readily possible. It is known that geese may make feeding flights to fields after dark, generally when the moon is near full and cloud cover limited (Whitford 1987, p 30, reporting pers. obs. from 200+ hours of fall nights spent in Horicon NWR, Wisconsin, 1980 and 1981, for dissertation research), and that they may initiate migration after dark when the moon is waning or in its dark phase (La Marche 1972, Bartelt 1987). Canada Geese rely heavily on landmarks for guiding their travels (Wege and Raveling 1984) and periods with heavy ground fog and/or low clouds that obstruct sight of the ground based land marks have been shown to leave them disoriented and circling aimlessly (La Marche 1927). Still, if the feeding attraction sites are reduced in attractive value by turning of the stubble and residue, it will certainly reduce night risks as well as daylight goose strike risks

Conclusions

Attraction sites drawing geese into the airport airspace at MSN airport were exclusively corn residue in fields harvested by row pickers or combines, and where the stubble remained unturned after harvest and left abundant corn residue for geese to feed upon. Requiring the farmers raising corn directly north of runway 21 to turn over the corn stubble immediately after harvest (or possibly cut corn for silage) should reduce goose airstrike risk for that landing approach by > 95%., thus nearly eliminating the most dangerous area for air traffic at MSN airport

Removal of geese from local parks will have little impact on fall goose risks at MSN airport since the majority of risks originate with migrant Canada Geese. Removal of attraction sources within 3.4 km of the airport should prove far more effective for the long term and it may be possible to accomplish by citizen and landowner involvement and education of the risk sources and options for solutions.

Acknowledgments

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Philip Whitford obtained his BS (1973) and MS in Wildlife Management (1976) from UW-Stevens Point, and a pilot's li-

cense in 1974 to use for UW-Stevens Point spring waterfowl pair counts and Greater Prairie-Chicken booming ground research via flight surveys for graduate students. His pilot's license is current and he owns and flies 3 small planes, part of the reason for his concern about aircraft goose strike and airport issues.

Philip received his PhD Biology (Animal Behavior), from UW-Milwaukee in 1987. His dissertation, "Vocal, Visual and other Social Communication of the Giant Canada Goose" was the first—and still only—attempt ever to fully and quantitatively define the vocal language and visual means of communication for this species. He has continued research on this topic and since 1998 on use of call playback and other methods to disperse geese from areas they are not wanted.

He held the Geist Endowed Chair/ Professor of Biology at Capital University, Columbus, Ohio, from 1993–2009, and has been Professor Emeritus since 2009.

He is the author of over 90 publications in scientific journals and popular magazines dealing with geese, ducks, and cranes, plus dozens of others for other species, served as the principle author/researcher for more than 70 presentations at national, international and regional science conferences. Dr. Whitford is considered a leading authority on vocal communication, behavior, dispersal, and management of Canada Geese.

Wisconsin Big Day Counts: 2013

Daniel Schneider

N1055 Cold Spring Road
Fort Atkinson, Wisconsin 53538
DanRSchneider9@gmail.com

The Passenger Pigeon's Big Day summaries have historically been the premier platform to broadcast your single-day birding successes to all of Wisconsin's birders. The reports represented in these summaries not only document Wisconsin's rich birding heritage, but have traditionally set the high water mark for competitive birders. For the year 2013, those high marks were an astonishing 188 species for Big Day birders and 118 species for Green Big Day birders.

For the first time since these reports began 34 years ago, more Big Day reports were submitted by birders on bicycles than birders in vehicles (Kim Kreitinger's Summer 2010 article soliciting Wisconsin birders to think "greener" when doing their Big Days must have been convincing). No matter what your mode of transport may be, I implore you to submit your birding accomplishments and set the 2014 high mark for others to chase.

The Summary

There were four checklists submitted for inclusion in *The Passenger Pigeon* in 2013; one Big Day report from the team of Matt Kemp, Tom Kemp, and Tim Hahn, and three Green Big Day reports, including one report from Bob and Kay Kavanagh, one report from Owen Boyle, and one from Dan Schneider. I'm also pleased to report the majority of this year's Big Days were done in conjunction with fundraising events benefiting Wisconsin's birds.

The Big Day Counts

Matt Kemp, Tom Kemp, Tim Hahn, *188 species,* 18 May, Columbia. Dodge, Fond du Lac, Jefferson, Milwaukee, Sheboygan, Walworth, and Waukesha Counties; 351 miles traveled by car.

This enthusiastic crew observed an astonishing 188 species, a mark not seen since 2005 (when Randy Hoffman, Al Shea, and Quinton Yoerger had 202), and was good enough to top all other teams in the Great Wisconsin Birdathon. Their accomplishment is even more impressive given they strayed from the traditional Hoffman/Shea route and only birded the south and eastern portions of the state. While it didn't qualify them for a "Green" Big Day, their 351 miles are well below other Big Days of this caliber.

Key birds for the day were the Chuck-will's-widow in the Southern

Kettle Moraine State Forest (Walworth County), Black-throated Blue Warbler at Lake Park (Milwaukee County), Lesser Black-backed Gull at North Point (Sheboygan County), Black-necked Stilt and Cattle Egrets at Horicon Marsh, and a Red-necked Grebe at Schoeneberg Marsh (Columbia).

[Matt reports on another Big Day from June 2012 in "Swans in the Moonlight" elsewhere in this issue of The Pigeon.]

The Green Big Day Counts

Daniel Schneider, *118 species*, 10 May, Dodge, Fond du Lac, and Jefferson Counties, 6.5 miles walking, 78 miles biking.

Starting from his home in Fort Atkinson, Daniel BIGBYed (biked) his way up to the Horicon Marsh Bird Festival. A quick morning stop at a birdy Rose Lake State Natural Area in Jefferson County produced 75 of the 118 species, including 10 shorebird and 18 warbler species. Other stops included Palmatory Drive, the Horicon Marsh International Education Center and Ledge Park in Dodge County, as well as many flooded fields along the way.

Bob and Kay Kavanagh, *108 species,* 30 May, Florence County, 30 miles biking.

Doing better than any of their previous runs of the route and among the biggest Green Big Days recorded to date from northern Wisconsin, veteran participants Bob and Kay tallied an impressive 108 species, including eight raptors, 19 warblers, and seven flycatcher species.

Owen Boyle, *67 species*, 11 May, Milwaukee County.

In conjunction with the Urban Ecology Center's Green Birding Challenge, Owen BIGBYed his way through the Milwaukee area seeing all five of Wisconsin's swallows, a White-winged Scoter, and Black-crowned Night-Heron.

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 by "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 BigDay@wsobirds.org. Paper results should be sent directly to Bird Report Coordinator Joe Schaufenbuel at 5676 Regent Street, Stevens Point, WI 54481. 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 2014 should be received by 15 January 2015 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 as a Research Scientist for the Wisconsin Department of Natural Resources, specializing in grassland birds. He has previously worked with Great Green Macaws in northeastern 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 of the tropics. He now lives in rural Fort Atkinson with his wife Lauren, son Adler, and two dogs Hawk and Heidi.

Brown Thrasher by Sunil Gopalan

Swans in the Moonlight

Matt Kemp

1609 North Prospect Ave., Apt 902
Milwaukee, Wisconsin 53202

The monthly Big Day record chart for the state of Wisconsin includes some whopping numbers (230 in May! 194 in September!). These lofty heights were, for a time, intimidating to a relative newcomer to the state. But I could repress the Big Day itch only so long, so two years after becoming a Cheesehead, I set my sights on the only apparent weakness—the June record of 147 species.

My first recruit was Eleanor Alexander. Eleanor and I had gone to college together, and during junior year she and a couple of other friends had for some reason agreed to come along on a haphazardly planned Big Day in Vermont. Our teammate Pete managed to publish an entertaining essay about the experience in *Northern Woodlands* magazine, including the immortal line, "Sweet Eleanor came along more as Matt's friend and a lover of adventure than as an aspiring birder, but she didn't feel much adventure at two in the morning, and grew surly when roused." Nine years later, Eleanor was still a lover of adventure, but now she was coming along as my fiancée and an aspiring birder, too. And she promised not to be surly.

Rounding out the team was Tim Hahn, the jovial force behind the local Birds 'n Beers social gatherings. I had never actually birded with Tim, and he had never done a Big Day before, but I figured that any fellow who recognized the innate connection between birds and beer probably had the *joie de vivre* necessary to survive, and even thrive, on a Big Day.

And so the lawyer, the engineer, and the banker left their Milwaukee offices on a fine Friday evening and headed off into the semi-wilds of central Wisconsin. We grabbed a few hours of sleep at the charming Little Bluff Campground (featuring a bluff so little we're still not sure where it is) and then, under cover of darkness, made our way to the nearby Mud Lake Wildlife Area. As we stepped out of the car at midnight, a Sandhill Crane bugled a reveille from the marsh to get us started. Marsh Wren, Swamp Sparrow, Virginia Rail, Wood Duck, and Eastern Screech-Owl followed in short order, and we were off . . .

Grand River Marsh was up next. Henslow's Sparrows sang in impressive numbers along the entrance road, and out on the dike we heard Barred and Great Horned Owls trading calls from the surrounding forest. Topping it off was a Least Bittern purring away near the end of the dike. Propelled by these excellent finds and a steady supply of coffee, we steamed into White

River Marsh with considerable momentum. At White River, Sedge Wrens were out in force, and we picked up a couple of winnowing Wilson's Snipe. Though we could not come up with the hoped-for Yellow Rail, the chorus of marsh birds, tree frogs, two pairs of Barred Owls, and a howling pack of coyotes left us shaking our heads in wonder. The summer night was anything but peaceful. A couple of nearby stops yielded Eastern Whip-poor-will and Sora, and it was off to our dawn spot at the Buena Vista grasslands. Not a bad night at all, though we had missed Woodcock, Common Nighthawk, and American Bittern.

A clear summer dawn at Buena Vista is a singular experience. Despite the chilly weather (it bottomed out around 40 degrees) we were surrounded by the calls of Greater Prairie-Chickens; Western and Eastern Meadowlarks; Bobolinks; Grasshopper, Savannah and Clay-colored Sparrows; Upland Sandpipers; and Brewer's Blackbirds. Short-eared Owl played hard-to-get at first but eventually put in an appearance—a cracking bird, as the Brits would say. On the way back to the highway we picked up Vesper Sparrow, Willow Flycatcher, Brown Thrasher, Dickcissel, and Green Heron. Solid start—but already half an hour behind schedule! Time to burn rubber.

A brief run up I-39 took us to the Dewey Marsh area north of Stevens Point. The maple-pine woods here, interspersed with tamarack swamps and alder thickets, have a distinctly northern flavor. Breeding warblers were in full song: Golden-winged, Blue-winged, Canada, Black-and-white, Pine, Chestnut-sided, Yellow, Yellow-rumped, Nashville, Redstart, Ovenbird, and Northern Waterthrush were easily found. Yellow-bellied Sapsucker, Hermit Thrush, Veery, Alder and Least Flycatchers, Scarlet Tanager, and a bevy of other woodland birds were added as well. We lucked into fly-by Hooded Merganser and Cooper's and Broad-winged Hawks, and a Ruffed Grouse drummed in the distance. Best of all was a singing Purple Finch—a bonus bird we had not expected.

We then headed west to the Sandhill and Wood County Wildlife areas—a vast, wild expanse of wetlands and woods interspersed with active cranberry bog operations, with an even stronger taste of the north than Dewey Marsh. (During scouting the previous weekend, I had heard a wolf howling here as an afternoon thunderstorm moved in—pretty cool. I had also hit a deer—not quite as cool, but fortunately my car was still in good enough shape for the Big Day run.) New finds here included Lincoln's and White-throated Sparrows and Palm Warbler, all at the southern edge of their breeding ranges in the state, plus Common Loon and Trumpeter Swan. We had hit the apex of our route, a long way from our Milwaukee desks, and we now pointed the (slightly dented) nose of the car back to the south and east.

On the run through Necedah National Wildlife Refuge we paused just long enough to note a Ring-necked Duck, then commenced our longest unbroken traverse of the day, briefly slowing to 65 miles per hour to tick Osprey on a nest platform on the side of the highway. The goal for the early afternoon segment was to drum up lingering migrant shorebirds. The "V" ponds in northern Dane County were underwhelming, as we found only two

species (Semipalmated and White-rumped Sandpipers), but Goose Pond came through for us, as we added Dunlin, Baird's Sandpiper, and Black-bellied and Semipalmated Plovers, plus a calling Ring-necked Pheasant.

As we pulled into our next stop, Schoenberg Marsh, we realized that we had committed a blunder by forgetting to swing through Arlington for Eurasian Collared-Dove. Fortunately, the damage was limited to just one bird, and Schoenberg quickly put an end to our self-criticism by offering up a raft of new species. The expected stuff was all there: American White Pelican, Red-necked and Pied-billed Grebes, Coot, Yellow-headed Blackbird, Black Tern, Redhead, Ruddy Duck. We picked out a Green-winged Teal—tricky to find at this time of year—and then two bonuses popped into the scope: Black Duck and a female Bufflehead. Back at the car, our missing Field Sparrow sang. Onward!

We pulled into the legendary Horicon Marsh at 16:30 with 139 species in the bag—nine away from a new June record—but we were now a full 90 minutes behind schedule. A quick spin around the auto tour loop yielded Forster's Tern, Gadwall, and Common Gallinule. The Route 49 transect through the marsh had Lesser Scaup, but despite our eye-watering efforts at scoping the cattail stands in the powerful afternoon winds, we could not pick out a night-heron or anything else new . . . until the far eastern end of the road, where we had distant Great Egret fly- bys and then joined a crowd ogling a lingering White-faced Ibis—a true blue-chip bird.

No time to explore the rest of the marsh. We tacked back to the south, picking up our missing Chimney Swift on the drive through Mayville, and then, in the bottomland forest near Neosho, we found our tying bird—Prothonotary Warbler. The record-setter followed seconds later—Northern Cardinal, which had heretofore eluded us.

So now whatever we found the rest of the evening would be gravy, but there was a lot of gravy to be had, and we intended to dish it up good and thick in the birding buffet known as the South Kettle Moraine State Forest. We quickly found Hooded Warbler, side-by-side with Golden-crowned Kinglet and Red-breasted Nuthatch, and we rounded out our woodpecker list with Pileated, Red-headed, and Red-bellied. But our persistent scheduling problems finally caught up with us, and with no time and fading light we missed the expected Black-throated Green and Cerulean Warblers, Acadian Flycatcher, Tufted Titmouse, and Orchard Oriole. Some desperate dashes into the dim twilight did net us Wood Thrush and Lark Sparrow, but the gloaming had now taken firm hold, and we reluctantly concluded that it was time for the day's grand finale.

The capstone came in the form of a calling Chuck-will's-Widow, a great bird for Wisconsin, and we shared some congratulatory high fives for a fitting end to a day well spent. And then a woodcock, absent in the morning, flew overhead. Followed within thirty seconds by our missing nighthawk. And now we were at 159, and there was no way in hell we were going to bed without hitting 160. There ensued some frantic and not altogether coherent discussions about what else we could get in the dark.

Herring Gull in the lights of Milwaukee? American Bittern at Vernon Marsh? Wait, aren't there Mute Swans at Vernon Marsh? Maybe we could see them in the moonlight?

And as it turns out, we could. Mute Swan, scoped from a quarter mile away in the moonlight, became our last bird, and "Swans in the Moonlight," a really excellent song improvised by the three of us on the spot, became the day's official anthem. Unfortunately, none of us remembers how it goes. But we do remember a great day of birding in south-central Wisconsin.

50 Years Ago in *The Passenger Pigeon*

"The scarcity of the Bluebird in Wisconsin is amply illustrated in the results of the 1963 summer bird count: the combined efforts of 71 observers, putting in 216.5 party hours on 46 separate counts, produced a total of only 53 bluebirds," noted Sam Robbins. Robbins then adds that it seems highly unlikely that the population of a given species in our state would vary as much as 20% in any given year, much less 30%, 40%, 50% or 60%. Robbins said much larger samples are needed in order to refine these percentages to a truer norm.

Black-billed Cuckoo Lands in Lake. "On August 21, while watching swallows and Spotted Sandpipers skim over the waves, I heard and saw a splash. It was a Black-billed Cuckoo that had landed about 100 feet out in the lake. He looked surprised, but not panicked. He fluttered his wings and splashed toward shore. When about 20 feet off shore, he stopped struggling–I guess he was almost submerged–but he did make it." –Louise Erickson, Racine.

Mrs. Henry Koenig wrote an article about the Koenig experience with birds in Sauk City. "Our strong interest in birds began in 1949 and has increased with each passing year until it now dominates our lives completely." It all started with a full time feeding program with 25 feeders in the winter and a reduced number in the summer. In 1959 state and federal permits were granted to care for injured birds that were being brought to their home. A banding permit was granted in 1961. Just a few short months later; the Koenig's experienced the great Evening Grosbeak invasion, and on March 5, banded 62 Evening Grosbeaks.

Excerpts from Vol. 26(2), 1964 by WSO Historian Nancy J. Nabak, 410 Stonehedge Road, Green Bay, WI 54302; 920. 655. 4185; nnabak@sbcglobal.net

Common Yellowthroat with food by Sunil Gopalan

"By the Wayside"—Summer 2013

These reports of rare species include White Ibis and Tricolored Heron.

TRICOLORED HERON (*Egretta tricolor*)

18 June 2013, Cold Spring Township, Findlay Road VPA, Jefferson County— Medium-sized heron (between a Great Egret and a Green Heron; closer to the size of an ibis). Burnished gray with brown tones on back and wings, more of a dark maroon on the neck. White underneath (belly, undertail coverts) and white underwings. Appeared, at first, to be a long vertical jagged white line on leading edge of wing (but it was part of the white underbody showing between wing and dark neck). Long bill, about 2x the length of the head or more; grayish with yellow tones, especially inner half. Yellow from bill to around back of eye. LONG neck when stretched out, long legs, and very long toes. Crest of feathers on back of head.—*Karen Etter Hale, Lake Mills, Wisconsin.*

20 June 2013, Cold Spring Township, Findlay Road VPA, Jefferson County—This heron was much smaller than a Great Blue Heron, but had a very long neck which it stretched out several times during my observation. It was alone, so there were no other heron species in view for direct size comparison. It had a blue-gray crown, sides of neck, and wings. The nape had a mix of chestnut-brown and blue-gray feathers. There were no plumes extending from the nape, so this was a non-breeding bird. The mantle was chestnut-brown. There was only a slight hint of buffy feathers on the back, and they were only visible at certain angles. Most of the time the back appeared blue-gray. The top of the throat was clean white, but became orange colored farther down. The orange merged into thick streaks of chestnut-brown and thinner streaks of white which continued down the fore neck and covered the upper breast. The lower breast and belly were an unmarked, bright white. The eye was orange and the lores were a bright orange-yellow. This color wrapped around and encircled the eye. The bill was long and straight with a gray upper mandible and an orange-yellow lower mandible. The legs were a brownish yellow.—*Tom Wood, Menomonee Falls, Wisconsin.*

WHITE IBIS (*Eudocimus albus*)

6 June 2013, Vern Wolf Lake Boat Launch, Bong State Recreation Area,

Kenosha County—Medium-sized white wader with long decurved beak that was dark (red at the base and dark from the mud toward the tip), bright red face, reddish legs, and small black primary tips visible when the bird changed its posture or raised its wings briefly.

Species eliminated: White-faced and Glossy Ibis—similar size and shape, but overall dark brown in all plumages; Snowy Egret—similar size and predominately white, but short dagger like beak, dark legs with yellow feet, all white primaries; Immature Little Blue Heron—similar size and predominately white, but short dagger like beak, greenish legs.—*Sean Fitzgerald, Burlington, Wisconsin.*

18 July 2013, Point au Sauble, Brown County—As I was conducting a shorebird/waterbird point count, two mainly white birds flying overhead that had just cleared the treeline behind me to the northeast caught my eye. Fully expecting them to be the gulls that are constantly flying over, I didn't think much of them. However, I was stunned to see with my naked eye that one of them was built differently with a very obvious long curved bill. Ibis immediately jumped into my mind and I frantically reached for my binocs. I got the bird in my binocs before it got too far away—it was about 50m and flying away at an angle into a strong wind. I first looked at the bill which indeed was long and curved and red in color. I didn't have time to get a detailed look at the face but the red from the bill seemed to reach where the eye would be. I spent my precious seconds as the bird was flying away assessing body shape and wing pattern to lock in the ID. The bird was all white with the exception of the bill and black wingtips. I looked at the wingtips carefully—they were limited to only the end of the wing, appearing very small compared to the rest of the body. I wasn't able to evaluate color on legs since light got worse the further the bird got away from me but they appeared dark and hung off the back end of the bird like I would expect on any kind of wader. The neck also was long—about the same length as the bill. The bird was bigger and bulkier than the Ring-billed Gull that I first saw it near but with a shorter wingspan. It flew much differently as I watched it knife into the strong wind. It constantly flapped with a somewhat weak but steady wingbeat—never gliding or shearwatering like all the gulls were doing constantly in these conditions. The white body and very limited black in the wings leads me to believe this bird was an adult and not a juvenile.

Species eliminated: Plegadis Ibis species—Correct shape but either of these would have been an obvious dark color like a cormorant. Although light was strong and color wasn't that easy to evaluate, I could certainly tell the difference between dark and white.—*Tom Prestby, Green Bay, Wisconsin.*

6 June 2013, Vern Wolf Lake, Bong Recreation Area in Kenosha County—The White Ibis was feeding in the open when I arrived. This long legged, long necked wader was about the same size as a nearby Black-crowned Night-Heron. It was much smaller when compared to the numerous Great Egrets. The feathers of this bird were entirely white except for black just on the tips of the primaries. The legs were red. The bill was long and curved downward like a sickle.

The base of the bill was red but the distal half was black. This red color was also noted on the facial skin around the eye. At full magnification I noticed the eye was blue. It fed continuously and appeared to capture and consume at least two frogs. After a nice 25 minute view it flew and circled the area a few times before disappearing well to the south. In flight the contrasting black wing tips were noted. The neck was held straight and the legs trailed behind. It had the classic hump backed flight posture of an ibis.

Species eliminated: It was a wader with long legs and neck. All white body except for distinctive black just on the tips of the wings. Wood Stork and American White Pelican have much more extensive black on wings. The red legs and red decurved bill along with blue eye are also distinctive. Smaller than nearby Great Egrets. None of the egrets would show a curved bill or red legs and bill. Plegadis Ibis are dark chestnut color. In flight the trailing legs, extended neck, and hunch back appearance are unique for ibis.—*Mark Korducki, New Berlin, Wisconsin.*

Hooded Merganser pair from Bob Larson

Merlin chick by Alyssa DeRubeis

Lessons From the Seasons: Summer 2013

Randy Hoffman

305 Fifth Street
Waunakee, Wisconsin 53597
ecurlew@hotmail.com

Big data is the term for a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. The challenges include capture, storage, search, sharing, transfer, analysis, and visualization. The trend to larger data sets is due to the additional information derivable from analysis of a single large set of related data.

As of 2012, limits on the size of data sets that are feasible to process in a reasonable amount of time were on the order of exabytes(10^{18}) of data. Scientists regularly encounter limitations due to large data sets in many areas, including meteorology, complex physics simulations, and biological and environmental research. Data sets grow in size in part because they are increasingly being gathered by ubiquitous information-sensing mobile devices, aerial sensory technologies (remote sensing), software logs, cameras, microphones, radio-frequency identification readers, and wireless sensor networks. The world's technological per-capita capacity to store information has roughly doubled every 40 months since the 1980s; as of 2012, every day 2.5 exabytes of data were created.

Birders, including those who are not WSO members contribute to this explosion of big data. Vastly more data are at hand to analyze the seasonal trends even compared with five years ago. Ever increasing data sets: BBS survey routes, Wisconsin's breeding bird atlas, secretive marsh bird surveys, nocturnal bird surveys, and simple bird observations entered into ebird, provide an exponential growth in information about birds in Wisconsin.

Not all analyses need use knowledge of or expertise in fast computers. A cursory look at the ebird mapping data for 2013 shows distribution patterns that could be delved into more deeply.

Yellow-bellied Sapsucker in 2013 was virtually absent southeast of a line from Dubuque, Iowa to Green Bay. Looking further back many summer records are found in the blank spot on the 2013 summer sapsucker range. And looking way back to the 1800s, Kumlein and Hoy considered this species common in southeast Wisconsin.

American Black Duck is becoming harder and harder to find as a summer bird in Wisconsin. Its summer range has contracted over the years and is now found primarily in isolated pockets near the Great Lakes. Formerly nesting well into the prairie pothole country, this species is now virtually extirpated west of Lake Superior and our population continues to decrease.

Common Nighthawk's range is the same, but the distribution has shrunk to pockets of nesting. Currently, this species is common in barrens areas of the state, and in certain cities. It has become rare elsewhere. Eastern Whip-poor-will populations have likewise shrunk in a similar fashion, although they do not inhabit the cities. Could changes in agricultural pasturing practices hasten the reduction in populations?

Evening Grosbeaks in the mid-part of the 20th century bred regularly from Shawano to Danbury. A birder standing on Stones Bridge where it crosses the Bois Brule would not have to wait for more than a few minutes to hear and oft times see grosbeaks coursing the shoreline forest. Today this species is found in summer almost exclusively in Florence and Forest Counties.

Swainson's Thrush, Boreal Chickadee, Dickcissel, Hooded Warbler, and American White Pelican are also species that have shown shifts in the short term.

These big data are exciting for bird observation. Getting real time information in the hands of birders has led to a social media culture of the chase and it has been the primary instigator of many added life list species. However, a much more profound value can be attained in the use of big data for conservation.

Species ranges have changed over time, some have increased and some have decreased or even left the state. Long-term small data have given us that information. Many times though those data lag significantly behind the events, thus making positive timely conservation decisions a challenge.

Bigger data can help with the timeliness of those conservation decisions and predictive modeling can even be more helpful. Long-term analysis of bird data attained in the long-standing Nicolet Breeding Bird Survey is forming the basis for an exciting effort coming out of the bird research labs at UW-Green Bay.

Their web site contains these following items: Modeling the distribution and abundance of wildlife populations is one of the most important tools for developing effective conservation strategies. Today, exciting new tools are available for predicting large scale distribution patterns. Cofrin Center for Biodiversity students and faculty are working with scientists from the Smithsonian Institution and U.S. Forest Service to employ LiDAR (Light Detection and Radar) data for modeling bird populations in northern Wisconsin. Results from the Nicolet National Forest Bird Survey and related field projects are enabling scientists to project population responses to future scenarios such as climate change and alternative forest management policies. See more at: http://www.uwgb.edu/biodiversity/research/current.asp#sthash.dsAP3Ra0.dpuf

Now heading toward its 26 consecutive year, the Nicolet National Forest Bird Survey is the longest-running vol-

unteer bird survey in the U.S. National Forest System. This project was originated by faculty at UW-Green Bay and U.S. Forest Service biologists, and it continues to involve a large contingent of UWGB students, faculty, staff, and alumni. Results from the NNF Bird Survey have been used in at least 2 Ph.D. theses, 14 Master's theses, and more than 25 scientific publications. (http://www.uwgb.edu/birds/nnf/).

WSO members are encouraged to participate in these surveys. The value can be game changing if we get highly accurate predictive models to help guide our bird conservation efforts. WSO members are also strongly encouraged to participate in the update of our highly acclaimed Wisconsin Breeding Bird Atlas. Over the past decade this atlas has been the catalyst for development of the Wisconsin Bird Conservation initiative and the Important Bird Areas Program. It has been used in many public institutions planning processes.

While not yet fully vetted, the updated atlas promises new area of focus to increase its usefulness. Such as:

- Strategic increase in block coverage—hope to cover far more blocks than in first atlas;
- Addition of point counts for abundance estimates and density contour maps—should work for 100–150 species common enough to generate enough data for models (lack of abundance data was big weakness of WBBA1);
- Greater geographic precision of records—only block level data were another weakness last time—really hope to improve for state properties, IBAs, NHI species, etc.;
- Modern public outreach tools—we have just a whole different toolbox now when it comes to communicating with the public;
- Online data entry and advanced data management—will likely be using modified eBird platform for data entry; point counts likely going through National Point Count Database soon to be housed at Midwest Avian Data Center. Smartphone apps will be developed. Atlas will have an active website as well.

Keep tuned in and monitor our web for more information. And please consider helping in the outstanding endeavor.

Green Heron pictured by Davor Grgic

The Summer Season: 2013

Randy Hoffman

305 Fifth Street
Waunakee, Wisconsin 53697
ecurlew@hotmail.com

Summer weather was cool in June and warm and dry in July for the most part. June temperatures did not show much difference in average between north and south. Nearly statewide, the June temperatures were 1 to 2 degrees below the long-term average. Rains were widespread with peaks early in the month and two big spikes at the end of June. July precipitation patterns were nearly non-existent in many parts of the state, although some localized areas received a few and sometimes very heavy downpours. Over most of the state and especially in the central sands, severe drought conditions persisted. Temperatures were slightly above average statewide for July with no extensive heat waves.

Observers recorded 271 species during the season, which is down only one from the 2012 total. Also, two Brewster's Warblers were seen and documented. The account that follows gives information on nearly all the species recorded in the summer season. The only species not included are Rock Pigeon, European Starling, and House Sparrow. Continuing the tradition established in past year's summaries, some detail is given on nearly every species found in the state.

Rarities

Observers have only a few opportunities to chase rarities this summer. *"By The Wayside"* accounts document a few of these sightings, although many documentations these days are photographs only. Look for color photos in various places in the Pigeon for documentation for many of the rare birds. Most significant among the rare species was Wisconsin's third and fourth White Ibis. The other rarities are in many instances becoming much less rare, but they are exciting to view nonetheless. Highlights include Tricolored Heron, Black-necked Stilts, Godwits and Whimbrels, Little and Laughing Gulls, two White-winged Doves appearing at feeders, and three separate Blue Grosbeaks sightings.

Although less rare, a number of additional species, some out of season, helped to make this a relatively interesting summer season: continued nesting of Buffleheads, Spruce Grouse, Snowy Egret, Piping Plovers, Buff-breasted Sandpiper, Red-necked Phalarope, Lesser Black-backed and Great Black-backed Gulls, Chuck-will's-widow, White-eyed Vireo, Northern Mockingbird, Brewster's Warblers, an abundance of late migrating war-

blers and flycatchers well into June, Prairie Warblers, American Pipits, White-winged Crossbill, and a very late Common Redpoll.

Farewell

This report is my last as summer season editor. Alyssa DeRubeis will be taking over next season, adding the youthful spark of enthusiasm she possesses. I have always viewed the summer season as a place to focus in on conservation priorities for our breeding birds. I did not spend much energy in the seasonal report describing the sightings that many birders reported for the more common species. In hindsight, and with my work on the organization's strategic plan, I have come to realize that many birders need to have sightings of even the most common species recognized.

To be part of the bird conservation world, a birder must first be able to recognize and name the bird species. With that step comes enjoyment. Second, a birder must know the essence of bird study including the implications of their own sightings to attain knowledge via bird study. Finally, after those first two parts are complete, a birder can be well versed in conservation issues. My reporting glossed over the second step and went directly to step three. To garner a larger contingent of bird conservationists from birders, more details on sightings need to be published.

Omissions

Soon after the *Passenger Pigeon* summer issue was mailed last spring, I received a very courteous email informing me that the seasonal report was not quite accurate. I promised to make it right and do a better job in the future. The change from the published 2012 seasonal report is: *Snow Goose*—Eric Epstein had only one Snow Goose in with a flock of 45 Canada Geese.

Conclusion

The data we collected do have value and every birder submitting to ebird or through hard copies to WSO should know their efforts can be used to help bird conservation. The data come in different forms. The summer report sent out a call for BBS participants to put their BBS records into ebird. This past summer several birders did and the analysis of data became much more complete (see Lessons From the Seasons in this issue).

Until we have data, such as many European countries do, which show the population of a species in the country within small statistical errors, we cannot do acceptable bird conservation. Please consider participating in one of the numerous citizen science surveys. A complete list can be found on the WSO website. The paradigm stills holds that for the most part people bird ten months of the year for fun and they bird in June and July for conservation. Everyone is encouraged to participate in single or group counts. Furthermore, if you are a landowner, it should be your moral obligation to know the breeding bird populations on your land.

REPORTS
(1 June–31 July 2013)

Canada Goose—Reported from 71 counties.

Mute Swan—Seen in 12 counties, which is significantly up in both geographical coverage and numbers. The largest population was 12 birds found at the Hwy 75 Pond near Kansasville in Kenosha County (mob). Waukesha County continues to be the hotspot or low point, depending upon your opinion.

Trumpeter Swan—Reported in 27 counties with highest numbers from Burnett 18 June (Stutz) with 39 birds. Ben West recorded 28 birds on 20 July in the Necedah National Wildlife Refuge, Juneau County.

Tundra Swan—Only one bird was seen this summer. Brady saw the individual near the Long Bridge in Ashland County on 11 June.

Wood Duck—Reported from 68 counties, which is up slightly over 2012.

Gadwall—Thirteen counties held birds this summer with the high count being 22 seen along the Cat Island Causeway in Brown County on 30 July (Prestby and Sinkula).

American Wigeon—Observed in four counties: Brown (mob), Dodge and Fond du Lac (mob), and Jefferson (Bridge).

American Black Duck—Observers reported this species from 11 counties.

Mallard—Reported from 68 counties.

Blue-winged Teal—Reported from 41 counties. This number is much higher than 2012 and may reflect recovery from the droughty conditions of the previous summer.

Northern Shoveller—A good summer with reports coming from 21 counties, which is much higher than 2012, probably reflective of much more habitat availability.

Northern Pintail—Pintails were found in five counties with 7 near the Old Marsh Road on 19 July (Thiessen). Several group of birders reported sightings in Dodge and Fond du Lac Counties throughout the summer. Brown (Schilke and Swelstad), Oneida (Younkin) and Dane (Taylor) Counties also held birds this summer.

Green-winged Teal—The number of reporting counties (26) and individuals were up significantly compared with 2012.

Canvasback—These 8 counties held birds, from which birders provided the season's observations: Brown, Dane, Dodge, Fond du Lac, Manitowoc, Marathon, Monroe, and Sheboygan.

Redhead—At least 210 birds were recorded 14 June at Rush Lake, Winnebago County (Ziebell). Additional observations were reported from 15 counties.

Ring-necked Duck—At least 13 birds were recorded 8 June, at Crex Meadows, Burnett County (Haseleu), and 12 were tallied at Navarino Wildlife Area, Shawano County (Szymczak). Additional observations came from 17 counties.

Greater Scaup—Observers found birds in eight counties: Brown, Door, Forest, Kewaunee, Manitowoc, Marinette, Racine, and Sheboygan.

Lesser Scaup—Reported from an outstanding 14 counties in early June. July sightings came from Dodge (Tessen), Green Lake (Bridge), Manitowoc (Sontag and Tessen), and Racine (Howe) Counties.

Bufflehead—Belter and Sabatke had birds at D. C. Everest Park, Marathon County on 17 June. Paulios had an individual 30 June at Crex Meadows, Burnett County. Both of these sightings may indicate breeding attempts, whereas, an 8 June bird at Toft Point, Door County (Licata) probably was a late migrant.

Common Goldeneye—Nine counties held birds this summer: Ashland, Bayfield, Brown, Door, Kewaunee, Outagamie, Shawano, Vernon, and Winnebago.

Hooded Merganser—Reported from 39 counties.

Common Merganser—Reported from 13 counties. Peczynski found 20 birds 1 July on Butternut Lake in Forest County.

Red-breasted Merganser—Sightings came from 16 counties with "inland" sightings from Chippewa, Dodge, and Marquette Counties.

Ruddy Duck—A normal season with observations in 14 counties including 45 on 14 June at Rush Lake in Winnebago County and on the same day 70 from Horicon Marsh in both Dodge and Fond du Lac Counties (Tyskiewski and Coulter).

Northern Bobwhite—The six reporting counties were down significantly from 2012. Two sightings in Waushara (Wedell) and Eau Claire (Gustafson) came from counties with traditional long-term populations. Two other county reports—Dodge (Tessen) and Wood (DeRubeis)—were from counties at the edge of historic Northern Bobwhite range. Far out of range observations came from Marinette (Swelstad) County and Washington Island, Door County (Noeldner). Birders still need to be cautious of Northern Bobwhite sightings, because they are preferred release birds for training hunting dogs.

Gray Partridge—The only summer season report for this declining species came from the County Farm in Iowa County on 17 June (Helin).

Ring-necked Pheasant—Reported from exact same 32 counties, which is close to average for recent summers.

Ruffed Grouse—Birds were reported in 30 counties compared to 29 counties in 2011. The 11-year cycle was bypassed, with this being the thirteenth year. We'll see how this species survives the extreme winter of 2013-2104.

Figure 1. A good size flock of Wild Turkeys visit the wooded yard of Bettie and Neil Harriman in Winnebago County almost every day all year around. This photo could be taken in any season, but happened to be recorded in summer by Tom Eddy. Some of the birds have discovered that standing atop the hopper feeder is an easy and safe way to get those sunflower seeds.

Spruce Grouse—The only mid-summer sighting was 11 July at the Old A Bog in Oneida County (Gustafson).

Sharp-tailed Grouse—The submitted reports were comparable to last year with four locations holding birds: Crex Meadows 1 June (Jackson) and Namekagon Barrens 11 June (DeLong) both in Burnett County, 18 June along Stone Chimney Road in Douglas County (Yoerger), and 21 July at Pershing Wildlife Area in Taylor County (P. Campbell and Cameron).

Greater Prairie-Chicken— Many observers report birds from the traditional Central Wisconsin Grasslands: Leola Marsh in Adams County, and Buena Vista Grasslands in Portage County.

Wild Turkey—Reported from 68 counties (Fig. 1). No reports from Menominee, Pepin, Iron, and Sawyer counties.

Red-throated Loon—Svingen sighted an incredible 30 individuals from Gull Bluff, Douglas County on 10 June.

Common Loon—Exceptional were southern sightings—18 July Jefferson County (Etter Hale) and 29 July on Lake Geneva in Walworth County (Loss). None of the remaining 32 reporting counties were considered unusual.

Pied-billed Grebe—Reported from 34 counties with a high count of 74 on 14 June at Rush Lake, Winnebago County (Ziebell).

Red-necked Grebe—Ziebell did not find any birds on Rush Lake, Winnebago County. Other reports came from these counties: Burnett (mob), and the Goose Pond and Scheoneberg Marsh both in Columbia County (mob).

Double-crested Cormorant—This species was seen in 42 counties. On his annual survey of Rush Lake in Winnebago County, Ziebell tallied 460 individuals 14 June.

American White Pelican—The number of reporting counties increased to 38 this season with good numbers counted. The exceptional

concentration was 3000 birds at the Cat Island Causeway, 14 July, in Brown County (Prestby).

American Bittern—Reported from 29 counties, which is an increase over the moderate numbers found in 2012.

Least Bittern—Noted in 16 counties this season. Ziebell had 50 birds 14 June at Rush Lake in Winnebago County.

Great Blue Heron—Reported from 69 counties.

Great Egret—Reported from 29 counties up slightly from 2012.

Snowy Egret—One or two birds were sporadically seen from 20 June - 19 July, Horicon Marsh along Highway 49 in both Dodge and Fond du Lac Counties (mob). Another Snowy was seen 13 June at the Mud Lake Wildlife Area also in Dodge County (Bahls).

Tricolored Heron—A cooperative individual (Figures 2 and 3) spent 16–26 June along Findlay Road in Jefferson County to the delight of many birders. Weberpal first sighted the bird and alerted other birders. See *"By the Wayside"* for details on this sighting.

Cattle Egret—Found at seven locations in Dodge and Fond du Lac Counties by many observers. Doverspike had 10 individuals on 31 July near Fir Road in Dodge County. Dozens of birders located the cooperative birds along Lone Elm Road in Winnebago County 9 June - 19 July.

Green Heron—Reported from 66 counties, which is the same as 2012, but well above the long-term average.

Black-crowned Night-Heron—Ziebell tallied 200 at Rush Lake 14 June in Winnebago County. Observers report sightings from 19 counties in all.

White Ibis—This third state record was found by at least twelve birders on 7 June and remained through 10 June. The bird was photographed and documented by several birders (Figures 4 and 5). See *"By the Wayside"* for samples of the documentation for this bird. A fourth state record was seen in Brown County 18 July by Prestby and his documentation is also found in *"By the Wayside."*

Turkey Vulture—Reported from 69 counties.

Osprey—Reported from 56 counties.

Bald Eagle—Reported from 63 counties.

Northern Harrier—Reported from 45 counties, which is down slightly from 2012, but well above the long-term average for the summer season.

Sharp-shinned Hawk—Anderson found a bird 24 July at Cherokee Marsh in Dane County for the most southerly report for the state. More traditional northern reports came from 17 counties.

Cooper's Hawk—Reported from 41 counties.

Northern Goshawk—Noted from 6 counties; found at the traditional site Bear Bottoms site in Florence County (Kavanaghs), and also in new locations in Bayfield, Door, Forest, Taylor and Vilas Counties.

Red-shouldered Hawk—Reports were nearly the same as 2011 with birder sightings from 24 counties. The most northern sightings were Union Township, Burnett County (Paulios), Crescent Lake in Oneida County (Gustafson), and Bear Bottoms in Florence County (K. Kavanagh).

Broad-winged Hawk—Reported from 36 counties with several in southern Wisconsin.

Red-tailed Hawk—Reported from 69 counties.

Virginia Rail—Reported from 22 counties, including a remarkable 28 birds tallied on a survey of Rush Lake 14 June, Winnebago County (Ziebell).

Sora—Reported from 39 counties.

Common Gallinule—Gallinule numbers maintained the high numbers recorded in 2012. Birds were found in 11 counties. Thirty-four individuals were seen 14 June at Rush Lake in Winnebago County (Ziebell).

American Coot—Numbers were up for this species. Reports came in from 27 counties highlighted by an estimated 650 birds 14 June at Rush Lake in Winnebago County (Ziebell).

Sandhill Crane—Reported from 68 counties.

Whooping Crane—Summer observations away from the release areas in Juneau and Green Lake Counties were confirmed in Adams, Dodge, Fond du Lac, Marathon, Monroe, and Outagamie Counties.

Black-bellied Plover—Ten counties reported late migrating birds with the last being 11 June at Wisconsin Point, Douglas County (Svingen). An exceptionally early fall migrant stayed from 6 - 30 July in Brown (Swelstad and Sinkula).

American Golden-Plover—The last spring migrant was seen 4 June in Columbia County (Coulter). An individual found 24 June in Outagamie County (Sabourin) was seen in what's considered the heart of summer for many shorebirds species.

Semipalmated Plover—Lingering spring birds were noted in 18 counties with the latest being 8 June Brown (Swelstad). The first fall migrants were recorded 17 July in Manitowoc County (Sontag).

Piping Plover—Late spring migrants were found 4 June Seagull Bar, Marinette (3 birds, J. Campbell and Hurst), 10 June along the Cat Island Causeway, Brown (Prestby). The first fall migrant was seen in Ashland on 8 July (Snead). The National Park Service reports that 17 young were banded on Long Island.

Killdeer—Reported from 67 counties.

Black-necked Stilt—Another excellent summer! Up to 4 birds were seen off and on along the Old Marsh Road within Horicon National Wildlife Refuge, Dodge County from 2 June (Kemp) through 13 July (Heikkinen and Herzmann).

American Avocet—Normally seen in two or fewer counties in any summer season; this season produced sightings from seven counties: Brown, Dane, Door, Kewaunee, Lincoln, Manitowoc and Racine.

Spotted Sandpiper—Reported from 48 counties.

Solitary Sandpiper—Reported from 36 counties, the same as 2012.

Greater Yellowlegs—Sixteen county reports were received indicating less than ideal shorebird habitat in many locations.

Willet—A better season than most with sightings from Brown (Prestby and Sinkula), Door (Peterson), Manitowoc (Sontag), and Sheboygan (Kavanagh and Hurlburt) Counties.

Lesser Yellowlegs—A good migration with birders submitting reports from 31 counties but no large concentrations.

Upland Sandpiper—Reported from 17 counties nearly statewide in distribution, however, in numbers keeps trending down every year. This year had lower total numbers than 2012.

Whimbrel—Three reports were submitted with spring migrants seen 3 June at North Point in Sheboygan (Coulter) and 5 - 7 June in Manitowoc County (Domagalski and Sontag). A lone fall migrant was found 16 July at Meyers Beach in Racine County (Keyel).

Hudsonian Godwit—Reported 22 July at the Cat Island Causeway, Brown County (Prestby) and 28 - 31 July along Highway 49 in Dodge County (mob).

Marbled Godwit—One spring migrant, 1 June at Crex Meadows in Burnett County (Jackson) and one fall migrant 25 July at the Cat Island Causeway, Brown County (Prestby).

Ruddy Turnstone—Seen in five counties in early June: Brown, Kewaunee, Marinette, Racine, and Sheboygan. An early fall migrant stopped 8 July in Ashland County (Anich and Brady).

Sanderling—Spring migrants seen in Douglas, Iowa, Kenosha, Kewaunee, Marinette, and Sheboygan. An unprecedented influx of birds built at the Cat Island Cause Brown County with the first fall bird seen 8 July peaking at 80 Sanderlings on 22 July Prestby).

Semipalmated Sandpiper—This species experienced another late migration this year with 19 counties holding birds in early June. The latest spring departures were 19 June Jefferson (Stutz). Another indicator of the magnitude of the late migration was 95 birds seen 6 June Brown County (Prestby). The earliest fall migrant was 1 July Kewaunee (Sinkula).

Least Sandpiper—The last spring migrant was 8 June Dane (Gugerty). The earliest fall migrant was 28 June Sheboygan (Lindemers).

Figure 2. "Wait for it . . . wait for it . . ." Recording the waiting on 26 June 2013 in Jefferson County was Sunil Gopalan.

Figure 3. Patience is rewarded, for both the bird and Sunil Gopalan.

White-rumped Sandpiper—Reported from 10 counties in June with the latest departure 17 June Sheboygan (Edlhuber). The only report of a fall migrant was 24 July in Fond du Lac County (Tessen).

Baird's Sandpiper—The latest departing bird was 10 June Brown (Prestby). The first fall migrant was seen 12 July Iowa (Holschbach).

Pectoral Sandpiper—A summer similar to 2012 with movements reported from 22 counties. The first fall migrants were recorded 12 July at Horicon Marsh, Dodge County (Mezera) and Marathon County (Belter).

Dunlin—Fourteen counties harbored birds in early June with the last migrant reported 20 June, Ashland (David) County.

Stilt Sandpiper—Eight counties reported fall birds: Brown, Burnett, Dane, Dodge, Dunn, Fond du Lac, Marathon, and Outagamie.

Buff-breasted Sandpiper—Early fall migrants seen 21–27 July at the Ashton K Pond, Dane County (Holschbach) and a second bird 28–29 July at the Wind Lake Sod Farm, and another near Union Grove, both in Racine County (Fitzgerald and Lubahn).

Short-billed Dowitcher—A late spring migrant was seen 4 June Columbia (Coulter). Fall birds were seen in 13 counties with a 6 July sighting at Collins Marsh, Manitowoc (Domagalski) being the earliest.

Long-billed Dowitcher—Only one report this summer and it came from Door County where Lukes saw an individual on 26 July.

Wilson's Snipe—Reported from 31 counties.

American Woodcock—Reported from 28 counties, which is well above normal for the summer season, and slightly above 2012.

Wilson's Phalarope—Reported from 8 counties including several from Dodge County. Most interesting was a single bird found 23 June at Chiwaukee Prairie State Natural Area in Kenosha County (Witynski).

Red-necked Phalarope—A late spring migrant was seen 1 June along the Cat Island Causeway, Brown County (Walton) and the first fall migrant was seen at the same location 27 July (Schilke and Swelstad).

Bonaparte's Gull—Present throughout the season in Brown, Door, Douglas, Manitowoc, and Sheboygan Counties. Short stays were reported from Ashland, Bayfield, Kewaunee, and unusual were 4 birds seen 6 June in La Crosse County (Houdek), and 225–235 in early June Manitowoc County (Sontag).

Little Gull—Sheboygan and Kewaunee Counties harbored this species. Scores of birders reported an individual from the North Point location, 1 June–13 July, and several birders found another individual in Kewaunee Harbor 6 - 18 June.

Laughing Gull—Wood found this species in Sheboygan on 15 June and it was subsequently seen by numerous birders (Fig. 6) through 21 July. Another individual stayed in Manitowoc County 2–5 July (Sontag).

Franklin's Gull—Sheboygan was the place to be for gulls this summer. Coulter found a Franklin's on 3 June and it stayed until 14 July (mob). Another individual was seen 2 July Dodge (Tessen) and another 12 June Ashland County (Brady).

Ring-billed Gull—Reported from 51 counties.

Herring Gull—Reported from 26 counties.

Lesser Black-backed Gull—Three reports: 5 June (Wood)–27 July (mob) Sheboygan County, 6–10 June Brown County (Prestby), and 16 July Racine County (Keyel).

Glaucous Gull—Two reports: 19 June at the Old Superior Landfill, Douglas County (Svingen), and 3 July Sheboygan (Murkowski).

Great Black-backed Gull—Three reports: 6 - 10 June Brown County (Prestby), 2 June–21 July Sheboygan County (mob), and 2 June Ozuakee County (Williamson).

Caspian Tern—Present through most or all of the entire season in 34 counties.

Black Tern—Reported from 28 counties with an estimated 118 individuals 14 June at Rush Lake in Fond du Lac County (Ziebell).

Common Tern—Numbers were down compared with 2012 with reports from 12 counties. All the records came from counties bordering the Great Lakes except the lone "inland" report from Winnebago County.

Forster's Tern—Present through the season in 23 counties. High count was 60 individuals 14 June at Rush Lake Winnebago (Ziebell).

Eurasian Collared-Dove—Numbers took a dip compared to a steady increase for the past five years with reports coming from 11 counties. The most northern was a bird seen 28 June in Chippewa County (Betchkal).

White-winged Dove—Door County again hosted this species with a short visit to the feeder of Dean and Bernie Shumway on 16 June. Another brief feeder appearance occurred in Wood County, where Gary Stout photographed a bird at his feeder on 9 June.

Mourning Dove—Reported from 71 counties.

Yellow-billed Cuckoo—Reported from 40 counties.

Black-billed Cuckoo—Reported from 52 counties.

Eastern Screech-Owl—Reports improved on the past few years with eight counties—Brown, Dane, Milwaukee, Monroe, Ozaukee, Richland, Sheboygan and Winnebago—harboring birds.

Great Horned Owl—Reported from 24 counties.

Barred Owl—Reported from 36 counties, which is down considerably from 2012.

Long-eared Owl—No reports this season.

Short-eared Owl—The only report this season was a 18 June observation at Powell Marsh in Vilas County (Anderson).

Northern Saw-whet Owl—June observations were limited to a single calling bird 9 June in Juneau County (Thompson).

Common Nighthawk—This year's 33 reporting counties is above average and is most likely due to increased effort documenting nocturnal birds. Thirteen birds were recorded on 7 June in Langlade County (Johnson). The 16 birds found 7 June in Bayfield County (Oksiuta) may or may not have been migrants.

Chuck-will's-widow—The first time in many years no audible Chuck sounds were recorded from Jackson County; however, the bird at the Kettle Moraine Oak Opening State Natural Area on the border of Jefferson and Walworth Counties was cooperative. On 1 June, Howe had the bird near Young Road and it was heard nearly every night through 29 June. Also, on 29 June, Frank heard another or the same bird 1/2 mile to the east. Another report came on 8 June near Elkhorn in Walworth County (Steger).

Eastern Whip-poor-will—Reported from 26 counties.

Chimney Swift—Reported from 65 counties.

Ruby-throated Hummingbird—Reported from 70 counties.

Belted Kingfisher—Reported from 67 counties.

Red-headed Woodpecker—Reported from 42 counties. These numbers are down from 2012, but up slightly over the last ten years.

Red-bellied Woodpecker—Reported from 65 counties and the missing counties were mostly due to coverage gaps. Bayfield, Ashland, and Iron Counties are the only locations where it's hard to find this species.

Yellow-bellied Sapsucker—Reported from 52 counties. This species is hard to find southeast of a line from Dubuque, Iowa to Green Bay.

Downy Woodpecker—Reported from 70 counties.

Hairy Woodpecker—Reported from 64 counties.

Black-backed Woodpecker—Birds were only seen at the Franklin Lake Campground, Forest County on 24 June (Long), the Buckatabon Game Trail in Vilas County 2 July (Repass) and at the Port Wing Boreal Forest State Natural Area in Bayfield County 3 June (Erickson).

Northern Flicker—Reported from 68 counties.

Pileated Woodpecker—Reported from 58 counties. See Figures 7-9 for some nesting activity.

Figure 4. Sean Fitzgerald's shot of the White Ibis at Bong State Recreational Area on 6 June 2013 in Kenosha County.

Figure 5. White Ibis in flight by Jim Edlhuber at Bong SRA on 11 June 2013, Kenosha County.

Figure 6. Laughing Gul at North Point, Sheboygan, Sheboygan County on 17 June 2013 was pictured by Jim Edlhuber.

American Kestrel—Reported from 59 counties.

Merlin—Numbers were virtually the same as the past few years with sightings from 18 counties. The most southern was a bird in Adams County 8 June (Stratton).

Peregrine Falcon—Reported from 19 counties, which is four more than 2012.

Olive-sided Flycatcher—Spring migrant reports came from 10 counties in all. The latest migrants were seen 14 June at WSO Honey Creek Preserve, Sauk County (Schiffman) and 16 June in Adams County (Sehloffs). Mid to late June breeding season records came from more traditional northern counties: Bayfield, Door, Douglas, Forest, Marinette, Oneida, Sawyer, Vilas and Washburn Counties.

Eastern Wood-Pewee—Reported from 68 counties.

Yellow-bellied Flycatcher—Late spring migrants were seen in 8 southern counties through 12 June at the Schlitz Audubon Center, Milwaukee County (Zehner). Thirteen northern counties had probable breeding activity, including 16 birds recorded at the Belden Swamp State Natural Area in Douglas County (Goldberg and Retter).

Acadian Flycatcher—Reported in 19 southern counties. The most northerly sightings were from the Dunnville Wildlfie Area, Dunn County (Hogseth) and the Schmeekle Reserve in Portage County (DeRubeis).

Alder Flycatcher—As usual, most of the 50 reporting counties were central and north, although many reports came from counties bordering Illinois. A paucity of reports came from the Driftless area.

Willow Flycatcher—Reported from 51 counties with no reports from the far north. As

usual the best places to observe were in the south; intriguing though were reports 10 June in Rusk County (Anich) and 8 June in Oconto County (Straub).

Least Flycatcher—Reported from 62 counties.

Eastern Phoebe—Reported from 67 counties.

Great Crested Flycatcher—Reported from 68 counties, which is near the long-term average.

Eastern Kingbird—Reported from 68 counties.

Scissor-tailed Flycatcher—A bird photographed 4 June Marinette County (J. Campbell and Hurst) and another 2 June Marathon County was seen by many, but first reported by Merkle.

Loggerhead Shrike—The Trempealeau Mountain Golf Club, Trempealeau County bird was found 22 July (Stratton), but that bird barely made news compared to the hundreds who travelled to the Buena Vista Grasslands in Portage County to see the pair through 28 July. Another lone bird was seen 10 June in Dane County (Schneider).

White-eyed Vireo—Four reports: Green Lake County (mob), Lafayette County (Wood), Green County (Belter), and Jefferson County (Schneider).

Bell's Vireo—Much better numbers compared with 2012 with birds seen: Dane (3 locations) Dunn, Eau Claire, Grant, Iowa (3 locations), La Crosse (2 locations), Racine, Rock, Trempealeau, Vernon, and Walworth Counties.

Yellow-throated Vireo—Among the 65 reporting counties, the most northern ones were Bayfield and Douglas. The counties without reports had the fewest observers.

Blue-headed Vireo—The 32 reporting counties were mostly northern with southern limits outlined by Waukesha, Milwaukee, and Clark Counties. Unusual was a sighting at Fisherman's Landing in La Crosse County 3 July (Kearns).

Warbling Vireo—Reported from 64 counties.

Philadelphia Vireo—Late migrants were seen 1 June Ozaukee County (Baumann), Also 1 June Door County (Spiecker) and 2 June Racine County (Williamson).

Red-eyed Vireo—Reported from 71 counties.

Gray Jay—Reported from three counties: 20 June along Woodbury Lane in Forest County (Szymczak and Schaefer), 11–28 July at three different locations in Oneida County (Gustafson and Coulter), and 21 July near Long Lake in Florence County (Peczynski).

Blue Jay—Reported from every county except Menominee.

American Crow—Reported from 71 counties.

Common Raven—Reported 34 counties and as far south as Sauk (Seibel).

Horned Lark—Reported from 36 counties, which is down from 2012.

Purple Martin—Reports were nearly the same as 2012 with 46 counties claiming birds.

Tree Swallow—Reported from 71 counties; Menominee was the only non-reporting county.

Northern Rough-winged Swallow—Reported from 56 counties.

Bank Swallow—Reported from 59 counties.

Cliff Swallow— Reported from 68 counties.

Barn Swallow—Reported from 71 counties.

Black-capped Chickadee—Reported from 71 counties following the trend of common birds reported in every county except Menominee.

Boreal Chickadee—Seen at Sheltered Valley Road in Forest County 11–18 July (Gustafson and Haese-Lehman), and 28 July in Oneida County (Coulter).

Tufted Titmouse—Reported from 29 counties that continue to document the expansion of this species with the farthest north to the

Chippewa Moraine Ice Age Reserve in Chippewa County (Betchkal and P. Campbell).

Red-breasted Nuthatch—Reported from 47 counties.

White-breasted Nuthatch—Reported from 69 counties.

Brown Creeper—Reported from 20 counties.

House Wren—Reported from 68 counties.

Winter Wren—Twenty-two counties held birds this summer. In the not expected category was a bird 5 June at the Schlitz Audubon Center, Milwaukee County (Huf).

Sedge Wren—Reports were submitted for 51 counties in all.

Marsh Wren—Ziebell found 2220 at Rush Lake in Winnebago County 14 June. Reports were submitted for 45 counties in all, which is nearly the same as 2012. .

Carolina Wren—Reported from 10 counties with Eau Claire (Betchkal) being the farthest north.

Blue-gray Gnatcatcher—Paulios had an individual 30 July in far northern Burnett County and Noeldner found one on Washington Island, Door County. These two sightings represent the farthest north sightings in the state. In addition, reports came from an additional 46 counties.

Golden-crowned Kinglet—Noted in Bayfield, Douglas, Florence, Forest, Langlade, Oneida and Vilas—all within normal summer range. The still present and potentially burgeoning population the Southern Unit of the Kettle Moraine State Forest was documented by Benjamin Goss Bird Club.

Ruby-crowned Kinglet—Reported from four counties: Bayfield (Moldenhauer), Douglas (Svingen), Forest (Tricks), and Sawyer (Szymczak).

Eastern Bluebird—This year's total is 71 counties reporting. The only location supposedly without bluebirds was Menominee County, but no reports came from that county. Kent Hall reporting the results of the 850 member Bluebird Restoration Association of Wisconsin shows a reduced season for production due to the long cold spring and early summer. The organization reported 23,074 Eastern Bluebirds fledged from the 8,687 nest boxes that were monitored. The fledged bird number is 13,000 lower than 2012.

Veery—Reported from 63 counties, which is up substantially compared with 2012.

Swainson's Thrush—Three counties held birds this summer: 6 June, Bayfield (Anich), 24 June, Forest (Long), and 30 June Vilas (Prestby).

Hermit Thrush—Reported from 29 counties south to Marquette (Mezera and Geupel).

Wood Thrush—Reported from 56 counties.

American Robin—Reports came from 71 counties.

Gray Catbird—Reported from 69 counties.

Northern Mockingbird—Found in eight counties: Bayfield, Door, Iowa, Kewaunee, Marathon, Marinette, Portage, and Rock.

Brown Thrasher—Reported from 67 counties.

American Pipit—Erickson found a bird hanging around the Port Wing Harbor, Bayfield County, 3 June.

Cedar Waxwing—Reported from 70 counties.

Ovenbird—Reported from 67 counties.

Louisiana Waterthrush—Reports came from the traditional sites in the Baraboo Hills, Sauk County, Governor Dodge State Park, Iowa County, Wyalusing State Park, Grant County and also Vernon and Monroe Counties (Epstein) and a far north bird at Kinnikinnic State Park, Pierce County (Keferl).

Northern Waterthrush—The seventeen counties with reports this season are above average.

Blue-winged Warbler—Of the 39 reporting counties, Burnett (P. Campbell and DeRubeis) was the farthest north.

Figure 7. Even young Pileated Woodpeckers seem to favor a punk hairdo. This one was photographed at his home in Willow River State Park, St. Croix County, by Delia Unson.

Figure 8. Lunch is served for the young Pileated Woodpecker at Willow River State Park, St. Croix County, and recorded by Delia Unson.

Figure 9. Cozy sharing a cavity with a sibling! Home was in Willow River State Park, St. Croix County. Photo by Delia Unson.

Golden-winged Warbler—Of the 23 reporting counties, Walworth (Howe) was the farthest south.

Brewster's Warbler—Two reports: 9 June at the Bucktail Trail in Oneida County (Haese-Lehman) and 3 July in Walworth County (Watson).

Black-and-white Warbler—Reported from 34 counties overall.

Prothonotary Warbler—Observed in 11 counties north to Pierce (Vershaw).

Tennessee Warbler—Many late spring migrants were reported from these counties: Burnett, Door, Florence, La Crosse, Polk and the latest spring bird 11 June in Clark County (DeRubeis). A normal early fall migrant appeared in 31 July in Douglas County (Hager). A bird found 7 July in Iowa County (Beachy) may have missed the train north and vacationed in Wisconsin.

Nashville Warbler—Reported from 31 counties, which is nearly normal for long-term trends.

Connecticut Warbler—A late migrant was reported 6 June, Jefferson County (Coulter). Breeding range reports came from Bayfield (Johnson and Svingen), Burnett (McDonald and Bradley), Douglas (Svingen, Goldberg, Retter), and Vilas (Yoshitani).

Mourning Warbler—Reported from 42 counties overall.

Kentucky Warbler—Many observers reported 1–2 birds at Wyalusing State Park in Grant County. In addition, these counties held birds in June: Iowa (Holschbach), Monroe and Vernon (Epstein), and Walworth along the John Muir trails (mob).

Common Yellowthroat—Reported from 69 counties.

Hooded Warbler—Reported from 16 counties with the Kettle Moraine State Forest [four units] providing nearly all the sightings. The cumulative count for the Southern Unit of the Kettle Moraine State Forest was 61 birds.

American Redstart—Reported from 67 counties.

Kirtland's Warbler—For the 2012 breeding season, 15 males and 9 females were at the Adams County location. Twelve nesting attempts were made with 8 failing and the four successful nests fledging 13 young. A nesting attempt was made in Marinette County with a female on eggs 17 June, but the nest was empty on 26 June. Additional birds recorded outside the nesting areas were Marinette (1), Bayfield (1), and Douglas (1).

Cape May Warbler—Six county reports were submitted: Bayfield (Brady), Burnett (Maercklein), Door (Witynski), Florence (Kavanaghs), Forest (mob), and Vilas County (Prestby).

Cerulean Warbler—Reports came from 15 counties, including a continued occupation of territories in the Chippewa Ice Age Reserve in Chippewa County (Hoffman). The most reliable location for the species is still Wyalusing State Park (mob). An out of range bird was sighted 12 June in Bayfield County (Hogseth).

Northern Parula—Reported from 20 counties with most being in the more obvious northern counties. Significant numbers were tallied from these southern counties: Grant, Ozaukee, Walworth and Waukesha. Keeping with the trend produced by the cool wet springs were late migrants spotted in Washington, Ozaukee, and Sheboygan Counties.

Magnolia Warbler—The 2012 season's records came from 12 counties, which is the lowest in several years.

Blackburnian Warbler—Reported in 18 counties with better numbers than 2012.

Yellow Warbler—Reported from 69 counties.

Chestnut-sided Warbler—Reported from 47 counties.

Blackpoll Warbler—The flurry of late migrants continues with birds being reported from Bayfield, Brown, Burnett, Ozaukee, Portage, Sheboygan, and the last migrant 9 June in Clark County (Run).

Black-throated Blue Warbler—Reported from these 10 counties: Bayfield, Door, Florence, Fond du Lac, Forest, Green, Langlade, Manitowoc, Oconto, and Vilas.

Bay-breasted Warbler—Late migrants were recorded 3 June Forest County (Spahn) and 4 June Florence County (Richmond).

Palm Warbler—Late migrants were recorded 2 June Racine County (Williamson), 12 June Portage County (Pendergast). Breeding locations included; Douglas (Goldberg and Retter), Oconto (Straub), Oneida (Szymczak and Schaefer), and Vilas (Hannah).

Pine Warbler—Present through the season in 46 counties.

Yellow-rumped Warbler—Reported from 24 central and northern counties with the farthest south 7 June at the Potosi Boat Landing, Grant County (Thiele).

Yellow-throated Warbler—Found 7 June at Wyalusing State Park, Grant County (Backus).

Prairie Warbler—A cooperative male stayed at the Mackie Picnic Area in Waukesha County from 17 June (Prestby) through 1 July (Wood). Another was seen 9 June in La Crosse County (Thometz).

Black-throated Green Warbler—Reports came from 33 central and northern counties.

Canada Warbler—Noted in 21 counties, which is up compared with 2012.

Wilson's Warbler—Thirteen counties held birds the first few days of June. A bird seen 30 June at the Dewey Bog in Portage County (DeRubeis) may have never made it to the breeding grounds.

Yellow-breasted Chat—Five county reports: Crawford (mob), 2 locations in Dane (mob), Green (Fissel and Otto), 2 locations in Jefferson (mob), and Kenosha (mob).

Eastern Towhee—Reported from 63 counties.

Chipping Sparrow—Reported from 71 counties.

Clay-colored Sparrow—Reported from 61 counties. The only places seemingly devoid of birds were the southern Driftless Area and the densely forested areas of North Central Wisconsin.

Field Sparrow—Fifty-eight counties held birds with the far north harbor few birds except in barrens areas.

Vesper Sparrow—Reported from 55 counties.

Lark Sparrow—In 2013, Lark Sparrows were reported from 15 counties. The best location for high numbers was the Spring Green Reserve in Sauk County where White found 14 individuals on 3 June.

Savannah Sparrow—Reported from 69 counties.

Grasshopper Sparrow—Among the 43 reporting counties, the highest number of individuals was 25 from the Buena Vista Grasslands in Portage County (Kemp).

Henslow's Sparrow—Noted in 27 mostly southern counties. A 13 June sighting in far northern Polk County (Smith) was by far the most northerly.

Le Conte's Sparrow—Reported from: Bayfield (Erickson), Burnett (McDonald), Marathon (Belter), Oneida (mob), Rusk (Anich), and Wood (Prestby and Kemp).

Nelson's Sparrow—No reports for the summer of 2013.

Song Sparrow—Reported from 71 counties.

Lincoln's Sparrow—Reported from these 9 northern counties: Bayfield, Florence, Forest, Marinette, Marathon, Oneida, Rusk, Sawyer, and Vilas. In addition, a 1–3 June sighting along Ball Road in Wood County (Prestby and Kemp) may have been another in the long list of late migrants.

Swamp Sparrow—Reported from 66 counties.

White-throated Sparrow—Reported from 27 counties, including 3 birds 15 June at Cedarburg Bog, Ozaukee County (Kemp).

White-crowned Sparrow—Reported this summer twice in Door County: 3 June (Lukes) and 29 July at Rock Island State Park (Fenske).

Dark-eyed Junco—Noted in these northern counties: Douglas, Forest, Marinette, and Vilas. A bird seen 1 June in La Crosse County (Stark) was another in the long list of probable late migrants.

Scarlet Tanager—Reported from 67 counties.

Northern Cardinal—Reported from 67 counties.

Rose-breasted Grosbeak—Reported from 70 counties.

Blue Grosbeak—What a summer for this species! Several observers found a bird (Fig. 10) back at the Spring Green Preserve in Sauk County, where it was seen a few years ago. This bird hung around 2–16 June and was seen by many. On the 26th of June another bird appeared in Iowa County (Hottman) and a third bird was photographed and audio recorded at the Fort McCoy State Natural Areas in Monroe County on 6 July (Boland).

Indigo Bunting—Reported from 71 counties.

Dickcissel—While not matching the phenomenal invasion of 2012, this species was seen in a highly respectable 61 counties.

Bobolink—Reported from 64 counties.

Red-winged Blackbird—Reported from 71 counties.

Eastern Meadowlark—This year the number of counties in which birders found this species was 64.

Western Meadowlark—Observers found this species in 14 counties this year. The best locations in the state for this species are the Buena Vista Grasslands in Portage County where Prestby recorded only a maximum of 10 birds.

Yellow-headed Blackbird—Noted in 26 counties. The highest number of individuals reported was 1110 at Rush Lake Winnebago County 14 June (Ziebell).

Figure 10. Blue Grosbeak at Spring Green Preserve in Sauk County on 13 June 2013 was pictured by Mark Hodgson.

Brewer's Blackbird—Noted in 27 counties.

Common Grackle—Reported from 71 counties.

Brown-headed Cowbird—Reported from 68 counties with the lowest numbers coming from the most heavily wooded counties.

Orchard Oriole—Noted in 44 counties this season up slightly over 2012. The northern limits were Burnett (Stutz), Taylor (P. Campbell and Cameron), and Marinette (J. Campbell) Counties.

Baltimore Oriole—Reported from 69 counties.

Purple Finch—Observed in 22 mostly northern counties with the most consistent numbers coming from far northeast Wisconsin. Unusual was a 2 June sighting in Dane County (Kerowicz).

House Finch—Reported from 62 counties.

Red Crossbill—Reported from six counties: Bayfield (Anich), Douglas (Brady), Forest (Szymczak and Schaefer), Langlade (Johnson), Oneida (Kavanaghs), and Price (Parker).

White-winged Crossbill—Two reporting counties: 28 June Fond du Lac (Inderdahl), and 28 July Oneida (Coulter).

Common Redpoll—An incredibly late bird stayed until 6 June where it was photographed at the Conserve School in Vilas County (Neufeld and Toner).

Pine Siskin—Reports from 19 counties, continuing the low summer season numbers for the past few years. Birds remained in several southeast continued throughout the reporting period.

American Goldfinch—Reported from 71 counties.

Evening Grosbeak—Reports from 5 counties: Bayfield (Moldenhauer), Door (Lukes), Douglas (Kirk), Florence (mob), and Forest (mob).

Contributors and Cited Observers

The list below identifies the credited contributors to this issue. Several hundred more contributors are also acknowledged for their submissions, and please see the lesson for this season to describe how your data are put to use.

Marge Anderson, Nick Anich, Mary Backus, Jeff Bahls, Danielle Baumann, Emma Beachy, Dan Belter, Steve Betchkal, Leslie Boland, Ryan Brady, Cynthia Bridge, Rory Cameron, Joan Campbell, Pamela Campbell, Jack Coulter, Guy David, Bruce DeLong, Alyssa DeRubeis, Robert Domagalski, Brian Doverspike, Jim Edlhuber, Eric Epstein, Laura Erickson, Karen Etter Hale, Tim Fenske, Peter Fisssel, Sean Fitzgerald, James Frank, Geoffrey Geupel, Nathan Goldberg, Dennis Gustafson, Vanessa Haese-Lehman, Stephen Hager, Kent Hall, Ashley Hannah, Judy Haseleu, Chuck Heikkinen, Michelle Helin, Liz Herzmann, Randy Hoffman, Bill Hogseth, Aaron Holschbach, Greg Hottman, Steven Houdek, Eric Howe, Judith Huf, Myles Hurlburt, Marcia Hurst, Lori Inderdahl, Dan Jackson, David Johnson, Bob Kavanagh, Kay Kavanagh, Amy Kearns, Eugene Keferl, Matt Kemp, Sam Kerowicz, Ted Keyel, John Kirk, Anthony Licata, Kyle Lindemer, Lisa Lindemer, Julie Long, Scott Loss, Steve Lubahn, Roy Lukes, Robin Maercklein, Sumner Matteson, Bradley McDonald, Keith Merkle, Noah Mezera, Barbara Moldenhauer, Steve Murkowski, Dana Neufeld, Paul Noeldner, Tim Oksiuta, Jim Otto, Linda Parker, Andy Paulios, Mike Peczynski, Rob Pendergast, Sue Peterson, Tom Prestby, Wolfe Repass, Michael Retter, Nancy Richmond, Hazel Run, Sarah Sabatke, Bryan Sabourin, Tom Schaefer, Darrell Schiffman, Paul Schilke, Kristin Schmitt, Daniel Schneider, Dave Sehloff, Kerry Sehloff, Josh Seibel, Bernie Shumway, Dean Shumway, Adam Sinkula, Jerry Smith, Scott Snead, Charles Sontag, Robert Spahn, Hans Spiecker, Brad Steger, Gary Stout, Doug Stratton, Karen Straub, Aaron Stutz, Peder Svingen, Jack Swelstad, Andrea Szymczak, Craig Taylor, Daryl Tessen, Jason Thiele, Steve Thiessen, Hillary Thompson, Sarah Toner, Joel Trick, Patti Trick, Michael Tyskiewicz, Dan Vershaw, Nick Walton, Jay Watson, Scott Weberpal, Jessica Wedell, Ben West, Jeffrey White, Geoffrey Williamson, Max Witynski, Tom Wood, Quentin Yoerger, Leslie Yoshanti, Tom Younkin, Norma Zehner, and Tom Ziebell.

American White Pelican with a fish was photographed by Jack Bartholmai.

WSO Records Committee Report: Summer 2013

Quentin Yoerger

6831 N. Francis Drive
Evansville, Wisconsin 53536
608. 882. 6078
harrierqman@gmail.com

The WSO Records Committee reviewed 40 records of 20 species for the Summer 2013 season, accepting 33 of them (83%). The season highlight was two separate White Ibis sightings. One bird was seen by many at the Bong State Recreation Area in Kenosha County and another at Point Au Sable in Brown County. There were only 2 prior reports of White Ibis in Wisconsin. A Blue Grosbeak was reported from three locations, Sheboygan was good for unusual gulls, and a Tricolored Heron was seen for several days at the Findlay Road VPA in Jefferson County. Noteworthy late departure dates were established for American Pipit and Common Redpoll.

Accepted Records

Table 1 provides a list of records accepted by the WSO Records Committee during the Summer 2013 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 no dissenting votes are accepted into the state records.

Table 1. List of rare bird records accepted by the WSO Records Committee during the Summer 2013 season.

Species	Date	Observer	Location	County	Other	Outcome	Tally
American Pipit	6/3	Laura Erickson	—	Bayfield	Late	Accept	5 - 0
Blue Grosbeak	6/11	Mark Hodgson	Spring Green Pre.	Sauk		Accept	5 - 0
Blue Grosbeak	6/26	Gregory Hottman	Schurch-Thomson Pr.	Iowa		Accept	5 - 0
Blue Grosbeak	7/6	Lindsey Boland	Fort McCoy Barrens	Monroe		Accept	4 - 1
Brewster's Warbler	6/9	Anessa Haese-Lehman	Bucktail Lane on Sheepranch Rd	Oneida		Accept	5 - 0
Chuck-will's-widow	6/23	Jym Mooney	Young Rd	Walworth/Jefferson		Accept	5 - 0
Common Redpoll	6/6	Sarah Toner	Conserve School	Vilas	Late	Accept	5 - 0
Laughing Gull	6/15	Thomas Wood	North Point	Sheboygan		Accept	5 - 0
Laughing Gull	6/16	Jym Mooney	North Point	Sheboygan		Accept	5 - 0
Laughing Gull	6/2	M. Obs.	North Point	Sheboygan		Accept	5 - 0
Little Blue Heron	5/30	Frank Hall	Bong SRA	Kenosha		Accept	4 - 1
Little Gull	6/2	Kerry Sehloff	North Point	Sheboygan		Accept	5 - 0
Little Gull	6/5	Thomas Wood	North Point	Sheboygan		Accept	5 - 0
Little Gull	6/9	Adam Sinkula	Algoma Harbor	Kewaunee		Accept	5 - 0
Little Gull	6/28	Kyle Lindemer	North Point	Sheboygan		Accept	5 - 0
Loggerhead Shrike	6/1	Kyle Lindemer	Taft Rd/n of Hwy W	Portage		Accept	5 - 0
Loggerhead Shrike	6/10	Daniel Schneider	Hwy F & W Blue Mounds Rd	Dane		Accept	5 - 0
Prairie Warbler	6/9	Jon Thometz	Camp Decorah	La Crosse		Accept	5 - 0
Scissor-tailed Flycatcher	6/2	Myles Hurlburt	Pioneer Rd	Marathon		Accept	4 - 1
Scissor-tailed Flycatcher	6/2	Sarah Sabatke	Pioneer Ave	Marathon		Accept	5 - 0
Tricolored Heron	6/18	Karen Etter Hale	Findlay Rd VPA	Jefferson		Accept	5 - 0
Tricolored Heron	6/20	Thomas Wood	Findlay Rd VPA	Jefferson		Accept	5 - 0
Tricolored Heron	6/26	Sunil Gopalan	Findlay Rd VPA	Jefferson		Accept	5 - 0
White Ibis	6/6	John Dixon	Bong SRA	Kenosha		Accept	5 - 0
White Ibis	6/6	Sean Fitzgerald	Bong SRA	Kenosha		Accept	5 - 0
White Ibis	6/6	Mark Korducki	Bong SRA	Kenosha		Accept	5 - 0
White Ibis	6/6	Jym Mooney	Bong SRA	Kenosha		Accept	5 - 0
White Ibis	6/7	Thomas Wood	Bong SRA	Kenosha		Accept	5 - 0
White Ibis	7/18	Tom Prestby	Tip-Point Au Sable	Brown		Accept	5 - 0
White Ibis	6/7	Darrel Tessen	Bong SRA	Kenosha		Accept	5 - 0
White-faced Ibis	4/30	Rory Cameron	Woodford's Ponds	Chippewa		Accept	5 - 0
White-winged Dove	6/9	Gary Stout	Village of Biron	Wood		Accept	5 - 0
White-winged Dove	6/16	Bernie Shumway	Rural Sister Bay	Door		Accept	5 - 0

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 result in a Record Not Accepted.

Barn Owl—
Oaklawn Academy, Dane County, 18 July 2013 (0-5).

The report indicated that the bird was not personally seen. Identification was based upon a "shriek or scream." The report did not eliminate a begging juvenile Great Horned Owl which can be fairly common in the summer.

Black-bellied Whistling Duck—
Horicon Marsh, Dodge County, 2 June 2013 (2-3).

The bird was described with a "striking upperwing stripe that extended almost to bases of primaries. Also saw the orangish neck and breast coloration. Bird was flying directly away." For such a rare bird the committee would like to see more detail in the report. Several field marks for this species were not included in the report. The report did not eliminate hybrid Mallards or other escaped species.

Great Grey Owl—
Muskego, Waukesha County, 9 June 2013 (0-5).

The only description provided was "Very large, grey/reddish color." For a species uncommon in Wisconsin the committee needs a much more detailed description noting the field marks that distinguish this species from the very common Barred and Great Horned Owls.

King Rail—
Horicon Marsh, Dodge County, 14 June 2013 (0-5).

This bird was identified as heard only with vocalizations of "Harsh, low pitched kuk-kuk-kuk." Virginia Rails are known to give deep sounding grunts. No mention of the kek-kek or kek-burr calls that are diagnostic for King Rail was given.

Northern Shrike—
Taft Road north of County W, Portage County, 7 June 2013 (0-5).

An inexperienced birder reported the bird from a location known to have Loggerhead Shrike. This is an example where it is very beneficial to know which of the two very similar species occurs during the summer in Wisconsin.

Scissor-tailed Flycatcher—
Seagull Bar, Marinette County, 4 June 2013 (0-5).

The bird was described as "Light colored bird about robin size, with a very long streaming tail." While the description is highly suggestive, there was little effort to eliminate other species that could fit this description such as Fork-tailed Flycatcher, cuckoos, and Say's Phoebe.

Tricolored Heron—
Navarino State Wildlife Area, Shawno County, 16 June 2013 (3-2).

Report was of a single bird in flight with "noticeable yellow legs, brownish plumage above and lighter belly." Also described as "medium sized heron—much smaller than a Great Blue

Heron and much larger than a Green Heron." The committee felt that a more detailed description of field marks seen is required to positively identify this species. Much of the ID seemed to be based upon the size of the bird which can be difficult to judge accurately when a bird is seen alone without other known species to compare against directly.

Pied-billed Grebe adult with young seen by Davor Grgic

Book Review

Jameson, Conor Mark. 2013. ***Looking for the Goshawk.*** *Bloomsbury Publishing. ISBN 978-1-4081-6487-7; hardcover, 368 pp. Ca. US$20 at amazon.com.*

Reference here is to the Northern Goshawk, *Accipiter gentilis*. The author's focus is on the species in the British Isles, with ample excursions to continental Europe and to the United States.

This is not a monograph on the species, but rather a personal memoir of what is almost an obsession. He is simply so in love with his subject that everything else tends to fade into the background. He does make occasional mention of his wife, Sara, but she is not included in the index. The very presence of an index in a book of this nature is welcome, even if it was compiled very selectively: for example, Mallard is mentioned in passing on page 305, and got indexed, but so is Black Duck, in the same sentence, and it's omitted.

You're going to want to read this book, that's a given. But you will need some auxiliary resources: first off, a good book on the birds of the British Isles. There are swarms of them, at minimal prices, at the same website where you're going to buy this book. Or perhaps you already know what the Brits mean by Buzzard, Hobby, Hoopoe, and Mistle Thrush. Next thing you need is an atlas or roadmap of the British Isles. All manner of towns, shires, and districts are mentioned, but there's no map in the book – there wouldn't be a map in an American book of this genre, either, it's fair to say.

Another adjunct you'll want is access to the internet, also helpful for birds and geography, to see what a Grass Snake is in England. The creature is mentioned twice, and the author's language with respect to this creature is almost lyrical. *Natrix natrix*, says Wikipedia, which also says it can be 2–3 feet long. The author generally eschews Latin names, which is fine where a standardized common-language nomenclature exists—like the AOU Checklist for the birds of the New World. But common names for many other creatures are not standardized (don't even mention common names for plants), and the occasional Latin binomial would be helpful. "Feral Pigeon" is routinely mentioned; this is an accepted common name (by the British Ornithologists' Union) for *Columba livia*, Rock Pigeon; that is, "park pigeon." The AOU Checklist does not include Feral Pigeon.

The protagonist in *Lady Chatterley's*

Lover was, of course, a gamekeeper. I almost wish my knowledge of that profession stopped there. But it is the author's duty to record how gamekeepers in the British Isles routinely slaughtered every identifiable predator of the Red Grouse and the (introduced) Pheasant, which I take to be the Ring-necked Pheasant, *Phasianus colchicus*. The gamekeepers submitted detailed lists of the creatures they persecuted to their employers, and apparently many of these lists have survived in various archives. As a result, the Northern Goshawk was for many years extirpated in the British Isles – the author prefers to say they became extinct. And that accounts for the title: *Looking for the Goshawk*.

Chapter 4, titled simply "Berlin," pp. 81-101, would merit a whole book of its own, for it details how the Northern Goshawk has become a resident breeder in that vast city, now again the capitol of Germany. The birds regularly inhabit cemeteries and busy parks, unfazed by streams of people moving about below their nest tree. There are also well-established populations in Hamburg and Cologne. The author fervently hopes for a time when the same adaptation will occur on his home territory.—Neil A. Harriman

This Indigo Bunting was photographed by Alyssa DeRubeis after it was banded by Bob Welch.

About the Artists

Jack R. Bartholmai is an amateur wildlife photographer and wood sculptor living near Beaver Dam with his wife Holly. His work appears frequently in local newspapers, travel brochures, calendars, and bird publications. He gives numerous presentations on birds and his work. He is an active member of the Horicon Bird Club. Jack was the 2005 recipient of the WSO Bronze Passenger Pigeon Award.

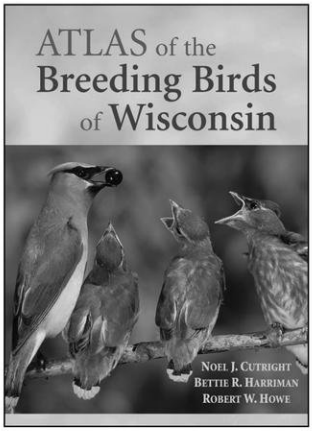
Alyssa DeRubeis, a Minnesota native, is now living in Stevens Point while attending UW-SP where she is a senior, double-majoring in Wildlife Ecology and Biology. She hopes to do avian-related technician work before pursuing a master's degree in Ornithology. Since 2011, Alyssa has been doing nature photography as well as birding. She has recently volunteered to be the next Summer Field Notes compiler for *The Passenger Pigeon*.

Sunil Gopalan moonlights as a nature photographer and birding enthusiast. His primary focus with wildlife photography is to capture nature in its raw form in the least intrusive manner possible. He currently lives and works in the Madison area with his family and credits his wife Heidi for allowing this father the opportunity to induge his passion. His work from Wisconsin and beyond can be viewed at www.sunilsimages.com

Davor Grgic is an avid birder and amateur nature photographer. He and his wife Patti live in rural Elkhart Lake. When his "day job" in IT and sustainability permits, he also enjoys traveling and exploring nature. In addition to birds, Davor's photography interests include other wildlife, landscape, and occasional macro photography. Beyond Wisconsin, many of his photographs reflect bird and nature explorations across the US and international locations. You can find more of his work at www.flickr.com/photos/dgrgic

Bob Larson, who lives in Kaukauna, is an advanced amateur photographer who concentrates his photography in the Fox Valley area. All nature centers and Haunts areas are fair game. Outagamie, Winnebago, Calumet, Brown, and Waushara Counties get the most attention. He switched to digital just before it became affordable and his been learning ever since.

Tom Uttech was born in Merrill, Wisconsin in 1942. He has been obsessed by both birds and drawing since early childhood. The cover of this issue is a small portion of a large painting which is owned by the Crystal Bridges Museum of American Art in Bentonville, Arkansas. Tom also designed the logo for Bird City Wisconsin and the Western Great Lakes Bird and Bat Observatory. He is a long-time WSO member and his wife, Mary, has been the Editor of The Badger Birder for over ten years.



Atlas of the Breeding Birds of Wisconsin

- Features almost 1,400 photographs, distribution maps, and figures – **all in color**!
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The largest natural history survey ever conducted in Wisconsin has resulted in this comprehensive guide to birds that breed in the state.

Hardcover, large format (9" x 11.25"), 624 pages. Copyright 2006. ISBN: 978-0-9774986-0-4.

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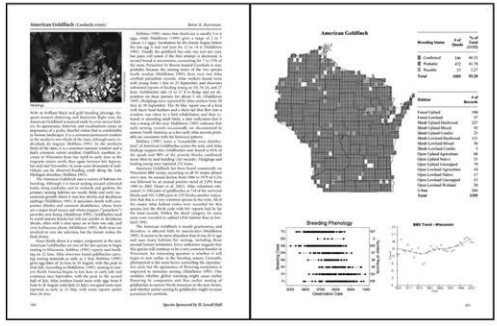

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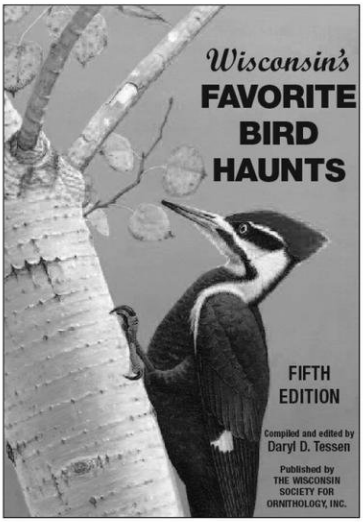

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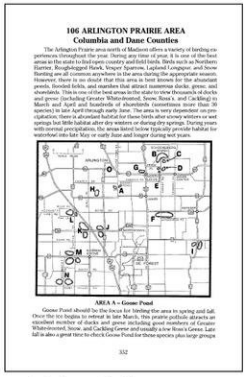
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COMMITTEE CHAIRS (2013–2014)

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Bookstore* Penny Fish, 5539 Indian Mound Circle, Sheboygan, WI 53081; 920. 918. 6892; wsobookstore@hotmail.com

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Education* Jim Knickelbine, Woodland Dunes Nature Center, PO Box 486, Two Rivers, WI 54241; 920. 793. 4007; nature@woodlanddunes.org

Field Trips* Thomas R. Schultz, N6104 Honeysuckle Lane, Green Lake, WI 54941-9609; 920. 960. 1796; trschultz@centurytel.net; and Jeffrey L. Baughman, W2640 Middle Road, Campbellsport, WI 53010; 920. 960. 4732; jbaughman@csd.k12.wi.us

File Keeper Thomas C. Erdman, Richter Museum of Natural History, MAC 212, University of Wisconsin-Green Bay, 2420 Nicolet Drive, Green Bay, WI 54911-7001

Historian* Nancy J. Nabak, 410 Stonehedge Road, Green Bay, WI 54302; 902. 655. 4185; nnabak@sbcglobal.net

Honey Creek* Levi Wood, 4222 Mohawk Drive, Madison, WI 53711-3723; 608. 277. 7959; woodlevi@aol.com

Legal Counsel David L. Kinnamon, 9507 N. Wakefield Court, Bayside, WI 53217-1245; 414. 277. 5000

Membership* Jesse Peterson, 7680 Payvery Trail, Middleton, WI 53562; 608. 836. 8334; peterson.jesse@tds.net

Records* Quentin Yoerger, 6831 N. Francis Drive, Evansville, WI 53536; 608. 882. 6078; harrierqman@gmail.com

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Research* David Drake, Dept. of Forest and Wildlife Ecology, University of Wisconsin-Madison, 1630 Linden Drive, Madison WI 53706; 608. 890. 0445; ddrake2@wisc.edu

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Web Administrator* Paul Jakoubek, 5305 Pheasant Hill Road, Monona, WI 53716; 608. 221. 0944; webadmin@wsobirds.org

Youth Education Coordinator* Ed Hahn, 119 N 9th Street, Watertown, WI 53094; 920. 262. 0499; ehahnbirding@gmail.com

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