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THE PASSENGER PIGEON
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Send all manuscripts and correspondence to the Editor; information for "Seasonal Field-Notes" should be sent to the Associate Editor or the appropriate Field-Note Compiler. Manuscripts that deal with information on birds in the State of Wisconsin, with ornithological topics of interest to WSO members, or with activities of the WSO will be considered for publication. All manuscripts submitted for possible publication should be typewritten, double-spaced, and on only one side of page-numbered typing paper. Illustrations should be submitted as photographs or good-quality drawings. Keep in mind that illustrations must remain legible when reduced to fit on a journal page. All English and scientific names of birds mentioned in manuscripts should follow *The A.O.U. Checklist of North American Birds (6th Edition)*. Use issues after Vol. 50, No. 1, 1988, as a general guide to style.

Tri-State Birding Convention

An unprecedented event will be taking place soon. Our annual convention in La Crosse will not be just a Wisconsin Society for Ornithology convention. It will also include the Iowa Ornithologists Union and the Minnesota Ornithologists Union. You noticed I did not say that we in Wisconsin were hosting the convention, for that is not the case. This is a joint convention with each state organization contributing equally for the benefit of their members and the birds of the upper midwest.

I believe this convention has the potential to be one of our most rewarding conventions so far. I am not trying to say other conventions have not been rewarding; they all had their own unique qualities. This convention will be rewarding for two reasons—these are people and birds. So what else is new, all conventions have this!

In this case the people and the birds are different. The differences in the people we will meet and the way we look at birds may be the reason the forthcoming convention is precedent setting. We in North America have a very competitive spirit that is pervasive throughout our society.

By using college sports as an example, it is easy to see how a simple game can generate pride in a state, which can transform into a we-are-better-than-you attitude. As an example, Iowa trounces Wisconsin in football (a typical occurrence). Does this mean every person in Iowa is better than every person in Wisconsin? Of Course Not. All it means is on that one day the members of the Iowa football team were better than the members of the Wisconsin football team at football. This is just one example of activities that generate state pride or national pride. What does this have to do with an ornithological convention? I would like to think a love for birds goes beyond regional competitiveness, but I'm afraid it does not always.

I hope this convention demonstrates that birders from Wisconsin, Iowa and Minnesota are the same type of people with the same concerns for birdlife. I have attended international conventions where it would be easy to categorize people by their dress and speech; however, a common purpose makes all the differences seem to disappear. This convention could forge a new partnership among ornithologists of all three states based on our mutual interests in the preservation, protection, and enjoyment of our birdlife. Try to develop new friendships and contacts that cross state boundaries.

The most important benefit, I believe, that could come from this convention is the realization if we are to help most of our birds we have to look at a much larger scale than state boundaries. Birds neither care about nor respond to arbitrary political boundaries drawn on maps hundreds of years ago. They respond to habitat. If we are to really help species, we have to look at their range-wide habitat, regardless of political boundaries.

This brings me to listing! Now don't get me wrong. I'm not opposed to listing! It is a natural by-product of serious field birding. First, you get hooked by the natural wonder of birds, then an expanded knowledge of birds occurs, then it becomes hard to remember what was seen when and where, then listing. Listing can be whatever the lister wants to make it be. Anything from occasional trip listing, to daily lists, years list, county lists, state list, national lists, lists while plowing, list while driving to Aunt Martha's, or lists dreamed up while compiling other lists. The seriousness, completeness and competitiveness of list-making can be whatever the lister wants it to be. Several somewhat competitive listings occur each year. Big Day Counts, May Day Counts, Big Year Counts, etc. These activities are fun, exhilarating, exhausting and competitive. Many people have life lists of the birds they have seen throughout their lifetimes. These life lists too have become the basis for competition. The political boundary limits put on North America, has allowed a competitive life-list competition.

It is essential to realize that these competitive activities are almost entirely selfish in nature and have very little to do with the welfare of birds themselves. My favorite quote on this subject is from Lane's book, *The Birders Guide to the Rio Grande Valley of Texas*, where he states in reference to the Brown Jay, "Be sure that they are on the American side before you count them." Does this mean the jay is less important unless it crosses the river!

By attending a regional convention, you may get valuable insights into the real ecological status of birds throughout their range in the upper midwest. Instead of keeping state or national bird lists, it may be more beneficial to keep bird lists for the major biotic communities. I can envision the day when competitive birders would compare their Northern Hardwood Transition Forest list or tall-grass prairie list instead of Big Day, state, or North American lists. This would eliminate the arbitrariness of political boundaries and increase our understanding of community ecology.

This may or may not be accepted by birders, but it's worth discussing at this convention. I'm looking forward to this convention. It is a great opportunity. I hope you will join us.

President

The 1989 Wisconsin Christmas Bird Counts

The 1989 Christmas Bird Counts were unexpectedly impressive. Many species were present in unusually high numbers even though only 133 species and few rarities were reported

by William L. Hilsenhoff

The 1989 Christmas Bird Counts were perhaps the best we have ever experienced in Wisconsin. The 133 species that were reported falls short of the 141 in 1974 and 139 in 1987, but numbers of many species were truly phenomenal. At least three-fourths of the common species occurred in above normal numbers, many of them in record numbers. While the counts in most years are highlighted by the rarities, the 1989 counts will be remembered more for the unusual abundance of numerous species. The very large numbers of all winter finches, both waxwings, many hawks, Red-breasted Nuthatches, most sparrows, open country birds, and thrushes, especially the 64 Eastern Bluebirds, will not soon be forgotten. These results were unexpected in a year when December temperatures were much below average, lakes and most rivers were frozen, and only a light snow cover was present to force birds to feeders and roadsides where they could be easily counted.

There were, however, several rarities that should be noted. Thayer's Gulls at Milwaukee and Newburg represent only the fourth year for this species on Wisconsin Christmas Counts. A Marsh Wren at Poynette and Rose-breasted Grosbeaks at Grantsburg and Willard are species that were seen for the fifth year. A Double-crested Cormorant at Green Bay (eighth year), a Harlequin Duck at Madison (eighth year), an American Woodcock at Richland Center (ninth year) and Savannah Sparrows at Green Bay, Bridgeport, and Racine (tenth year) round out the list of rarities. The House Finch, which although it was seen for only the fourth year, can no longer be considered a rarity. The first House Finch on a Wisconsin Christmas Count was reported in 1986 when 8 were seen. Thirty-six were found in 1987, 108 in 1988, and this year 617 were reported. Reports of a Broad-winged Hawk at Appleton, Laughing Gulls at Newburg, and Chestnut-collared Longspurs at Poynette were not included because the documentation did not include sufficient detail for such rare

sightings; the latter record was reviewed and rejected by the Records Committee.

The overall quality of the counts this year was very good. There were ten or more field observers on half of the counts, and one or more hours was spent listening for owls on more than half of the counts. At least 20 species were seen on all counts, and 50 or more were found on 14 counts. The leading counts were at Madison and Newburg, which reported 77 species, followed by Sauk City (69 species), Poynette (67 species), Shawano, Green Bay, and Bridgeport (62 species), Appleton (61 species), and Milwaukee (60 species).

Location and Details of the Counts

Information on weather and participation in each count is summarized in Table 1. Seventy-eight counts were compiled this year. Three more counts were made (Kettle Moraine – 33 species, Pensaukee – 41 species, New Richmond – 44 species), but report forms for these counts were not received until after the other counts had been compiled and tables had been typed. Three counts that were made in 1988 (Cloverland, Minoqua, Wisconsin Rapids) were not repeated in 1989, but there were four returning counts (Arpin, Peshtigo, Platteville, Sturgeon Bay). Locations of the counts are shown in Figure 1. The counts are numbered generally from north to south and west to east. An alphabetical listing follows (bold face type) along with the count number (Figure 1), the exact location of the count center, and the name, address, and telephone number of the compiler.

Adams (31); 1.25 miles S of Dellwood on Hwy. Z; Ted May, Rt. 2, Box 50, Whitehall, WI, 54773; (715) 694-2170. **Amery** (16); Jct. Soo Line RR and Hwy. D; Bernie Klugow, Box 13, Brule, WI 54820; (715) 372-4858. **Amherst** (33); Jct. Hwys. A and B; David Borchardt, 10296 Yellow Brick Rd., Amherst, WI 54406; (715) 824-3971. **Appleton** (38); Jct. Hwys. 10 and 45; John Shillinglaw, 1952 Palisades Dr., Appleton, WI 54915; (414) 731-3237. **Arcadia** (46); Hwy. J 1.5 miles S of Arcadia; Thomas Roskos, Rt. 1, Box 201, Arcadia, WI 54612; (608) 323-7072. **Arpin** (30); Jct. Hwy. C and Oak Rd.; Dean Albrecht, 6477 Main St., Arpin, WI 54410; (715) 652-2245. **Ashland** (2); Jct. Hwys. 2 and 112; Dick Verch, Biology Department, Northland College, Ashland, WI 54806; (715) 682-1335. **Baraboo** (53); Jct. City View Rd. and Hwy. A; Raymond Dischler, 3830 Anchor Dr., Madison, WI 53714; (608) 249-4581. **Bayfield** (1); T 50 N, R 5 W, S-22; Albert Roy, 906 Water St., Ashland, WI 54806; (715) 682-5334. **Beloit** (69); N end Big Hill Park; John & Edith Brakefield, Rt. 2, Box 294, Evansville, WI 53536; (608) 876-6242. **Black River Falls** (29); Jct. Norman Rd. and Hwy. 54; Dorothy Harmer, Rt. 1, Box 70, Black River Falls, WI 54615; (715) 284-4098. **Blanchardville** (56); 2.5 miles SW of Blanchardville; David Willard, Bird Division, Field Museum of Natural History, Roosevelt Rd. at Lakeshore Dr., Chicago, IL 60605; (312) 922-9410 ext. 269. **Bowler** (25); Jct. Hwys N and D; Linda Slater, Rt. 1, Box 230, Birnamwood, WI; (715) 449-2664. **Bridgeport** (51); 2 miles SE of Bridgeport; Sam Robbins, 14 S. Roby Rd., Madison, WI 53705; (608) 233-3581. **Brule** (3); Jct. Hwys B and 27; Bernard Klugow, Box 13, Brule, WI 54820; (715) 372-4858. **Caroline** (26); 2 miles W of Caroline; Mark Peterson, Box 53, Caroline, WI 54928; (715) 754-2661. **Chippewa Falls** (18); Jct. Hwys.

Table 1. Details of the Counts.

Name of count	Date	Sky	Snow (in)	Wind Dir.	Wind Vel. (mph)	High Temp. (°F)	Low Temp. (°F)	Observers at Feeders	Observers in the Field	Parties	Party hours	Owl hours
Adams	12/30	Cloudy	2	Var.	1–5	22	18	3	7	4	24	0
Amery	12/23	Partly Cloudy	3	SE-S	5–10	21	−12	7	7	5	44	1
Amherst	12/16	Partly Cloudy	3	NW	3–5	8	−10	2	12	5	22	0
Appleton	12/16	Fair	4	SW	10–15	3	−10	4	30	14	60	0
Arcadia	12/30	Mostly Cloudy	2	W		25	15	0	4	2	18.5	1
Arpin	12/16	Cloudy	5	N-NW		12	−2	5	5	3	22	1
Ashland	12/16	Cloudy	8	WNW	5–10	11	3	1	8	4	28	0
Baraboo	12/28	Mostly Cloudy	3	SW	15–20	36	25	2	9	3	29	1.5
Bayfield	12/19	Partly Cloudy	8	NW	5–15	−1	−15	0	4	3	22.5	0
Beloit	12/16	Fair	2	NW	2–3	7	−10	2	22	11	56	0
Black River Falls	12/30	Rain-Snow	3	W	0–5	27	19	13	10	4	15.5	3.5
Blanchardville	12/17	PCl-Fair	tr	W	5–10	15	8	0	7	3	23.5	2.5
Bowler	12/17	Cloudy-PCl	5			20	8	10	3	3	8.5	0
Bridgeport	12/19	Fair-PCl	1	NW	5–12	9	−4	0	15	7	50	5
Brule	12/26	Partly Cloudy	5	SW-S		26	−24	9	8	6	54	4
Caroline	12/30	Cloudy	5	NE	5–15	23	15	13	7	3	14	1
Chippewa Falls	12/23	Fair-Cloudy	1	W-SW	5–10	−1	−14	0	8	4	33	0
Columbus	12/27	Cloudy	2	Var.	2–4	30	17	1	4	3	24	1
Cooksville	1/1	Cloudy-PCl	3	WNW	5–12	30	26	2	4	2	15	2
Durand	12/16	Snow-Cloudy	1	W	0–5	11	3	0	4	2	17	0
Ephraim	12/16	MCl-PCl	10	SW	5–12	14	4	26	26	15	54	0
Fifield	12/21	Fair	6	WNW	0–10	−16	−28	23	3	3	12.5	0
Fond du Lac	12/17	MCl-PCl	1	SW	0–10	17	7	1	10	5	19.75	0
Fort Atkinson	12/31	Cloudy	4	NW	8–15	27	23	0	5	3	15	0
Fremont	12/26	Fair-PCl	1	NW-SW	5–10	10	−4	1	4	2	17	0.5
Gilman	12/16	Fair	2	SW-W	0–7	12	0	5	11	5	39	4
Grantsburg	12/16	Cloudy	3	E-NE	8–11	13	1	0	20	11	75.25	0
Green Bay	12/16	Fair-PCl	8	W-SW	5–12	10	−13	17	30	13	66	6
Green Lake	1/1	Cloudy-PCl	2	SW	0–15	28	25	0	10	4	20	0
Hales Corners	12/17	Cloudy-Fair	1	W-SW	5–10	20	10	2	12	7	35.6	1
Hartford	12/30	Cloudy	2	E	10	31	28	11	13	4	33.75	5.25
Holcombe	12/27	Cloudy	2	WNW	0–10	18	11	0	10	4	31.5	0.75
Horicon Marsh	12/16	Fair-PCl	1	NW	5	5	−5	0	14	7	46.5	0
Hudson	1/1	Cloudy-Fair	2	SW-SE	10–14	24	16	1	6	3	13	0
Kenosha	12/18	Fair	1	WSW-WNW	0–3	16	4	0	1	1	10	0
Kickapoo Valley	12/16	Cloudy	1	W	5–10	3	−4	0	6	3	15.5	0.5
LaCrosse	12/16	Snow	2	NW	6–8	13	2	2	21	14	75	2
Lake Geneva	12/31	Cloudy-Snow	5	NE-NW	4–5	33	22	4	3	2	11.5	2
Lakewood	12/26	Fair-MCl	3	W	5–12	7	−8	0	1	1	8.75	0
Luck	12/16	Partly Cloudy	3	W	5–15	14	−4	18	4	4	10	2
Madison	12/16	Fair-PCl	1	N	3–10	10	−8	6	66	25	215	28.5
Medford	12/23	Cloudy	5	SW	3–15	10	−17	13	9	4	32.5	3
Merrill	12/22	Fair	5	NW	4–8	0	−20	0	10	6	29	1.5
Milwaukee	12/16	Fair	1	W	5–10	14	−3	11	37	13	90	3
Mount Horeb	12/17	PCl-Cloudy	1	SW-NW	6–10	15	0	17	39	21	60.3	1
Nelson	12/30	Cloudy	1	ESE		25	14	0	9	6	44	0
Newburg	12/16	Fair	tr	NW	10	10	−6	27	63	25	207.7	18
Oconomowoc		Fair	tr	SW	3–5	15	4	4	20	5	42.5	1
Oshkosh	12/16	Fair-PCl	1	W	8–12	10	−5	5	16	9	69.75	0
Owen	12/17	Cloudy-PCl	5	W	0–5	17	5	10	16	6	51	9.25
Oxbo	12/16	Cloudy-Fair	5	NW	2	14	2	10	11	5	15	0
Peshtigo	12/16	Cloudy	11	W	2	16	0	0	4	2	17	0
Phelps	12/16	Cloudy-PCl	10	W	5	12	−2	1	5	4	21	0
Platteville	12/31	Cloudy	3	NNW	0–6	27	22	6	22	10	46	4.5
Plymouth	12/16	Partly Cloudy	1	NW	5–15	11	−7	6	10	4	32	0
Poynette	12/30	Mist-Cloudy	2		0	20	26	15	27	11	81.75	8.25
Racine	12/16	Fair	2	W-SW	5–10	10	−4	3	16	7	46.5	5.5
Randolph	12/29	Cloudy	2	Var.	0–10	30	20	0	2	1	9	0
Rhinelander	12/16	PCl-Fair	5	N-NW		8	−4	0	3	2	10	0
Richland Center	12/16	PCl-Cloudy	2	Var.	0–5	9	−8	3	32	16	84	0.5
Sauk City	12/26	Fair-PCl	2	NW-SE	5–10	20	10	1	35	14	113.8	10.5
Shawano	12/16	Cloudy-PCl	5	W	5–15	10	−10	12	10	5	36	2
Shiocton	12/22	Fair	2	W	6–15	3	−13	5	14	7	35	0
Solon Springs	1/1	Fair-PCl	5	NW-W		28	8	9	9	7	23	1
Spencer	12/27	Cloudy	10	W	0–15	17	10	8	14	5	44	4.5
Stevens Point	12/16	Fair-Cloudy	2	NW	8–12	7	−12	10	29	9	57.5	1
Stockbridge	12/16	Fair-PCl	3	W	5–10	10	−10	6	8	5	39.3	1.25
Sturgeon Bay	12/26	Partly Cloudy	12	NW	8	12	0	2	2	1	9	0
Three Lakes	12/29	Partly Cloudy	12	NE	10	20	15	1	4	3	18	0
Trempealeau	12/30	Sleet-Cloudy	1	NE	5–10	22	18	12	20	7	38.75	0
Waukesha	12/16	Fair	1	S	5–15	12	−6	7	21	10	69	11
Wausau	12/16	Cloudy	5	SW-W	0–4	8	−10	0	8	5	27.5	0
Wautoma	12/30	Cloudy	2	SW	5–10	20	13	35	11	7	26	1
Willard	12/30	Cloudy	5			20	12	3	13	5	40.25	3.5
Woodland Dunes NW	12/30	Fair-PCl	7	WNW-SW	2–8	15	10	0	6	2	18	1
Woodland Dunes NE	12/31	Cloudy	7	W-NW	3–8	38	18	3	12	5	31.75	1
Woodland Dunes SW	12/16	Fair	5	WNW-S	5–7	5	−10	0	3	3	17	1
Woodland Dunes SE	12/23	Fair-PCl	1	W-WSW	5–12	10	−10	4	7	6	24.5	1
TOTAL								440	1034	490	3062.45	171.25

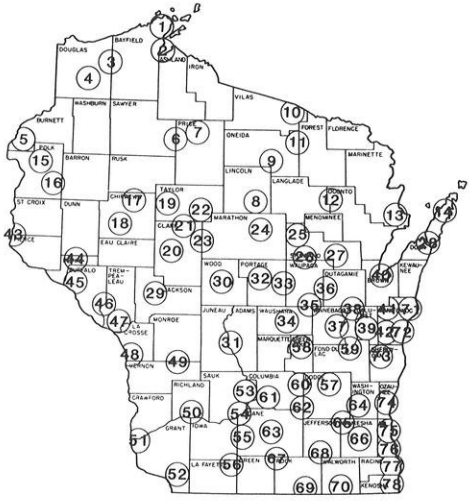

Figure 1. Locations of the 1989 Wisconsin Christmas Bird Counts.

178 and S; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **Columbus** (62); Jct. Johnson and Jahnke Sts.; Phyllis Johnson, W12156 Johnson Rd., Columbus, WI 53925; (414) 623-2447. **Cooksville** (67); Cooksville; John Wilde, Rt. 1, Box 429, Evansville, WI 53536; (608) 882-5352. **Durand** (44); Jct. Hwys. 25 and DD 3 miles N of Durand; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **Ephraim** (14); Hwy. A 3 miles S of Jct. with Hwy 42; Charlotte Lukes, 3962 Hillside Rd., Egg Harbor, WI 54209; (414) 823-2478. **Fifield** (7); Fifield Post Office; Thomas Nicholls, 2160 Draper Ave., Roseville, MN 55113; (612) 636-2592. **Fond du Lac** (59); Jct. Tower and Cody Roads; Thomas Schultz, Rt. 2, Box 23, Green Lake, WI 54941; (414) 294-3021. **Fort Atkinson** (68); Jct. Main St. and Sherman Ave.; Richard Wanie, W5920 Lee Dr., Fort Atkinson, WI 53538; (414) 563-6274. **Fremont** (35); Jct. Hwys. I and HH 4 miles S of Fremont; Daryl Tessen, 2 Pioneer Park Place, Elgin, IL 60123; (312) 695-2464. **Gilman** (19); 1 mile W of Miller Dam; Janice Luepke, B-894 Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Grantsburg** (5); Jct. Hwys. 70 and 48; Dennis Allaman, 506 W. St. George, Grantsburg, WI 54840; (715) 463-2366. **Green Bay** (40); Jct. Allouez and S. Webster Avenues; John Jacobs, Neville Public Museum, 210 Museum Pl., Green Bay, WI 54303; (414) 436-3767. **Green Lake** (58); Jct. Hwy. J and Swamp Rd.; Thomas Schultz, Rt. 2, Box 23, Green Lake, WI 54941; (414) 294-3021. **Hales Corners** (76); Jct. Hwy 41 and Puetz Rd. (Milwaukee Co. only); John Schaeffer, 6636 W. Coldspring Rd., Greenfield WI 53220; (414) 543-3429. **Hartford** (64); Jct. Hwys. 60 and 83; Judy Haseleu, 337 W. State St., Hartford, WI 53027; (414) 673-5865. **Holcombe** (17); Chippewa-Rusk county line 1 mile E of Hwy. 27; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **Horicon Marsh** (57); Jct. Main Ditch and Main Dike in Refuge; Bill Volkert, Wis. Dept. Natural Resources, 1210 N. Palmatory, Horicon, WI; (414) 485-3018. **Hudson** (43); Afton, MN; Boyd & Helen Lien, 5148 29th Ave. S., Minneapolis, MN 55417; (612) 729-5982. **Kenosha** (78); Jct. Hwys. 158 and HH (Kenosha Co. only); Ron Hoffmann, Box 886, Kenosha, WI 53141; (414) 654-5854. **Kettle Moraine** (not compiled); Hwy. DD, W of Auburn Lake; Bill Volkert, 611 Birchwood Dr., Campbellsport, WI 53010. **Kickapoo Valley** (49); Jct. Hwys. T and 131; Eric Epstein, Rt. 2, Box 100, Norwalk, WI 54648; (608) 823-7837. **LaCrosse** (48); LaCrosse Courthouse; Brian Christoffel, 1816 Madison St., LaCrosse, WI 54601; (608) 782-6268. **Lake Geneva** (70); 42° 15′ Lat., 88° 30′

Long.; Gaylord Culp, Rt. 3, Box 1, Lake Geneva, WI 53147; (414) 248-3163. **Lakewood** (12); Jct. Hwys. T and FR 2117; John Woodcock, 1718 Cedar Grove Dr., Apt. 3A, Manitowoc, WI 54220; (414) 684-0447. **Luck** (15); Jct. 180th St. and 180th Ave.; Howard Jorgenson, 817 S. 7th St., Luck, WI; (715) 472-2769. **Madison** (63); State Capitol; Sam Robbins, 14 S. Roby Rd., Madison, WI 53711; (608) 233-3581. **Medford** (22); 2.5 miles NE of Whittlesey; Nick Risch, W5172 Allman Ave., Medford, WI 54451; (715) 748-6177. **Merrill** (8); NE corner of S-31 NW of Merrill; Alan Rusch, 3342 Westview Lane, Madison, WI 53713; (608) 274-1224. **Milwaukee** (75); Jct. Port Washington Rd. and Hampton Ave.; Jim Frank, 4339 W. Laverna Ave., Mequon, WI 53092; (414) 242-2443. **Mount Horeb** (55); Mount Horeb; Sharon & Warren Gaskill, 10405 Bell Rd., Black Earth, WI 53515; (608) 767-3642. **Nelson** (45); 1 mile S of Jct. Hwys. I and D; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **Newburg** (74); Jct. Hwy. 33 and Lakeland School Rd.; Julie Tubbs, Riveredge Nature Center, P.O. Box 26, Newburg, WI 53060; (414) 675-6888. **New Richmond** (not compiled); 2 miles E of Boardman; Joseph Merchak, 210 Ilwaco Rd., River Falls, WI 54022; (715) 425-1169. **Oconomowoc** (65); Hwy 67, 2 miles N of Oconomowoc; Edward Peartree, 36516 Lisbon Rd., Oconomowoc, WI 53066; (414) 567-4086. **Oshkosh** (37); Jct. Hwys. 21 and 41; Thomas Ziebell, 1322 Ceape Ave., Oshkosh, WI 54901; (414) 235-0326. **Owen** (21); Hwy. D 2.5 miles N of Hwy. 29; Nick Risch, W5172 Allman Ave., Medford, WI 54451; (715) 748-6177. **Oxbo** (6); Jct. Hwys. EE and 70; Maybelle Hardy, Rt. 1, Box 263, Park Falls, WI 54552; (715) 762-3178. **Pensaukee** (not compiled); Pensaukee; Thomas Erdman, 4093 Hwy. S, Route 2, Oconto, WI 54153; (414) 834-3416. **Peshtigo** (13); Harold Lindberg, 311 Emery Ave., Peshtigo, WI 54157; (715) 582-4117. **Phelps** (10); Jct. FR 2139 and FR 2533, 2 miles S of Phelps; Bill Reardon, 2547 Hwy. 70 E, Eagle River, WI 54521; (715) 479-8055. **Platteville (formerly Cornelia)** (52); Cornelia: Tom Goltry, 660 Pioneer Rd., Platteville, WI 53818; (608) 348-9666. **Plymouth** (73); Jct. Hwys. 23 and C; Harold Koopman, 415 Caroline St., Plymouth, WI 53073; (414) 892-8101. **Poynette** (61); Jct. Hwys. 51 and CS; Mark & Sue Martin, Goose Pond Sanctuary, W7468 Prairie Lane, Arlington, WI 53911; (608) 635-4160. **Racine** (77); Hwy. H 0.5 miles S of Hwy. K (Racine Co. only); Gerald DeBoer, 2406 Kinzie Ave., Racine WI 53405; (414) 637-0393. **Randolph** (60); Hwy P midway between Cambria and Randolph; Charles Gilmore, 115 Meadowood Dr., Randolph, WI 53956; (414) 326-3221. **Rhinelander** (9); Rhinelander; Ced Vig, 919 Birch Bend, Rhinelander, WI 54501; (715) 363-3047. **Richland Center** (50); Jct. Hwys. O and OO SE of Richland Center; Robert Hirschy, University of Wisconsin Center-Richland, Richland Center, WI 53581; (608) 647-6186. **Sauk City** (54); 2.5 miles SE of Witwen; Becky Isenring, 6869 Taylor Rd., Sauk City, WI 53583; (608) 643-6906. **Shawano** (27); 2.5 miles N of Lunds; Mark Peterson, Box 53, Caroline, WI 54928; (715) 754-2661. **Shiocton** (36); Jct. Hwys. M and 54; James Anderson, Mosquito Hill Nature Center, Rt. 1, Rogers Rd., New London, WI 54961; (414) 779-6433. **Solon Springs** (4); Jct. Hwys. M and 53; Bernard Klugow, Box 13, Brule, WI 54820; (715) 372-4858. **Spencer** (23); Jct. Hwys. F and 153; Janice Luepke, B-894

Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Stevens Point** (32); Old Main Building, University of Wisconsin-Stevens Point; Nancy Stevenson, 1890 Red Pine Lane, Stevens Point, WI 54481; (715) 341-0084. **Stockbridge** (39); Kloten Swamp, 3 miles SE of Stockbridge; Carroll Rudy, W3866 Hwy. H, Chilton, WI 53014; (414) 849-9021. **Sturgeon Bay** (28); Sturgeon Bay, Adrian Freitag (no address or phone given). **Three Lakes** (11); 6 miles E of Three Lakes; Bill Reardon, 2547 Hwy. 70 E, Eagle River, WI 54521; (715) 479-8055. **Trempealeau** (47); Jct. Hwy K and Fremont St., Trempealeau; Thomas Hunter, 575 Jay St., Trempealeau, WI 54661; (608) 534-6233. **Waukesha** (66); Jct. Hwy. D and Brookhill Rd. (old Hwy. ZZ); John Bielefeldt, N3066 Hardscrabble Rd., Dousman, WI 53118; (414) 495-8397. **Wausau** (24); Jct. Grand Ave. and Thomas St.; Duane Goetsch, 3005 Heron Ave., Wausau, WI 54401; (715) 845-2651. **Wautoma** (34); Mount Morris; Delbert Greenman, 1218 Hwy W, Redgranite, WI 54970; (414) 787-3036. **Willard** (20); 1 mile E and 1.5 miles S of Willard; Janice Luepke, B-894 Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Woodland Dunes NW** (41), **NE** (71), **SW** (42), **and SE** (72); All in Manitowoc Co. as drawn on a map; Bernard Brouchoud, Woodland Dunes Nature Center, P.O. Box 2108, Manitowoc, WI 54221-2108; (414) 793–4007.

Results of the Counts

Results are reported in Tables 2–8. The more common species are reported in Tables 2–7, with counts in similar areas of the state grouped together in each table. In Table 7 the number of each species is compared with the average for the previous ten years, corrected for participation (total party hours). Rarer species are listed in Table 8 in the order of their count number, the same order used in Tables 2 to 7. A summary of the general abundance of various species follows.

Waterfowl.—In spite of a general lack of open water, numbers of many waterfowl remained at or above normal. There was only 1 Tundra Swan, but Mute Swans appeared in normal numbers. Counts of Canada Geese were 25% above normal, with many seen migrating south. Numbers of Mallards and American Black Ducks were slightly higher than usual, with most uncommon species of ducks occurring in about normal numbers. Notable exceptions were Canvasbacks, Lesser Scaup, Oldsquaws, and Ruddy Ducks, which occurred in record low numbers. The number of Greater Scaup was the lowest in 11 years, and counts of Common Goldeneyes, Common Mergansers, and Hooded Mergansers were well below normal.

Hawks and Eagles.—Several species of hawks occurred in record numbers (Northern Harrier, Sharp-shinned, Cooper's, Red-tailed, and Rough-legged), perhaps as a result of increasing populations of these species. Counts of American Kestrels and Red-shouldered Hawks were slightly lower than in the previous 10 years, and Northern Goshawks were 25% lower. The second highest total for Bald Eagles reflects the comeback of this species. Four Golden Eagles were also seen, all of them in western Wisconsin.

Grouse, Pheasants, Quail, etc..—The explosion of the Wild Turkey population continued, with a record 1161 being re-

Table 2. Number of each species in northern Wisconsin found on 16 or more counts.

Species	Bayfield (1)	Ashland (2)	Brule (3)	Solon Springs (4)	Gransburg (5)	Oxbo (6)	Fifield (7)	Merrill (8)	Rhinelander (9)	Phelps (10)	Three Lakes (11)	Lakewood (12)	Peshtigo (13)	Ephraim (14)
Canada Goose	0	5	0	1	4566	0	0	0	0	0	0	0	0	0
American Black Duck	0	75	2	5	0	1	0	2	50	0	0	0	37	0
Mallard	7	71	14	2	24	1	0	476	250	1	0	0	0	87
Common Goldeneye	5	1	7	0	0	0	0	1	1	0	0	0	29	165
Common Merganser	0	0	2	2	0	2	0	0	1	0	0	0	0	28
Bald Eagle	0	0	7	2	5	4	*	1	2	3	1	0	1	*
Northern Harrier	0	0	0	0	0	0	0	0	0	0	0	0	0	*
Sharp-shinned Hawk	0	0	0	0	0	1	0	0	1	0	0	0	0	2
Cooper's Hawk	0	0	1	1	0	0	0	0	0	0	0	0	1	0
Northern Goshawk	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Red-tailed Hawk	0	0	1	1	2	0	0	0	0	0	0	0	1	0.
Rough-legged Hawk	0	0	1	1	33	0	0	1	0	0	0	0	4	5
American Kestrel	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Ring-necked Pheasant	0	0	0	0	1	0	0	0	0	0	0	0	2	*
Ruffed Grouse	1	5	6	3	12	38	16	21	6	4	0	6	3	5
Common Snipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1	51	0	0	0	0	0	0	0	0	0	0	3	1014
Rock Dove	1	167	2	6	215	0	40	88	18	0	0	0	6	374
Mourning Dove	1	41	0	2	0	1	15	44	49	0	0	0	262	233
Eastern Screech-Owl	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Horned Owl	0	1	1	1	1	0	*	0	0	0	0	0	0	1
Barred Owl	1	0	1	1	0	0	1	1	0	0	0	0	0	0
Belted Kingfisher	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Red-headed Woodpecker	0	0	0	0	0	1	0	0	0	0	0	0	0	*
Red-bellied Woodpecker	0	0	3	1	19	0	0	0	0	0	0	0	2	11
Downy Woodpecker	2	9	4	2	50	22	35	19	20	18	19	14	6	51
Hairy Woodpecker	2	2	4	2	34	37	27	12	9	19	13	3	2	50
Northern Flicker	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pileated Woodpecker	0	2	4	1	12	3	2	1	10	2	3	1	2	10
Horned Lark	0	0	0	0	0	0	0	0	0	0	0	0	5	1
Blue Jay	107	62	36	82	268	61	68	119	61	81	16	12	129	311
American Crow	22	39	16	12	212	30	58	101	66	6	3	17	185	355
Common Raven	35	63	243	35	16	49	12	3	9	53	43	4	11	9
Black-capped Chickadee	88	120	22	193	505	250	625	508	314	387	186	81	166	561
Tufted Titmouse	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red-breasted Nuthatch	26	26	16	14	76	63	65	53	60	46	50	15	8	74
White-breasted Nuthatch	14	12	3	17	169	30	33	20	60	22	7	12	6	47
Brown Creeper	2	1	2	1	1	2	1	1	2	0	0	3	0	1
Golden-crowned Kinglet	0	0	0	2	0	0	2	3	0	0	0	0	0	3
American Robin	0	1	0	0	0	0	0	0	0	0	0	0	0	4
Bohemian Waxwing	0	585	1	0	68	0	60	168	200	0	0	0	0	121
Cedar Waxwing	0	*	0	0	49	0	0	0	30	0	0	0	0	7
Northern Shrike	0	1	1	1	6	0	3	2	2	0	0	0	1	*
European Starling	135	297	3	0	98	8	34	13	1	5	1	1	43	362
Northern Cardinal	0	2	0	0	13	0	4	8	2	1	0	0	9	55
American Tree Sparrow	2	1	2	0	3	0	0	11	0	0	0	0	18	65
Song Sparrow	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White-throated Sparrow	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Dark-eyed Junco	2	9	6	0	28	4	13	12	4	15	0	3	65	144
Lapland Longspur	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Snow Bunting	0	42	26	6	739	0	0	54	0	0	0	0	1400	149
Red-winged Blackbird	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Grackle	0	0	0	0	1	0	0	0	1	0	0	0	0	0
Pine Grosbeak	49	228	249	183	63	158	115	44	139	83	41	22	81	17
Purple Finch	0	0	1	7	3	1	16	34	0	7	0	2	0	16
House Finch	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Crossbill	3	8	0	0	221	32	0	2	5	2	2	0	0	0
White-winged Crossbill	36	171	3	0	3	77	141	230	0	131	317	34	0	0
Common Redpoll	78	47	26	11	663	7	77	18	0	85	9	28	0	2
Pine Siskin	59	96	213	214	512	318	233	119	594	71	78	94	66	160
American Goldfinch	15	11	36	2	765	48	63	67	99	28	18	7	75	159
Evening Grosbeak	107	123	28	26	219	599	559	92	272	388	149	43	15	137
House Sparrow	1	9	4	1	414	8	12	142	67	0	0	2	281	424
Total Species	28	37	42	40	40	33	29	38	33	24	20	21	34	43

*Found within 3 days of the count day but not on the day of the count.

Table 3. Number of each species in north-central Wisconsin found on 16 or more counts.

Species	Luck (15)	Amery (16)	Holcombe (17)	Chippewa Falls (18)	Gilman (19)	Willard (20)	Owen (21)	Medford (22)	Spencer (23)	Wausau (24)	Bowler (25)	Caroline (26)	Shawano (27)	Sturgeon Bay (28)
Canada Goose	1	0	0	0	0	0	0	0	0	0	0	0	1	0
American Black Duck	0	2	0	8	0	0	0	0	0	4	0	1	1	3
Mallard	0	93	0	363	0	0	0	0	0	120	0	247	20	125
Common Goldeneye	0	2	0	12	0	0	0	0	0	7	0	0	12	10
Common Merganser	0	2	0	0	0	0	0	0	0	0	0	0	1	0
Bald Eagle	0	2	3	1	1	0	1	0	0	0	0	0	8	0
Northern Harrier	0	0	0	2	0	0	0	0	0	0	0	0	1	0
Sharp-shinned Hawk	0	0	0	0	2	0	0	1	0	1	0	1	3	1
Cooper's Hawk	0	0	0	0	0	1	0	1	0	0	0	0	3	0
Northern Goshawk	1	0	0	0	2	0	0	1	2	0	0	0	1	0
Red-tailed Hawk	1	1	4	6	2	9	19	0	7	0	1	4	15	0
Rough-legged Hawk	0	1	2	4	19	18	17	5	4	2	3	1	7	1
American Kestrel	0	0	0	0	1	4	1	1	2	0	0	0	3	0
Ring-necked Pheasant	1	1	0	0	0	3	4	0	0	0	0	1	7	0
Ruffed Grouse	5	4	21	0	27	23	56	45	11	3	0	6	5	0
Common Snipe	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Herring Gull	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Rock Dove	18	52	189	176	87	401	723	129	621	94	1	55	523	37
Mourning Dove	10	2	12	38	26	61	258	258	114	108	66	91	357	15
Eastern Screech-Owl	0	0	0	0	0	0	3	0	0	0	0	0	0	0
Great Horned Owl	1	1	1	0	0	2	31	2	5	0	*	3	8	0
Barred Owl	1	1	0	0	0	1	9	0	1	0	*	2	4	0
Belted Kingfisher	0	0	0	0	0	0	0	0	0	1	1	1	0	0
Red-headed Woodpecker	0	0	0	4	0	28	10	0	6	0	1	1	2	0
Red-bellied Woodpecker	21	4	3	6	2	25	16	5	8	3	7	15	12	0
Downy Woodpecker	49	4	23	26	25	45	82	55	45	6	26	22	29	2
Hairy Woodpecker	41	2	12	6	40	34	39	37	33	10	21	23	24	0
Northern Flicker	0	0	0	0	0	1	*	0	2	0	0	0	1	0
Pileated Woodpecker	9	3	5	0	3	3	2	1	1	1	0	1	3	0
Horned Lark	0	0	0	0	2	18	11	5	40	6	0	0	16	0
Blue Jay	81	21	216	268	204	456	456	261	227	42	105	118	234	19
American Crow	22	60	270	452	232	182	352	398	260	111	73	118	513	14
Common Raven	0	2	3	0	70	6	1	6	0	1	4	0	2	3
Black-capped Chickadee	174	46	617	208	496	633	760	850	305	129	129	183	228	21
Tufted Titmouse	0	0	0	25	0	0	0	0	0	0	0	0	0	0
Red-breasted Nuthatch	28	6	32	43	153	94	103	120	40	7	20	31	43	1
White-breasted Nuthatch	100	1	59	60	48	91	122	57	70	11	28	41	59	2
Brown Creeper	1	1	1	0	5	0	3	2	2	7	2	0	7	1
Golden-crowned Kinglet	20	0	0	0	16	0	0	0	0	3	2	2	3	0
American Robin	0	0	1	0	0	0	2	0	0	9	0	0	0	0
Bohemian Waxwing	0	0	0	5	0	0	11	70	10	9	3	7	0	0
Cedar Waxwing	0	0	5	5	0	9	0	0	0	80	0	0	41	0
Northern Shrike	0	1	2	0	6	2	3	2	2	0	1	0	3	0
European Starling	33	14	60	137	71	469	535	387	155	131	147	20	464	17
Northern Cardinal	30	12	11	23	8	99	47	50	40	15	11	49	54	9
American Tree Sparrow	3	2	137	271	66	215	165	85	448	17	16	18	60	36
Song Sparrow	1	0	0	0	0	0	0	0	0	0	3	0	1	0
White-throated Sparrow	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Dark-eyed Junco	51	0	44	269	31	241	81	115	97	65	121	246	315	7
Lapland Longspur	0	0	0	0	0	0	0	0	40	0	0	0	2	0
Snow Bunting	50	16	40	50	525	435	3800	132	1318	112	0	150	375	57
Red-winged Blackbird	1	0	0	0	0	1	1	0	0	0	0	0	0	0
Common Grackle	11	0	0	0	2	0	1	1	0	0	0	0	0	0
Pine Grosbeak	11	15	77	48	149	83	197	171	80	28	25	63	69	0
Purple Finch	5	4	5	58	0	28	14	7	1	1	46	38	47	0
House Finch	0	0	0	0	0	0	0	0	0	1	0	0	4	0
Red Crossbill	0	0	0	1	79	0	9	2	0	0	0	0	0	0
White-winged Crossbill	0	0	7	30	684	0	166	273	157	39	16	99	25	0
Common Redpoll	5	51	322	96	1070	298	228	119	563	57	36	147	35	0
Pine Siskin	163	42	922	719	781	245	95	563	171	143	490	301	315	6
American Goldfinch	174	30	57	160	212	528	283	296	234	129	310	219	541	1
Evening Grosbeak	2	14	230	5	667	392	82	567	5	33	155	105	110	4
House Sparrow	401	82	682	758	529	3639	3722	1029	1664	309	141	258	126	53
Total Species	35	38	34	36	39	39	45	38	40	40	33	41	62	27

*Found within 3 days of the count day but not on the day of the count.

Table 4. Number of each species found in central Wisconsin on 16 or more counts.

Species	Black River Falls (29)	Arpin (30)	Adams (31)	Stevens Point (32)	Amherst (33)	Wautoma (34)	Fremont (35)	Shiocton (36)	Oshkosh (37)	Appleton (38)	Stockbridge (39)	Green Bay (40)	Woodland Dunes NW (41)	Woodland Dunes SW (42)
Canada Goose	0	0	3	2	0	105	0	0	90	13	1	1299	0	22
American Black Duck	0	0	8	11	0	1	8	0	74	72	0	337	2	0
Mallard	0	0	158	740	20	199	215	1	1122	1435	0	1649	0	4
Common Goldeneye	0	0	17	232	0	0	*	0	58	402	0	9	1	1
Common Merganser	0	0	21	0	0	0	2	0	*	193	0	15	0	0
Bald Eagle	0	0	2	4	0	0	0	0	0	3	0	0	0	0
Northern Harrier	2	1	0	0	0	3	1	0	4	0	0	0	0	0
Sharp-shinned Hawk	1	0	0	1	0	1	*	0	0	0	*	*	1	0
Cooper's Hawk	0	0	0	1	*	1	*	0	1	1	0	2	0	0
Northern Goshawk	0	0	0	2	1	1	1	0	0	1	0	0	0	0
Red-tailed Hawk	6	8	3	2	9	7	25	10	51	24	8	40	4	0
Rough-legged Hawk	3	11	2	24	7	26	45	5	34	3	3	2	0	10
American Kestrel	0	3	0	1	1	0	10	3	22	8	18	13	1	4
Ring-necked Pheasant	17	0	0	0	2	3	0	3	11	5	*	3	1	0
Ruffed Grouse	9	2	7	*	3	2	3	1	0	0	0	0	6	0
Common Snipe	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0	0	0	0	0	0	0	0	46	154	9	13	25	0
Rock Dove	105	550	40	204	265	50	418	331	438	230	403	1652	40	197
Mourning Dove	28	51	6	138	12	97	158	277	667	329	135	652	24	45
Eastern Screech-Owl	0	0	0	0	0	0	0	0	*	0	4	1	0	0
Great Horned Owl	5	2	0	0	0	*	4	3	4	2	2	13	11	4
Barred Owl	2	0	1	1	0	5	0	0	0	1	0	0	0	0
Belted Kingfisher	0	0	0	3	3	1	0	0	0	0	0	0	1	0
Red-headed Woodpecker	4	5	9	1	0	9	1	1	1	1	2	6	0	0
Red-bellied Woodpecker	21	6	3	4	1	19	8	20	7	4	11	15	2	2
Downy Woodpecker	44	16	14	42	19	53	24	40	56	24	54	67	18	15
Hairy Woodpecker	28	10	8	22	12	28	8	17	12	11	21	26	7	6
Northern Flicker	0	1	0	0	0	1	12	1	0	0	2	1	0	0
Pileated Woodpecker	6	1	0	4	0	*	0	1	0	1	2	0	2	1
Horned Lark	0	11	0	36	51	0	16	69	42	57	281	78	2	85
Blue Jay	204	184	171	371	149	364	80	127	104	38	85	166	81	21
American Crow	68	167	64	377	270	173	121	76	96	449	31	151	58	41
Common Raven	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	147	163	175	490	77	327	97	170	94	51	67	185	86	44
Tufted Titmouse	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Red-breasted Nuthatch	35	19	19	60	26	57	32	23	11	8	1	31	3	1
White-breasted Nuthatch	100	22	26	59	21	137	31	63	44	19	42	79	18	8
Brown Creeper	2	0	0	2	0	4	2	6	3	1	1	7	3	0
Golden-crowned Kinglet	0	0	0	0	0	0	0	4	9	1	0	4	1	0
American Robin	0	0	1	5	0	4	0	1	1	14	2	19	0	0
Bohemian Waxwing	0	0	0	66	0	0	0	0	0	0	0	52	14	0
Cedar Waxwing	35	22	71	154	70	131	0	2	*	33	*	18	6	0
Northern Shrike	1	3	0	3	0	0	0	3	2	0	0	3	0	0
European Starling	19	411	28	125	21	95	145	196	908	243	417	557	51	4
Northern Cardinal	97	34	23	101	13	96	20	104	69	43	33	97	38	14
American Tree Sparrow	118	55	122	253	91	35	279	366	531	54	112	497	132	164
Song Sparrow	0	0	0	0	0	0	0	3	2	2	5	2	0	0
White-throated Sparrow	0	0	0	2	0	0	0	0	2	3	0	1	2	2
Dark-eyed Junco	349	85	258	445	879	1008	190	402	376	190	111	376	130	64
Lapland Longspur	0	0	0	0	0	0	40	0	389	100	435	37	0	1
Snow Bunting	0	1	0	113	63	0	34	383	345	635	2643	768	35	5
Red-winged Blackbird	0	0	0	1	0	0	5	0	11	22	0	1	0	1
Common Grackle	0	0	1	10	0	0	0	1	4	17	0	11	0	0
Pine Grosbeak	18	0	5	48	20	44	36	23	0	15	*	17	12	11
Purple Finch	105	6	67	30	12	72	5	16	3	5	3	22	1	1
House Finch	0	0	0	0	0	5	0	0	4	14	4	0	0	0
Red Crossbill	0	0	0	5	0	0	0	0	1	0	0	5	1	0
White-winged Crossbill	0	0	0	14	0	6	1	7	0	29	13	25	0	6
Common Redpoll	13	545	0	280	400	0	4	26	0	8	0	36	16	11
Pine Siskin	403	585	277	518	207	261	22	139	58	63	16	89	617	0
American Goldfinch	556	232	200	448	165	703	215	317	405	90	115	201	42	40
Evening Grosbeak	93	10	47	90	2	52	8	1	0	1	5	4	0	0
House Sparrow	46	510	74	803	200	136	760	829	3695	610	2176	1657	264	374
Total Species	37	36	38	52	32	41	44	45	53	61	41	62	41	34

*Found within 3 days of the count day but not on the day of the count.

Table 5. Number of each species in west or southwest Wisconsin found on 16 or more counts.

Species	Hudson (43)	Durand (44)	Nelson (45)	Arcadia (46)	Trempealeau (47)	LaCrosse (48)	Kickapoo Valley (49)	Richland Center (50)	Bridgeport (51)	Platteville (52)	Baraboo (53)	Sauk City (54)	Mount Horeb (55)	Blanchardville (56)
Canada Goose	2376	0	0	0	1020	16	0	0	11	0	21	152	0	0
American Black Duck	3	0	0	0	2	8	0	0	2	0	3	72	0	0
Mallard	601	7	1	0	167	704	0	32	761	0	93	948	18	1
Common Goldeneye	12	0	10	0	9	9	0	0	9	0	12	212	1	0
Common Merganser	18	0	20	0	0	0	0	0	0	0	1	1650	0	0
Bald Eagle	3	0	23	0	2	7	0	7	39	1	4	201	1	0
Northern Harrier	0	0	0	0	0	0	0	2	1	1	2	9	8	3
Sharp-shinned Hawk	0	2	0	0	4	3	2	0	0	0	1	7	2	1
Cooper's Hawk	0	0	0	0	0	0	0	1	0	0	1	6	0	2
Northern Goshawk	0	0	0	1	0	0	0	1	1	0	0	0	0	0
Red-tailed Hawk	4	13	37	20	25	19	26	62	49	40	21	130	58	34
Rough-legged Hawk	1	1	3	2	3	1	1	24	4	6	9	49	4	4
American Kestrel	2	2	5	5	8	10	3	10	7	8	7	23	16	10
Ring-necked Pheasant	1	0	0	0	0	0	0	4	0	0	1	13	0	4
Ruffed Grouse	0	1	15	2	0	38	12	34	10	17	6	25	7	22
Common Snipe	0	0	0	1	0	1	2	9	7	0	1	1	2	1
Herring Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Dove	110	158	531	251	348	236	145	729	244	117	148	886	26	170
Mourning Dove	2	0	8	54	118	102	6	20	15	59	115	254	99	72
Eastern Screech-Owl	0	0	0	0	0	2	0	0	1	0	0	7	0	7
Great Horned Owl	1	0	8	1	2	3	3	3	7	4	2	11	6	16
Barred Owl	0	1	0	1	2	3	0	0	1	1	1	7	0	0
Belted Kingfisher	2	1	1	0	1	2	3	2	2	1	0	1	0	4
Red-headed Woodpecker	0	0		1	10	2	13	43	22	13	3	11	9	1
Red-bellied Woodpecker	6	12	25	14	32	43	32	67	77	20	34	140	37	16
Downy Woodpecker	22	16	23	18	56	84	21	69	68	71	38	181	95	50
Hairy Woodpecker	10	4	25	13	41	51	6	42	30	9	14	48	43	13
Northern Flicker	0	0	3	3	1	4	0	4	14	12	8	20	2	1
Pileated Woodpecker	1	0	6	2	5	6	3	12	12	3	3	26	3	1
Horned Lark	0	0	0	0	0	33	45	49	67	7	0	66	38	103
Blue Jay	32	87	246	164	290	178	186	423	291	144	206	691	258	75
American Crow	203	114	424	118	424	193	433	514	225	218	187	699	350	305
Common Raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	75	70	175	60	118	308	109	261	202	155	161	568	272	233
Tufted Titmouse	2	0	0	0	3	0	3	26	22	46	1	8	10	0
Red-breasted Nuthatch	39	1	4	6	21	8	9	7	16	5	29	59	1	7
White-breasted Nuthatch	31	19	17	42	64	144	27	124	120	85	95	183	121	92
Brown Creeper	0	0	2	0	4	16	6	0	6	0	7	19	4	2
Golden-crowned Kinglet	0	0	0	0	0	0	0	0	0	0	2	6	1	2
American Robin	87	5	5	1	37	3	2	0	1	0	8	9	0	2
Bohemian Waxwing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cedar Waxwing	46	218	183	0	307	101	0	25	1	64	84	172	12	0
Northern Shrike	2	1	2	1	0	2	1	1	0	0	1	3	0	3
European Starling	68	158	268	85	122	234	84	629	600	320	702	1012	302	234
Northern Cardinal	36	12	248	122	164	178	50	220	156	161	39	316	191	48
American Tree Sparrow	74	256	395	216	385	468	73	808	792	37	396	1625	468	662
Song Sparrow	0	0	0	0	0	2	0	0	7	5	2	21	69	20
White-throated Sparrow	0	0	0	0	1	0	0	0	3	0	0	3	1	0
Dark-eyed Junco	134	241	607	256	522	437	378	1103	745	253	160	1502	520	455
Lapland Longspur	0	0	0	0	0	0	0	0	45	0	0	0	0	31
Snow Bunting	0	0	0	0	0	105	40	0	1	3	0	5	24	40
Red-winged Blackbird	0	0	10	0	1	26	0	0	1	1	10	35	0	0
Common Grackle	0	0	3	0	1	1	0	0	3	0	0	3	23	3
Pine Grosbeak	17	0	27	0	16	1	0	0	0	0	4	5	0	0
Purple Finch	61	1	10	3	78	45	41	58	65	18	72	196	19	28
House Finch	0	0	0	0	0	0	0	0	1	9	16	8	0	0
Red Crossbill	0	0	0	7	0	0	0	0	0	0	0	0	0	0
White-winged Crossbill	10	0	1	0	0	0	0	0	0	0	0	1	0	0
Common Redpoll	170	21	108	0	*	3	9	2	5	1	0	2	0	0
Pine Siskin	66	80	49	2	112	184	244	197	128	59	152	436	356	5
American Goldfinch	97	98	288	80	312	178	342	558	535	106	145	476	484	213
Evening Grosbeak	0	0	0	0	*	0	0	0	0	0	0	0	0	0
House Sparrow	195	672	1843	556	1265	989	737	1956	2278	885	284	2190	842	1111
Total Species	38	29	42	35	48	50	37	45	62	40	49	69	43	49

*Found within 3 days of the count day but not on the day of the count.

Table 6. Number of each species found in southeast Wisconsin on 16 or more counts.

Species	Horicon Marsh (57)	Green Lake (58)	Fond du Lac (59)	Randolph (60)	Poynette (61)	Columbus (62)	Madison (63)	Hartford (64)	Oconomowoc (65)	Waukesha (66)	Cooksville (67)	Fort Atkinson (68)	Beloit (69)	Lake Geneva (70)
Canada Goose	40000	8000	121	6790	3505	*	5144	43	992	898	645	1208	1080	188
American Black Duck	0	3	22	0	30	10	148	0	19	20	42	136	100	4
Mallard	2	70	266	0	464	412	7291	53	613	347	242	1180	2427	379
Common Goldeneye	0	0	0	0	49	0	31	0	6	0	8	0	199	3
Common Merganser	0	0	0	0	194	0	0	0	0	0	0	0	27	0
Bald Eagle	1	1	0	1	4	0	1	0	1	0	0	0	0	0
Northern Harrier	13	7	1	4	3	2	0	0	0	4	0	2	7	0
Sharp-shinned Hawk	0	0	2	0	1	0	4	0	3	0	0	0	1	0
Cooper's Hawk	1	1	0	1	0	*	5	1	1	1	2	1	1	0
Northern Goshawk	1	0	0	0	0	0	1	1	0	0	0	0	0	0
Red-tailed Hawk	32	12	20	6	44	2	73	15	43	34	13	9	21	3
Rough-legged Hawk	5	21	13	0	30	1	5	1	9	15	1	3	1	0
American Kestrel	8	7	13	8	16	5	19	6	25	8	9	6	5	2
Ring-necked Pheasant	9	0	0	0	28	0	13	0	2	4	5	1	42	0
Ruffed Grouse	0	0	0	0	16	0	3	0	0	0	0	0	0	0
Common Snipe	0	0	0	0	6	0	6	0	0	5	2	1	0	0
Herring Gull	0	0	22	0	0	0	8	0	0	0	0	0	0	0
Rock Dove	493	123	528	75	294	145	590	348	404	190	167	50	481	19
Mourning Dove	37	53	73	7	322	65	1093	204	276	314	122	48	458	230
Eastern Screech-Owl	0	0	1	0	13	0	104	4	5	14	10	0	2	0
Great Horned Owl	1	2	3	0	23	0	23	2	0	20	*	1	3	0
Barred Owl	1	0	0	0	2	0	2	0	0	0	4	0	0	0
Belted Kingfisher	0	0	1	0	3	0	6	0	1	6	1	0	4	0
Red-headed Woodpecker	2	2	1	2	4	0	2	1	1	1	0	0	1	7
Red-bellied Woodpecker	1	12	4	*	47	3	42	4	12	10	5	0	10	11
Downy Woodpecker	26	23	26	10	140	6	278	48	45	54	36	3	34	18
Hairy Woodpecker	4	10	9	1	49	2	84	11	18	12	9	4	11	8
Northern Flicker	1	4	6	0	15	0	8	4	1	9	1	0	1	0
Pileated Woodpecker	0	1	0	0	4	0	0	0	0	0	0	0	0	0
Horned Lark	15	*	57	67	274	520	17	93	25	4	41	51	19	110
Blue Jay	60	119	72	35	590	45	287	79	67	105	46	19	66	29
American Crow	19	190	61	18	362	47	1153	107	268	355	91	49	248	77
Common Raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	95	98	123	7	400	30	860	169	162	408	65	21	107	89
Tufted Titmouse	0	0	0	0	15	0	0	0	1	1	0	0	3	0
Red-breasted Nuthatch	5	8	10	0	60	6	43	7	11	30	0	4	2	4
White-breasted Nuthatch	17	48	33	5	153	9	191	51	38	50	20	5	20	28
Brown Creeper	2	0	6	0	13	0	56	4	2	4	1	0	1	0
Golden-crowned Kinglet	5	0	4	0	5	0	25	0	0	2	0	0	0	3
American Robin	0	24	0	0	58	0	99	4	15	35	*	21	69	1
Bohemian Waxwing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cedar Waxwing	0	51	0	0	531	0	97	0	0	159	40	0	0	3
Northern Shrike	2	4	1	0	3	0	3	0	1	0	0	1	0	0
European Starling	270	13	59	225	780	335	4151	222	407	342	251	95	701	73
Northern Cardinal	34	13	25	6	181	26	454	89	104	124	51	8	119	36
American Tree Sparrow	451	168	297	162	2402	116	906	453	246	385	550	101	1895	474
Song Sparrow	0	0	0	*	13	0	44	2	1	9	2	5	14	1
White-throated Sparrow	0	0	0	0	6	0	42	1	2	1	0	1	0	0
Dark-eyed Junco	240	226	136	91	1568	87	1165	335	311	382	172	15	555	329
Lapland Longspur	54	0	129	0	457	0	1	0	0	0	0	0	27	0
Snow Bunting	33	12	395	10	834	100	0	25	3	0	0	0	73	0
Red-winged Blackbird	909	0	0	11	7	0	82	0	0	23	0	0	0	0
Common Grackle	33	1	0	0	3	1	9	0	0	0	0	0	0	0
Pine Grosbeak	0	33	0	0	2	0	0	0	0	6	0	0	0	0
Purple Finch	0	35	0	0	239	0	13	4	13	36	2	0	0	0
House Finch	0	15	4	0	0	0	339	4	0	6	*	0	0	0
Red Crossbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White-winged Crossbill	0	10	110	0	21	0	48	0	0	0	0	0	0	0
Common Redpoll	0	11	0	0	20	0	35	2	0	1	*	0	0	0
Pine Siskin	17	75	74	0	436	65	383	80	34	136	77	15	13	2
American Goldfinch	26	132	112	19	684	76	393	89	87	98	77	33	65	68
Evening Grosbeak	0	0	0	0	0	0	0	0	0	0	0	0	0	1
House Sparrow	746	175	658	535	2892	1026	4690	1057	1273	681	499	126	2212	699
Total Species	42	42	43	24	67	28	77	38	49	56	38	34	45	33

*Found within 3 days of the count day but not on the day of the count.

Table 7. Number of each species found in Lake Michigan counties on 16 or more counts.

Species	Woodland Dunes NE (71)	Woodland Dunes SE (72)	Plymouth (73)	Newburg (74)	Milwaukee (75)	Hales Corners (76)	Racine (77)	Kenosha (78)	Number of counts	Total birds	Percent change
Canada Goose	1	13	50	1184	1135	1045	465	55	41	82784	+ 23%
American Black Duck	0	25	20	24	140	0	60	4	52	1601	+ 7%
Mallard	33	416	52	738	998	45	1138	571	58	28514	+ 11%
Common Goldeneye	32	52	0	67	387	64	165	144	40	2453	− 30%
Common Merganser	62	82	0	123	10	0	110	4	24	2578	− 16%
Bald Eagle	0	0	0	0	1	0	*	0	35	349	+ 35%
Northern Harrier	0	0	2	11	*	0	0	0	25	96	+ 83%
Sharp-shinned Hawk	0	0	0	3	1	1	0	0	29	55	+ 55%
Cooper's Hawk	1	0	0	2	3	0	0	0	28	45	+ 84%
Northern Goshawk	0	0	0	0	0	1	0	0	18	21	− 25%
Red-tailed Hawk	5	8	26	72	41	16	17	5	64	126	+ 45%
Rough-legged Hawk	3	2	10	7	15	1	2	0	66	561	+ 81%
American Kestrel	2	3	9	18	14	16	12	7	55	432	− 8%
Ring-necked Pheasant	2	1	3	4	4	5	1	14	37	226	− 46%
Ruffed Grouse	13	1	0	7	0	0	0	0	50	594	+ 39%
Common Snipe	*	0	0	2	1	0	0	0	18	50	+ 64%
Herring Gull	635	10	57	230	625	43	455	662	21	4066	− 59%
Rock Dove	39	134	254	761	475	82	178	235	74	19110	− 16%
Mourning Dove	237	148	67	842	661	93	539	74	72	11570	+ 42%
Eastern Screech-Owl	0	0	0	11	2	6	11	0	19	208	+ 71%
Great Horned Owl	8	2	2	28	6	4	8	1	54	313	+ 20%
Barred Owl	1	2	0	6	0	2	0	0	33	71	− 11%
Belted Kingfisher	0	0	1	3	1	1	1	0	32	62	+ 1%
Red-headed Woodpecker	0	3	2	7	0	0	3	0	45	258	+ 10%
Red-bellied Woodpecker	0	2	16	42	4	1	2	0	66	1069	+ 48%
Downy Woodpecker	28	24	48	221	49	18	32	3	78	3178	+ 19%
Hairy Woodpecker	12	6	24	71	13	1	6	2	77	1470	+ 5%
Northern Flicker	0	0	1	12	2	0	1	13	35	173	+ 45%
Pileated Woodpecker	1	0	0	2	0	0	0	0	49	194	+ 29%
Horned Lark	0	0	2	14	0	0	0	5	44	2554	+ 132%
Blue Jay	68	29	81	321	18	18	9	14	78	1172	+ 25%
American Crow	103	222	105	401	573	159	145	57	78	15538	− 40%
Common Raven	0	0	0	0	0	1	0	0	26	685	+ 17%
Black-capped Chickadee	87	141	79	933	228	86	124	164	78	18401	+ 10%
Tufted Titmouse	0	0	1	0	0	0	0	0	16	168	+ 127%
Red-breasted Nuthatch	6	4	21	41	19	9	17	0	75	2158	+ 252%
White-breasted Nuthatch	34	44	27	269	33	15	17	1	78	4142	+ 17%
Brown Creeper	1	0	1	7	4	2	*	0	55	250	+ 10%
Golden-crowned Kinglet	1	0	1	7	0	1	0	0	29	140	− 42%
American Robin	2	1	*	6	459	28	0	1	39	1047	+ 199%
Bohemian Waxwing	0	0	0	2	0	0	0	0	18	1452	+ 230%
Cedar Waxwing	0	0	18	197	91	165	93	15	41	3445	+ 147%
Northern Shrike	2	0	2	6	0	1	0	0	44	97	− 32%
European Starling	1080	124	377	1–35	836	334	324	555	77	24258	− 85%
Northern Cardinal	47	32	42	338	157	44	85	4	72	5290	+ 25%
American Tree Sparrow	17	114	42	644	56	77	243	133	70	21037	+ 48%
Song Sparrow	0	8	0	24	9	6	10	2	30	295	+ 63%
White-throated Sparrow	2	0	1	2	15	0	7	0	23	102	+ 69%
Dark-eyed Junco	84	172	228	1207	505	82	337	165	75	22606	+ 18%
Lapland Longspur	0	0	0	0	0	0	0	0	16	1789	+ 586%
Snow Bunting	0	35	0	0	0	0	68	77	50	16384	+ 261%
Red-winged Blackbird	0	0	0	3	0	0	1	19	24	1183	− 68%
Common Grackle	0	0	0	5	1	0	1	14	27	165	− 49%
Pine Grosbeak	9	0	0	6	0	0	0	0	49	2863	+ 505%
Purple Finch	0	1	34	23	14	2	4	0	63	1807	+ 43%
House Finch	0	59	8	5	90	2	19	0	21	617	+3573%
Red Crossbill	1	0	0	0	0	0	0	0	18	386	+ 154%
White-winged Crossbill	0	14	125	0	0	0	0	0	37	3107	+1228%
Common Redpoll	4	3	0	1	0	0	10	6	54	5831	+ 113%
Pine Siskin	139	62	42	166	50	10	17	0	75	15001	+ 366%
American Goldfinch	119	26	124	379	333	25	76	137	78	15373	+ 43%
Evening Grosbeak	0	3	2	*	0	0	0	0	42	5444	+ 127%
House Sparrow	306	450	609	3414	1561	111	944	174	76	69786	+ 14%
Total Species	42	43	42	77	60	46	56	40			

*Found within 3 days of the count day but not on the day of the count.

Table 8. Species found on fewer than 16 counts.

Species	Number of counts	Number of birds	Count and number
Pied-billed Grebe	1	1	Milwaukee 1
Horned Grebe	1	1	Newburg 1
Double-crested Cormorant	1	1	Green Bay 1
Great Blue Heron	12	14	Brule 1, Stockbridge 1, Woodland Dunes SW 1, Trempealeau 1, Richland Center 1, Blanchardville 2, Horicon Marsh 1, Poynette 1, Waukesha 1, Cooksville 1, Newburg 2, Racine 1
Tundra Swan	1	1	Sauk City 1, (Madison)
Mute Swan	6	20	Solon Springs 9, Shawano 4, Stevens Point 3, Green Lake 2, Madison 1, Waukesha 1
Snow Goose	2	4	Appleton 1, Green Bay 3
Wood Duck	12	18	Chippewa Falls 3, Caroline 2, Adams 1, Wautoma 1, Green Bay 1, Trempealeau 1, Sauk City 2, Blanchardville 1, Poynette 1, Madison 3, Oconomowoc 1, Waukesha 1
Green-winged Teal	3	5	Fremont 1, Madison 3, Newburg 1
Northern Pintail	4	5	Caroline 1, Shawano 1, Fremont 2, Appleton 1
Northern Shoveler	1	41	Madison 41
Gadwall	6	371	Adams 8, Oshkosh 1, Trempealeau 4, Sauk City 2, Madison 332, Waukesha 24
American Wigeon	3	42	Appleton 3, Madison 38, Milwaukee 1
Canvasback	2	4	Bridgeport 3, Oconomowoc 1
Redhead	2	4	Green Bay 2, Newburg 2
Ring-necked Duck	4	5	Caroline 1, Green Bay 1, Lake Geneva 1, Milwaukee 2
Greater Scaup	3	712	Newburg 14, Milwaukee 686, Kenosha 12
Lesser Scaup	8	18	Brule 1, Oshkosh 4, Green Bay 1, Fond du Lac 1, Madison 2, Waukesha 4, Lake Geneva 3, Milwaukee 2
Harlequin Duck	1	1	Madison 1
Oldsquaw	5	248	Newburg 5, Milwaukee 128, Hales Corners 2, Racine 52, Kenosha 61
White-winged Scoter	1	1	Ephraim 1
Bufflehead	9	238	Sturgeon Bay 6, Oshkosh 1, Madison 2, Oconomowoc 1, Newburg 4, Milwaukee 35, Hales Corners 1, Racine 149, Kenosha 39
Hooded Merganser	4	7	Stevens Point 1, Fremont 2, (Madison), Oconomowoc 1, Milwaukee 3
Red-breasted Merganser	11	190	Bayfield 1, Adams 2, Green Bay 3, Madison 3, Woodland Dunes NE 1, Woodland Dunes SE 3, Newburg 32, Milwaukee 69, Hales Corners 4, Racine 56, Kenosha 16
Ruddy Duck	1	1	(Oshkosh), Oconomowoc 1
Red-shouldered Hawk	4	5	Trempealeau 1, Oconomowoc 2, Woodland Dunes NE 1, Hales Corners 1
Golden Eagle	3	4	Gilman 1, Kickapoo Valley 2, Bridgeport 1
Merlin	2	2	Willard 1, Madison 1
Gray Partridge	8	100	Shawano 16, Shiocton 1, Green Bay 23, Trempealeau 15, Poynette 28, Lake Geneva 9, Newburg 6, Kenosha 2
Greater Prairie-Chicken	2	97	Spencer 92, Arpin 5
Sharp-tailed Grouse	4	37	Solon Springs 4, Grantsburg 13, Oxbo 1, Gilman 19
Wild Turkey	11	1161	Black River Falls 22, Nelson 58, LaCrosse 15, Kickapoo Valley 29, Richland Center 467, Bridgeport 167, Platteville 90, Sauk City 97, Mount Horeb 208, Poynette 4, Cooksville 4, (Newburg)
Northern Bobwhite	6	33	Ephraim 7, Black River Falls 1, Arpin 6, (Trempealeau), Richland Center 12, Newburg 4, Kenosha 3
Virginia Rail	1	1	Poynette 1
American Coot	6	125	Oshkosh 2, Woodland Dunes SW 1, Madison 115, Oconomowoc 3, Newburg 3, Milwaukee 1
Killdeer	4	5	(Green Bay), Arcadia 1, Richland Center 1, Bridgeport 1, Platteville 2, (Fort Atkinson)
American Woodcock	1	1	Richland Center 1
Ring-billed Gull	9	2652	Oshkosh 10, Appleton 180, Fond du Lac 5, Plymouth 1, Newburg 518, Milwaukee 1069, Hales Corners 98, Racine 710, Kenosha 61
Thayer's Gull	2	3	Newburg 1, Milwaukee 2
Glaucous Gull	3	3	Ashland 1, Appleton 1, (Green Bay), Woodland Dunes NE 1
Snowy Owl	3	3	Brule 1, Solon Springs 1, Shawano 1, (Kenosha)
Long-eared Owl	6	22	Oshkosh 1, Appleton 1, Bridgeport 1, Blanchardville 6, Poynette 2, Waukesha 11, (Milwaukee)
Short-eared Owl	5	6	Arcadia 1, Sauk City 1, Madison 1, Waukesha 2, Woodland Dunes SE 1
Northern Saw-whet Owl	1	1	Woodland Dunes NW 1, (Newburg), (Milwaukee)
Yellow-bellied Sapsucker	9	15	Merrill 1, Ephraim 1, (Willard), (Caroline), Arpin 1, Green Bay 1, (Trempealeau), Bridgeport 1, Sauk City 2, Madison 2, Newburg 4, Milwaukee 2
Black-backed Woodpecker	2	2	Solon Springs 1, Oxbo 1
Gray Jay	7	71	Brule 5, Solon Springs 2 Oxbo 13, Fifield 25, Rhinelander 6, Phelps 10, Three Lakes 10
Carolina Wren	2	4	(Ephraim), Madison 1, Racine 3
Winter Wren	8	9	Stockbridge 1, Bridgeport 1, Blanchardville 1, Madison 1, Oconomowoc 1, Woodland Dunes NE 1, Newburg 2, Hales Corners 1
Marsh Wren	1	1	Poynette 1
Ruby-crowned Kinglet	1	1	(Oconomowoc), Newburg 1
Eastern Bluebird	9	65	Shiocton 2, Nelson 4, Arcadia 23, Trempealeau 6, Bridgeport 3, Baraboo 4, Sauk City 14, Green Lake 4, Poynette 5

continued

Table 8. (*Continued*)

Species	Number of counts	Number of birds	Count and number
Hermit Thrush	5	14	Fond du Lac 1, Waukesha 2, Newburg 2, Milwaukee 8, Racine 1
Varied Thrush	1	1	Wausau 1, (Wautoma), (Sauk City)
Gray Catbird	1	1	Milwaukee 1
Brown Thrasher	7	8	Shawano 2, Sturgeon Bay 1, Appleton 1, Green Bay 1, Madison 1, Newburg 1, Racine 1
Yellow-rumped Warbler	5	11	Shawano 3, Appleton 1, Waukesha 3, Newburg 3, Racine 1
Rose-breasted Grosbeak	2	4	Grantsburg 3, Willard 1
Rufous-sided Towhee	7	10	Adams 1, (Oshkosh), Sauk City 1, Poynette 3, Madison 1, Hartford 2, Woodland Dunes SE 1, Racine 1
Field Sparrow	7	11	Appleton 1, Bridgeport 1, Sauk City 1, Mount Horeb 2, Waukesha 1, Beloit 1, Newburg 4
Vesper Sparrow	1	1	Bridgeport 1
Savannah Sparrow	3	3	Green Bay 1, Bridgeport 1, Racine 1
Fox Sparrow	9	25	Spencer 1, Stevens Point 1, Woodland Dunes NW 1, Richland Center 6, Sauk City 1, Poynette 8, Madison 1, Newburg 2, Milwaukee 4
Swamp Sparrow	14	64	Shawano 2, Stockbridge 1, LaCrosse 1, Sauk City 10, Blanchardville 4, (Horicon Marsh), Poynette 14, Madison 13, Waukesha 2, Fort Atkinson 3, Beloit 1, Woodland Dunes SE 1, Newburg 7, Milwaukee 3, Racine 2
White-crowned Sparrow	4	17	Shiocton 1, Sauk City 1, Madison 7, Beloit 8
Harris' Sparrow	1	1	Blanchardville 1
meadowlark spp.	4	5	Amery 1, Caroline 1, Stevens Point 1, (Poynette), Racine 1
Rusty Blackbird	11	60	Oshkosh 1, Stockbridge 1, Nelson 3, Trempealeau 1, Bridgeport 6, Sauk City 11, Fond du Lac 1, Columbus 1, Madison 7, Cooksville 16, Beloit 12
Brewer's Blackbird	4	77	Amery 1, Oshkosh 1, Horicon Marsh 65, Fort Atkinson 10
Brown-headed Cowbird	10	154	Ashland 1, Fremont 4, Shiocton 16, Oshkosh 1, Appleton 1, LaCrosse 51, Horicon Marsh 76, Columbus 1, Madison 2, Newburg 1, (Hales Corners)
scaup spp.	1	15	Racine 15
Accipiter spp.	3	6	Kickapoo Valley 1, Green Lake 1, Racine 4
blackbird spp.	1	1	Bowler 1

ported this year. Record numbers of Greater Prairie Chickens were also recorded and totals of Sharp-tailed and Ruffed Grouse were high. Ring-necked Pheasant numbers remained near their all-time low and counts of Gray Partridges and Northern Bobwhite were well below normal.

Gulls and Other Waterbirds.—Because of the lack of open water, Herring Gulls and Ring-billed Gulls were less common than usual and restricted mostly to the Lake Michigan shore. No Bonaparte's Gulls were seen. Common Snipe occurred in record numbers, and Great Blue Herons were found in near record numbers. The only rail, a Virginia Rail, was seen at Poynette. Counts of Belted Kingfishers and Killdeers were about normal, while American Coots were less common than in most years.

Doves.—Rock Doves were less common than in the previous ten years, while counts of Mourning Doves were 42% higher.

Owls.—Eastern Screech Owls were found in near record numbers, and totals of Great Horned and Long-eared Owls were well above normal. Barred Owls were slightly less common than usual, and Snowy and Short-eared Owls were unusually scarce.

Woodpeckers.—The range of the Red-bellied Woodpecker appears to be still expanding, with the number found being 200 more than the previous high in 1985. Downy Woodpeckers, Northern Flickers, and Pileated Woodpeckers also occurred in record numbers, while the total for Hairy Woodpeckers was the second highest ever recorded. Red-

headed Woodpeckers and Yellow-bellied Sapsuckers also were more abundant than usual.

Jays, Crows, Chickadees, Nuthatches, etc..—Most impressive was the number of Red-breasted Nuthatches, which was more than twice the previous record. While very common statewide, they were most abundant in the north. White-breasted Nuthatches were also found in record numbers. Counts of American Crows remained down, perhaps because large roosts are not being counted, while Common Ravens were somewhat more common than usual. A report of a Common Raven that was heard on the Hales Corners count in southern Wisconsin is noteworthy. Populations of Tufted Titmice continued to improve, especially in the southwestern part of the state, with numbers this year being the highest since 1968. Gray Jays occurred on northern counts in record numbers, but the Boreal Chickadee was not found for the first time since 1957. Blue Jays were exceptionally common, with a near record total.

Creepers, Kinglets, Wrens, and Warblers.—Brown Creepers were found in near record numbers, but Golden-crowned Kinglets were unusually scarce. It was a good year for wrens, with a record total for Winter Wrens, a continued recovery of Carolina Wrens, and a Marsh Wren at Poynette. Yellow-rumped Warblers also occurred in record numbers.

Thrushes, Shrikes, and Waxwings.—Numbers of thrushes were phenomenal. There were record numbers of Eastern Bluebirds (64), American Robins (1047), and Hermit Thrushes (11). Numbers of waxwings were equally phenomenal, with record numbers of Cedar Waxwings (3445), and Bohemian Waxwings (1452). All of these totals were well above previous highs. It was a relatively poor year for Northern Shrikes, after several good years.

Sparrows.—This year was also great for sparrows. Record numbers were reported for Field, Fox, and White-crowned Sparrows and near record numbers for Song and White-throated Sparrows and the Dark-eyed Junco. The count of Tree Sparrows was the highest since 1975 and Swamp Sparrows also appeared in relatively high numbers. The three Savannah Sparrows, a Vesper Sparrow, and a Harris' Sparrow added to the sparrow highlights.

Open Country Birds.—In spite of a lack of snow to force them to roadsides and manure spreads, it was a great year for Horned Larks and Snow Buntings, which occurred in record numbers, and Lapland Longspurs, which occurred in their highest numbers since 1967. Meadowlarks were uncommon.

Blackbirds.—Blackbirds were an exception to the record trends in other groups. Counts of Common Grackles, Red-winged Blackbirds, and Brown-headed Cowbirds were unusually low. Rusty Blackbirds were found in about normal numbers, while a record total of Brewer's Blackbirds was seen.

Finches.—A very poor year for winter finches last year was followed this year by a truly exceptional flight, especially in the northern part of the state. Record numbers were recorded for the Pine Grosbeak, White-winged Crossbill, Pine Siskin, American Goldfinch, and Evening Grosbeak. The total for White-

winged Crossbills was twice the previous high and that for Pine Siskins was 4,600 above the very high total recorded in 1987. Purple Finches were found in near record numbers, and totals for Red Crossbills and Common Redpolls were more that twice the average for the previous ten years.

The 1989 Wisconsin Christmas Bird Counts were excellent. Hopefully the 1990 counts will be as good or better. If you wish to participate in a count in 1990, please contact the compiler in your area (Table 1). If you want to initiate and new count in an area not presently covered, please write to me.

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50 years ago in *The Passenger Pigeon*
Excerpts from Volume 2 (1940)

Miscellaneous items from *The Passenger Pigeon* 2(2). February 1940. "Mr. Max Zielinski of Milwaukee recently reported the shooting of an albino Coot at Muskego Lake in Waukesha County in October, 1939." "A general increase in wintering Mourning Doves and decrease in Red-headed Woodpeckers was noted for the Madison region this year by members of the Kumlien Club." "Ted Theobald near Barneveld reports 40 Cardinals, 40 Bobwhite and 60 Pheasants at his feeding station and states that 30 Mallards stopped at a spring hole on his land on the 21st." "Conservation Warden Wm. Elliott reports over 42 Chukar Partridge about 1-½ miles north of Whitewater and 200–300 Prairie Chicken about 4 miles south of that city. Warden Royce Dallman of Rock County reports 30–40 Prairie Chicken near Evansville on Dec. 15, 1939, while Warden Bill Field of Dodge County estimates about 10 flocks in that county."

Nesting Least Bitterns on Rush Lake, Wisconsin

This article contains new information on the nesting biology of one of the least studied marsh birds and summarizes results from other studies.

by Thomas J. Ziebell

The Least Bittern (*Ixobrychus exilis*) is an inconspicuous and often overlooked marsh nester. It is neither shy nor rare within its range, but is merely a quiet bird which lives out of sight among marsh emergents (Weller 1961). Little information has been published on the Least Bittern's breeding biology. However, three published accounts originate from Wisconsin. Wright (1946) reported briefly on a nest he observed in Northeastern Wisconsin and Nero (1950, 1951) reported on several nests he located in Dane County.

Study Area

Rush Lake is a shallow, prairie pothole wetland located in the southwestern corner of Winnebago County and the northwestern corner of Fond du Lac County, Wisconsin. It has an area of 1245 hectares and an average depth of only 60 cm. The lake was once largely covered with bulrush (*Scirpus acutus*) and scattered islands of cattail (*Typha latifolia* and *T. angustifolia*). Unfortunately, this emergent vegetation has been steadily disappearing due to high water levels maintained by a dam (Ziebell 1985, Mossman et al. 1987). The most extensive remaining stands of emergent vegetation are found on the northern end of the lake. Therefore, a study area was established here (Figure 1).

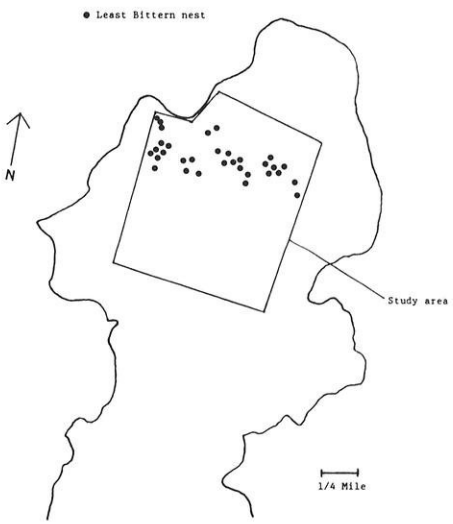

Figure 1. Rush Lake study area and nest distribution in 1981.

Methods and Materials

The data in this paper were gathered incidently while studying Black-crowned Night-Herons (*Nycticorax nycticorax*) during the 1980 and 1981 breeding seasons. No intensive search was conducted to find Least Bittern nests. Many nests were discovered while paddling through emergent vegetation. Others were found after an adult bird was flushed and the immediate area was searched. Nests were very easy to find.

Each newly-discovered nest was marked with a metal-rimmed cardboard tag. The tag, bearing the nest number, was attached to nearby vegetation or to a boxelder stake that was placed about one meter from the nest. At each nest the following were noted: nest diameter, nest thickness, nest composition, height of nest above water, distance to the nearest nest, and distance to the edge of the vegetation. The length and breadth of each egg was measured with a vernier caliper. The number representing the position of an egg in the laying sequence was noted on the egg with a #2 pencil. Eggs whose positions were not known were lettered.

Nests were checked almost daily until the young fledged, or some other form of termination occurred. Whenever possible, nests were checked in the mid-morning. With each visit all eggs were weighed with a 50-gram-capacity Pesola pocket scale. A small pouch made from a plastic onion bag was attached to the scale to hold the egg while it was weighed.

Newly-hatched young were marked with a colored wire around a leg until the bird was large enough to be banded with a U.S. Fish and Wildlife Service aluminum leg band. Caught by hand until they became too mobile, the young were weighed and measured at each visit. Their weights were taken with a 50-gram-capacity Pesola pocket scale or an Ohaus triple-beam balance. The tarsus and culmen were measured with a vernier caliper. The wing length was measured with a plastic pocket ruler.

Results

Nests.—Thirty-seven nests were found during the two year study. Five nests were found in 1980. In 1981 more time was spent looking for nests and 32 nests were found. Thirty-one nests were located in cattail and six were in bulrush. The nests were constructed from the immediately surrounding vegetation.

The dimensions of 37 nests were recorded. The thickness of the nests ranged from 6.0 cm up to 20.0 cm, with a mean of 12.7 cm (SD = 10.0). The diameter of the nests ranged from 10.0 to 25.0 cm, with a mean of 16.6 cm (SD = 14.6).

The height of nests above the water ranged from 1.0 to 92.0 cm, with a mean of 53.6 cm (SD = 583.7). Nests built in cattail ranged from 20.0 to 92.0 cm, with a mean of 60.0 cm (SD = 400.5). Nests built in bulrush ranged from 1.0 to 40.0 cm, with a mean of 20.8 cm (SD = 256.9).

Nests were always located adjacent to a patch of open water. The nests were 4 to 400 cm from open water with a mean of 99.6 cm.

In 1981 the nests were not evenly spaced, but were often concentrated in loose groupings (Figure 1). The distance between neighboring nests in 1981 ranged from 2 to 85 meters, with a mean of 16 meters. Of the 32 nests observed, 24 (75%) were 16 meters or less from their nearest neighbor and 10 (31%)

were six meters or less from their nearest neighbor. Only two neighboring nests could have resulted from one female. These two nests were not active at the same time and the later one could have been a renest by the same female. All other neighboring nests were active at the same time and were assumed to be the work of different females.

During this study the number of Least Bitterns using Rush Lake was noticeably higher than in other years. This increase was documented on an annual mid–June survey, during which a fairly standard route is followed by unmotorized skiff. From 1980 to 1989 the number of Least Bitterns observed each year (except 1981) ranged from 1 to 16 with an average of 5.4. However, 40 Least Bitterns were recorded in 1981.

Eggs.—The egg-laying interval was documented for 14 nests on Rush Lake. In 13 nests the eggs were deposited one a day. In the other nest, five days were required to lay four eggs. A day was skipped before the last egg was laid.

The measurements of 158 eggs were recorded. Egg length ranged from 28.4 to 34.5 mm, with a mean of 31.2 mm (SD = 1.40). Egg breadth ranged from 22 to 25 mm, with a mean of 23.8 mm (SD = 0.44).

The weight of 47 eggs at laying ranged from 8.1 to 12.0 g, with a mean of 9.8 g (SD = 0.76). The weight of 39 eggs just before hatching ranged from 6.1 to 10.2 g, with a mean of 8.2 g (SD = 0.62). The average weight loss of 37 eggs throughout the incubation period ranged from 0.4 to 2.8 g, with a mean of 1.5 g (SD = 0.23) or 15.3% of the original weight. Two eggs with dead embryos maintained the same weight for up to four days before they were cracked or broken.

Clutch Size.—The following complete and incubated clutches were recorded; 1 two-egg, 15 four-egg, 13 five-egg and 6 six-egg, with a mean clutch size of 4.6 (SD = 0.76). The clutch size of successful nests (n=22) ranged from two to six eggs, with a mean of 4.5 (SD = 0.83).

The clutch size of nests from June 1–15 ranged from 4 to 6 with a mean of 4.86 (n=15). The clutch size of nests from June 16–30 ranged from 4 to 6 with a mean of 4.92 (n=13). However, from July 1–17 the clutch size ranged from 2 to 4 with a mean of 3.50 (n=4). These later nests were most likely renests or second nests which typically have smaller clutch sizes.

Incubation Period.—The incubation period for all eggs ranged from 16 to 23 days with a mean of 18.9 days. The incubation periods of only the first eggs in a clutch ranged from 21 to 23 days with a mean of 22 days. When using only the last egg in a clutch, the incubation period ranged from 16 to 20 days with a mean of 17.3 days.

The incubation periods of eggs by position in the laying sequence are presented in Table 1. Eggs in the first, second and third positions had longer incubation periods. Eggs in the fourth and fifth positions had the shortest in-

Table 1. Incubation periods of eggs by position in the laying sequence.

Egg position	Number of eggs	Mean incubation period
1	6	22.0
2	5	20.2
3	7	19.1
4	10	17.8
5	9	17.3
6	2	19.0

Table 2. Growth of Least Bittern young.

Age in days	Weight (g)	Tarsus (mm)	Culmen (mm)	Wing (mm)
2	9.0	9.2	11.2	10.6
4	16.1	13.1	17.4	15.0
6	29.9	17.3	23.5	23.4
8	50.6	20.5	30.3	35.0

cubation periods. Two eggs in the sixth position had slightly longer incubation periods.

The bottom of Table 1 shows the incubation periods for the last egg laid in a clutch and the second through sixth from last eggs laid. The early eggs in a clutch had the longest incubation periods and the last eggs had the shortest. This suggests that in many nests effective incubation did not begin until the clutch was nearly complete.

Hatching Success.—When all nests are considered (n=37), the number of young hatched per nest ranged from two to six, with an average of 2.4 young. If only the successful nests (n=22) are considered, the number of young hatched per nest ranged from two to six, with an average of 4.1 young. The average number of young hatched per clutch size of two, four, five, and six was 2.0, 3.4, 4.6, and 6.0, respectively. Of the 37 nests I observed, 59% hatched young, and the average clutch size for these nests was 4.5.

Five of the fifteen nests that were observed through the incubation process hatched asynchronously (one a day). However, the eggs in the other ten nests hatched with various degrees of synchrony. The following hatching rates were noted: three eggs in two days (1), four eggs in three days (1), four eggs in two days (1), five eggs in three days (5), six eggs in four days (1), and six eggs in three days (1).

Growth of the Young.—Fifteen young from four nests were measured from hatching up to 8 days old. The growth means of these young are presented in Table 2.

Predation.—In this study the Marsh Wren (*Telmatodytes palustris*) was the probable predator in two instances. In one nest the first and only egg was punctured. The nest was subsequently abandoned. Another nest with five eggs had one egg punctured. The nest was not abandoned and the other four eggs hatched.

Fifteen nests were terminated when all the eggs or young disappeared. In six instances the eggs disappeared without a trace, and the nest remained in perfect condition. The cause of these disappearances is unknown. In seven other nests all the eggs disappeared without a trace, but the nest was partially pulled down. In two nests all the young disappeared without a trace, and the nests were partially pulled down. The predator responsible for these terminations may have been the Raccoon (*Procyon lotor*).

Banding.—In 1980, 40 young were banded with U.S. Fish and Wildlife Service aluminum leg-bands and one adult male was caught on a nest and banded. In 1981, 59 young were banded. At this time no band returns have been reported.

Discussion

Nest dimensions recorded during this study are similar to those found in the literature. The mean nest thickness of 12.7 cm recorded on Rush Lake is similar to a nest thickness of 10.2 cm (4 inches) reported by Pearson (1909). The nest diameters of this study are compared to others found in the literature in Table 3. The height of nests above the water from this study and those found in the literature are listed in Table 4.

The location of Least Bittern nests adjacent to a patch of open water has been noted by several authors (Cooke 1881, Simmons 1915, Saunders 1926, Nero 1950, and Weller 1961). Weller (1961) reports that nests were a distance of 6 to 20 feet (182.8 to 609.6 cm) from open water, with a mean of eight feet (243.8 cm). Nero (1951) found a nest two feet (60.9 cm) from open water. On Rush Lake nests were 4 to 400 cm from adjacent open water with a mean of 99.6 cm.

Least Bittern nests have been found evenly spaced in wetlands (Kent 1951, Weller 1961). Kent (1951) found 19 nests in a 44 acre marsh and Beecher (1942) found one nest per four acres. Weller (1961) found 62 nests in 83 acres. However, Wood (1951) found 15 nests in two acres of vegetation. Weller (1961) considered Wood's concentration of nests exceptional. Weller (1961) did observe several cases of two active nests only 15 to 20 feet (4.5 to 6.1 m) apart. In 1981 the nests on Rush Lake were not evenly spaced, but were often concentrated in loose groupings. The distance between neighboring nests ranged from 2 to 85 meters, with a mean of 16 meters. Of the 32 nests observed, 24 (75%) were 16 meters or less from their nearest neighbor and 10 (31%) were six meters or less from their nearest neighbor. Concentrations of nests probably develop in particularly suitable habitat (Weller 1961). The concentra-

Table 3. Least Bittern nest diameters.

Source	Number of nests	Diameter (cm)
Bent (1904)	2	10.2–17.8
Pearson (1909)	1	22.9
Simmons (1915)	1	16.5
Baker (1940)	1	20.3
Nero (1950)	1	20.3
Kent (1951)	19	20.3
Weller (1961)	89	12.7–20.3
This study	37	10.0–25.0

Table 4. Height of Least Bittern nests above water.

Source	Number of nests	Habitat	Height (cm)
Baker (1940)	1	Brush	30.5
Trautman (1940)	17	Cattail & Bulrush	15.2–60.9
	2	Brush	106.7
Nero (1950)	1	Cattail	30.5
Nero (1951)	3	Cattail	7.6–60.9
	2	Bulrush	2.54–5.1
Kent (1951)	17	Bulrush & Bur-reed	5.1–17.8
	2	Cattail	30.5
Weller (1961)	89	Cattail & Bulrush	15.2–60.9
This study	31	Cattail	20–92
	6	Bulrush	1–40

Table 5. Least Bittern egg dimensions.

Source	Number of eggs	Length (mm)		Breadth (mm)	
		Mean	Range	Mean	Range
Bent (1926)	58	31.0	28.0–33.0	23.5	22.5–25.0
Baker (1940)	3	32.1	31.5–33.0	24.0	—
Palmer (1962)	20	31.1	—	23.9	—
All literature	81	31.4	—	23.8	—
This study	158	31.2	28.4–34.5	23.8	22.0–25.0

tions observed during this study may have resulted from the limited availability of suitable habitat, concentrating the bitterns in the remaining suitable habitat.

Also during this study the number of Least Bitterns using Rush Lake was higher than in other years, as documented on the annual mid–June survey. An increase in the Least Bittern population was also noticed in southern Wisconsin by Mossman (personal communication). Roberts and Roberts (1982) report good numbers of Least Bitterns in the southern and eastern areas of the state during the 1981 breeding season. A sudden increase in the state population of Least Bitterns may have contributed to the number of birds attempting to nest in the limited areas on Rush Lake.

The egg-laying interval for the Least Bittern is generally one a day. Baker (1940) watched a nest in which three eggs were laid, one a day. Trautman (1940) observed six nests, and with only two exceptions, an egg was laid daily in each until the sets were completed. Weller (1961) studied three nests that had eggs deposited one a day. He observed one other nest that had five eggs laid in six days. A day was skipped before the last egg was laid. The egg-laying interval documented on Rush Lake was one a day, except for one nest that required five days to lay four eggs. A day was skipped before the last egg was laid.

The egg dimensions found in this study are very similar to those found in the literature and are presented in Table 5.

Egg weights for Least Bitterns have been poorly documented. Baker (1940) reports "three eggs 29 grams." Hansen (1984) reports "three eggs from an abandoned clutch each weighed approximately eight grams." In both of these papers the extent of incubation and the exact weight of the individual eggs is not given. The extent of incubation is important because as the process of incubation goes on, an egg steadily loses weight (Welty 1975). In this study the weight of 47 eggs at laying ranged from 8.1 to 12.0 g, with a mean of 9.8 g (SD = 0.76). The weight of 39 eggs just before hatching ranged from 6.1 to 10.2 g, with a mean of 8.2 g (SD = 0.62).

Knowing whether an egg is infertile, developing properly, or if the embryo is dead, is valuable information in determining the reproductive success of a species. This can be determined by regularly weighing the eggs throughout incubation. Eggs that are infertile or dead lose little if any weight and often gain weight (Ziebell 1985). In this study two eggs with dead embryos maintained the same weight for up to four days before they were cracked or broken.

In this study of Least Bitterns the av-

erage weight loss of 37 eggs throughout the incubation period ranged from 0.4 to 2.8 g, with a mean of 1.5 g (SD = 0.23) or 15.3% of the original weight. It has been found in Black-crowned Night-Herons that 11.3% of the original egg weight was lost during incubation (Ziebell 1985).

The clutch size of the Least Bittern is ordinarily four to five, sometimes six, very rarely seven (Bent 1926). On Rush Lake the clutch size ranged from two to six. The mean clutch size of 4.6 for this study is similar to other studies (Table 6).

The second nesting attempt of double-brooded species usually has a smaller clutch size (Lack 1954). Weller (1961) found a variation in clutch size for the Least Bittern that was not consistent with a double-brooded species. He found that early nests, before June 15, had smaller clutch sizes than those after June 16, which may have been renests or second nests (Table 7). He also reports that in 1951 Kent found 13 nests that also exhibited this trend. On Rush Lake the opposite was found (Table 7). All nests in June had a similar "high" clutch size, and it was not until July, when most renests or second nests would be started, that the clutch size decreased. Weller (1916) suggests that the variation in clutch size that he and Kent observed was related to the availability of food. The parents could feed more young in midsummer, when more food was available, than in the early summer. If clutch size is influenced by food availability then food was not a limiting factor for the Least Bitterns on Rush Lake. The parents were able to feed the same number of young in midsummer as in early summer.

The incubation period for the Least Bittern is reported as being between 15 and 20 days. The incubation period from this study is similar to those found in the literature (Table 8). The method used to determine the incubation period is very important when comparing the results of different studies. In early studies the method used to determine the incubation period is unclear. However, later sources do mention the method of calculation. Nice (1953) and Sigurslid (1982) suggest that calculating the incubation period for the last egg in a clutch is more reliable as a measure of incubation time because the number of days required for clutch completion is eliminated as a variable in the calculation. When using only the last egg in a clutch method, the mean incubation period for this study is 17.3 days. This value is similar to those reported in the literature (Table 8).

One factor affecting the length of incubation is the position of the egg in the laying sequence. Kendeigh (1940) sug-

Table 6. Least Bittern clutch size.

Source	Number of clutches	Area	Mean clutch size
Baker (1940)	2	Michigan	5.00
Trautman (1940)	23	Ohio	4.39
Nero (1950)	1	Wisconsin	5.00
Nero (1951)	5	Wisconsin	3.80
Kent (1951)	19	Iowa	4.15
Weller (1961)	59	Iowa	4.40
Hansen (1984)	3	Kansas	4.30
This study	35	Wisconsin	4.60

Table 7. Least Bittern clutch size and chronology of nesting.

Source	June 1–15			June 16–30			July 1–17		
	Number	Mean	Range	Number	Mean	Range	Number	Mean	Range
Weller (1961)*	22	3.59	2–5	28	4.89	4–6	9	4.77	4–5
This study	15	4.86	4–6	13	4.92	4–6	4	3.50	2–4

*Based on 46 nests found by Weller (1961) and 13 nests by Kent (in litt.) in 1951.

gests that the length of the incubation period is inversely related to the incubation attentiveness of the adult. Eggs in the first, second and third positions had longer incubation periods (Table 1). Eggs in the fourth and fifth positions had the shortest incubation periods and most likely received the most uninterrupted incubation. This suggests that in most clutches, effective incubation did not begin until the clutch was nearly complete or was complete. Two eggs in the sixth position had longer incubation periods. This may have been due to the interruption of incubation caused by the young that had already hatched.

This trend of shorter incubation periods for eggs laid later in a clutch can also be found at the bottom of Table 1. This shows the incubation periods for the last egg laid in a clutch and the second through sixth from last eggs laid. The early eggs in a clutch had the longest incubation periods and the last eggs had the shortest. Similar trends in incubation periods by egg position have been found in the Black-crowned Night-Heron (Ziebell 1985).

When all 37 nests are considered, the number of young hatched per nest ranged from two to six with an average of 2.4 young. The average number of young hatched per clutch size of two, four, five, and six was 2.0, 3.4, 4.6, and 6.0, respectively. Disregarding the one clutch size of two eggs, it appears that larger clutch sizes were more successful in hatching their eggs. Weller (1961) found that 84% of the nests he studied hatched young and the average clutch size was 4.0. Of the 37 nests I observed, 59% hatched young and the average clutch size for these nests was 4.5.

Earlier studies report that Least Bittern eggs hatch asynchronously, one a day (Nero 1950, Kent 1951, Hansen 1984). Incubation is said to begin with the first egg laid (Kent 1951, Weller 1961). Hansen (1984) suggests that incubation begins with the first or second egg and Baker (1940) states that incubation begins with the second egg. These references give the impression that Least Bitterns lay one egg a day, start incubation almost immediately and always hatch their young asynchronously (one a day). In this study eggs were laid one a day, but in many nests effective incubation did not begin until the clutch was nearly complete. As mentioned previously, in this study the incubation period for the first eggs in a clutch was quite long in comparison to late eggs. If effective incubation had begun with the first or second egg their incubation periods would be similar to that of the later eggs. Instead their incubation periods were about 4 to 5 days longer, suggesting that effective incubation did not begin until the clutch was nearly complete. This delay in effective incubation resulted in nests hatching with some synchrony. Five of the fifteen nests that were observed through the incubation

Table 8. Least Bittern incubation periods.

Source	Method of calculation	Days	
		Mean	Range
Allen (1915)	—	15	—
Bergtold (1917)	—	17	—
Bent (1926)	—	—	16–17
Baker (1940)	Last egg	—	18.5–19
Weller (1961)	Last egg	—	17–18
	First egg	—	19–20
This study	Last egg	17.3	16–20
	First egg	22.0	21–23
	All eggs	18.9	16–23

process did hatch asynchronously. However, the eggs in the other ten nests hatched with various degrees of synchrony.

Little data are available documenting the growth of Least Bittern young. Hansen (1984) lists weights of some young, but the age of the individuals is not given. Nero (1950) provides weights and tarsal measurements for five young. However, the measurements were not begun until the last egg had hatched, so the age is known only for the last hatchling. In this study 15 young from four nests were measured from hatching up to 8 days old. The data from this study (Table 2) is similar to that listed by Nero (1950).

Predation is known to affect the nesting success of the Least Bittern. Chapman (1900) reports a Marsh Wren piercing eggs in a bittern nest. Weller (1961) suggests that Common Crows (*Corvus brachyrhynchos*), Blue Jays (*Cyanocitta cristata*), and blackbirds may take eggs for food. Trautman (1940) saw a turtle take an adult bittern. Weller (1961) concluded that turtles were responsible for the loss of several young bitterns. Hansen (1984) suggests that Raccoons may have been responsible for destroyed nests.

In this study the Marsh Wren was the predator in two instances. In nine instances the Raccoon was the probably predator. Raccoons have been seen in the beds of emergent vegetation in the middle of Rush Lake by myself and Tom Bett (personal communication). It would be very easy for a Raccoon to reach up and partially pull a nest down to retrieve the contents. However, the exact cause for these terminations is unknown.

Conclusion

The data collected on the breeding biology of the Least Bittern on Rush Lake is similar to that found in the literature, except for the following: Synchronous hatching occurred more frequently than has been recorded in the literature. It seems logical that varying degrees of synchronous hatching would occur in a population. However, other researchers have not documented this, most likely because they have not addressed this aspect of the Least Bittern's breeding biology.

The high density of nests on Rush Lake was also unusual and may have been due to the limited availability of nesting habitat and an influx of breeding adults into the area.

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Trumpeter Swans in St. Croix and Polk Counties

Observations of Trumpeter Swans in northwestern Wisconsin from 1985–89 give encouraging indications that reintroduction efforts are working.

by James O. Evrard

The history of Trumpeter Swans (*Cygnus buccinator*) in Wisconsin has been summarized in detail by Matteson et al. (1988). Briefly, the swans were extirpated in the State by the early 1900s. Trumpeter Swans were not regularly seen again until they began pioneering into northwestern Wisconsin from Minnesota in the mid-1980s. This article documents their recent arrival and movements in St. Croix and southern Polk Counties.

My first sighting of a Trumpeter Swan in St. Croix County was in 1985. On 11 April, I observed an unmarked adult Trumpeter Swan feeding in a flooded pasture adjacent to the Hammond Waterfowl Production Area (WPA). My observation was later confirmed by Cindy Swanberg, Wildlife Manager for the Wisconsin Department of Natural Resources (WDNR) at Baldwin.

A second Trumpeter Swan was observed in St. Croix County on 20 May 1986. The swan was seen on the Goose Pond WPA by WDNR technician Bruce Bacon and student intern, Julie Sweitzer. The bird was marked with a yellow plastic neck collar having the black characters, 80NA. A week later I saw a swan with a yellow neck collar on a privately-owned pond several miles from the earlier observation. The bird was too far to accurately read the letters on its collar, but I assumed it was 80NA.

Donna Compton, wildlife technician with Hennepin County (Minnesota) Parks, informed us that 80NA was a 4-year old male or cob originally from Lacreek National Wildlife Refuge in South Dakota. The bird was handreared by the Minnesota Department of Natural Resources (MDNR) and held in captivity until the summer of 1985 when it was released in the Carver Park Reserve. The cob remained in the area until early April of 1986. 80NA was next seen in late April near Cumberland, Wisconsin before moving to St. Croix County in May. He returned to Minnesota and the Carver Park Reserve in early June where he remained for the rest of the year.

80NA returned to Wisconsin in 1987. The cob was first observed on Bootie Lake northeast of New Richmond on 8 March and later on Surprise Lake in

southern Polk County in early April. However, he returned again to the Carver Park Reserve later in April. Larry Gillette, wildlife manager with Hennepin County Parks, agreed to provide a wing-clipped female as a potential mate for 80NA if he spent his flightless molting period in Wisconsin.

By the end of April, 80NA returned to Surprise Lake where he remained for a week. In early May, he moved to Oakridge Lake northeast of New Richmond. During May he was seen almost daily on Oakridge Lake and nearby wetlands. The shoreline and uplands surrounding the lake are federal and state wildlife properties. The lake is 72 ha in size and is excellent waterfowl habitat.

On 27 May 1987, I observed 80NA chasing a pair of swans on the far end of Oakridge Lake. The cob would vigorously chase the pair on the water and in the air while trumpeting loudly. As the pair flew over me I examined them closely through my binoculars looking for neck collars and other markings.

The swans were the same size as 80NA, but their bills were bright yellow from the base to nearly the tip. The bird's large size and bill coloring ruled out both Trumpeter and Tundra Swans (*Cygnus columbianus*). These strange swans were seen by WDNR Assistant Brian Lueth the previous day on a wetland a few km southwest of Oakridge Lake.

On 28 May I had the opportunity to view the odd birds as they loafed in a plowed field just east of Oakridge Lake. I clearly saw that the pair was marked with leg bands. After checking various references and field guides, I concluded that the birds were Whooper Swans (*Cygnus cygnus*), a Eurasian species found rarely in North America (Bellrose 1976). Since the pair was leg-banded, I suspect that they had escaped from captivity.

Delacour (1954) considered Trumpeter Swans and Whooper Swans to be the same species. Since they are so closely related, 80NA may have identified the pair as competing swans and attempted to drive them away.

80NA was seen several times in early June on a small wetland south of Oakridge Lake but later returned to the lake. On 19 June, I saw the swan on the lake. After he was not seen for nearly a month, an aerial search of the lake and adjacent wetlands was conducted on 10 July. The pilot reported seeing the collared swan in the security of thick emergent vegetation on the east end of the lake, apparently flightless while it was molting.

On 5 August, a flightless female or pen Trumpeter Swan was released on Oakridge Lake by Steve Kittleson of the MDNR. The pen was marked with a yellow neck collar having the black characters, 07NC. The molting 2-year old bird was obtained by the MDNR from a private breeder in Illinois and was raised in the MDNR's Carlos Avery facility. She had been transferred earlier to the Carver Park Reserve but was returned to Carlos Avery because of irregular molting of her wing feathers.

07NC was not positively identified again until mid–August when Brian Lueth saw her on a road adjacent to Oakridge Lake. At the same time I saw 80NA on the opposite end of the lake. A few days later I chased the overly-tame pen from the shoreline into the lake attempting to make the swan more wary of people. She swam along the shore calling loudly probably as a result of being disturbed by me. A few minutes later 80NA flew over the lake and landed in the vegetation where the pen was hiding.

After a few minutes he reappeared and swam out into the lake. He fed there and later returned to the area where 07NC was suspected to be hiding. This was as close as 80NA ever approached 07NC to my knowledge.

Both swans were seen alone on Oakridge Lake and nearby wetlands during the rest of August and through most of September. 80NA was observed flying to wetlands as far as 3 km from Oakridge Lake, while 07NC was seen only on wetlands that she could reach by walking or swimming.

We suspected that 07NC could not fly after noting an absence of primary and secondary feathers when she raised her wings. On 22 September we chased her by canoe until we captured the bird. An examination found that her wing feathers had not developed properly after molting. Since she could not fly, 07NC was returned to the MDNR.

80NA continued to be observed throughout northcentral St. Croix County until 18 October when Bruce Bacon saw him on the Ausen WPA. He was later seen in Minnesota where he returned for the winter. He used areas in St. Croix County open to waterfowl hunting, but was not mistaken for a legal target possibly due to the WDNR's intensive publicity campaign warning hunters not to shoot the protected bird.

80NA, now 6 years old, returned to his familiar territory on Oakridge Lake by 5 March. During the month he was seen actively chasing Canada Geese about the lake, a behavior we had not observed previously.

On 29 March, Bruce Bacon saw 2 new marked Trumpeter Swans, 14NC and 42NC, on a wetland about 4 miles southeast of Oakridge Lake. These birds also originated from Minnesota and were apparently exploring northwestern Wisconsin looking for a breeding territory. They successfully nested in northern Polk County the following year. This was the first known nesting of Trumpeter Swans in Wisconsin modern times. Two cygnets were produced and marked with yellow collars 10KT and 11KT.

On 30 March 1988, another female Trumpeter Swan from Minnesota was released on Oakridge Lake in a second attempt to provide a mate for 80NA. The 3-year old pen's flight feathers were clipped to encourage her to remain on the lake. She was marked with a red wing tag having the black numbers, 25. Within a day, 80NA and Red25 had established a pair bond.

Although they were seen almost always together, there were several occasions when the pair was separated on Oakridge Lake. The pen would eventually call and the cob would fly to her. They greeted each other with calls, head bows and entwined necks. When Canada Geese would come near, 80NA would flush and chase the geese for distances up to 2 km from the lake. On other occasions he was seen alone feeding in nearby wetlands. Upon returning to Red25, he would trumpet loudly and they would greet each other with calls and head bows.

In mid–May, the Trumpeter pair was seen with increasing frequency on and near a cattail (*Typha* sp.) island in Oakridge Lake. For more than a month both birds preened and loafed on the island and the pen appeared to be sitting on a nest. I did not want to disturb the swans if they indeed were nesting so I waited until late June to visit the island.

I found a rudimentary nest, 1 m in diameter and 6 cm above the water level. A normal nest of the Trumpeter Swan is at least twice that size (Banko 1960). The pen had created a moat around the

nest by reaching out and pulling in vegetation which was added to the structure beneath her. Since Red25 was too young to lay eggs, she apparently went through the early stages of the nesting cycle. Most Trumpeters normally do not breed until 4–6 years old (Banko 1960). I have seen the same behavior in Canada Geese too young to breed. A loafing platform of crushed cattails was found about 3–5 m from the nest. The cob normally sat on this platform when the pen was on the nest.

80NA was seen flying until late July. The Trumpeter pair was seen together on Oakridge Lake throughout August and midway into September. Because of the previous year's experience, we were concerned about the ability of Red25 to fly. On 13 September, Bruce Bacon and I chased both swans by canoe until they flushed. Red25 flew about 400 yards and landed while 80NA flew half way around the lake before landing.

The Trumpeter Swans began flying to other wetlands within a few km of Oakridge Lake in early October. These wetlands were open to waterfowl hunting during the month, but hunters again refrained from shooting at the protected birds. 80NA and Red25 were last seen in St. Croix County on the Ausen WPA on 16 October. By November they had returned to Minnesota for the winter, repeating the pattern of the previous year.

We had great hopes that the Trumpeter pair would return and produce young in 1989. This was not to be the case. WDNR Wildlife Manager Kris Belling at Baldwin was informed that Red25 died of lead poisoning while in Minnesota during the winter of 1988–89. Despite overwintering ponds not being hunted for 40 years, extremely low water levels caused by the 1988 drought made old lead shot available to the swans.

80NA returned to St. Croix County in late February when he was seen alone on the open water of the Willow River about 8 km southwest of Oakridge Lake. By 11 March he was back on Oakridge Lake chasing Canada Geese from his territory.

A third female Trumpeter Swan, marked with a yellow neck collar with the black characters, 01NC, was released by the WDNR on Oakridge Lake on 14 April. The 3-year old pen was wing-clipped so she would not wander from the lake.

Apparently 80NC and 01NC did not form a pair bond until 20 April when Bruce Bacon saw them sitting close together on the east shore of the lake. The following day, the pair were on the cattail island where I found the rudimentary nest the previous year. On a May 11th aerial waterfowl count, I saw 01NC building a nest on the cattail island. Bruce Bacon inspected the island on 16 May and found both a rudimentary nest and a loafing platform much like in 1988.

During May, June, and July, the birds were observed together on Oakridge Lake. Beginning in August, 80NA would occasionally leave 01NC and move to a wetland immediately west of the lake. The pair was last seen in St. Croix County on 9 October.

What will 1990 bring? Hopefully both 80NA and 01NC will return to Oakridge Lake and establish their nesting territory. The pen will be 4 years old—the minimum breeding age. They could be the second pair of Trumpeter Swans to nest in Wisconsin in modern times. Only time will tell.

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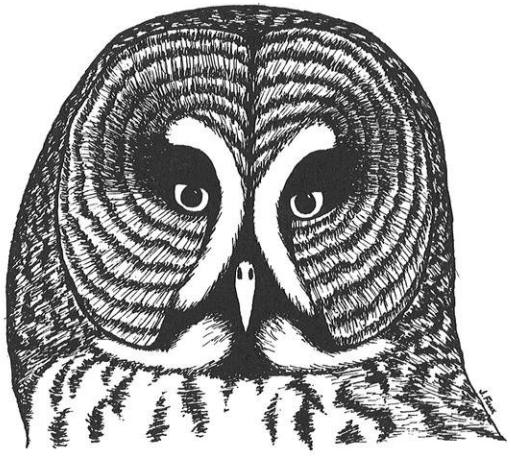
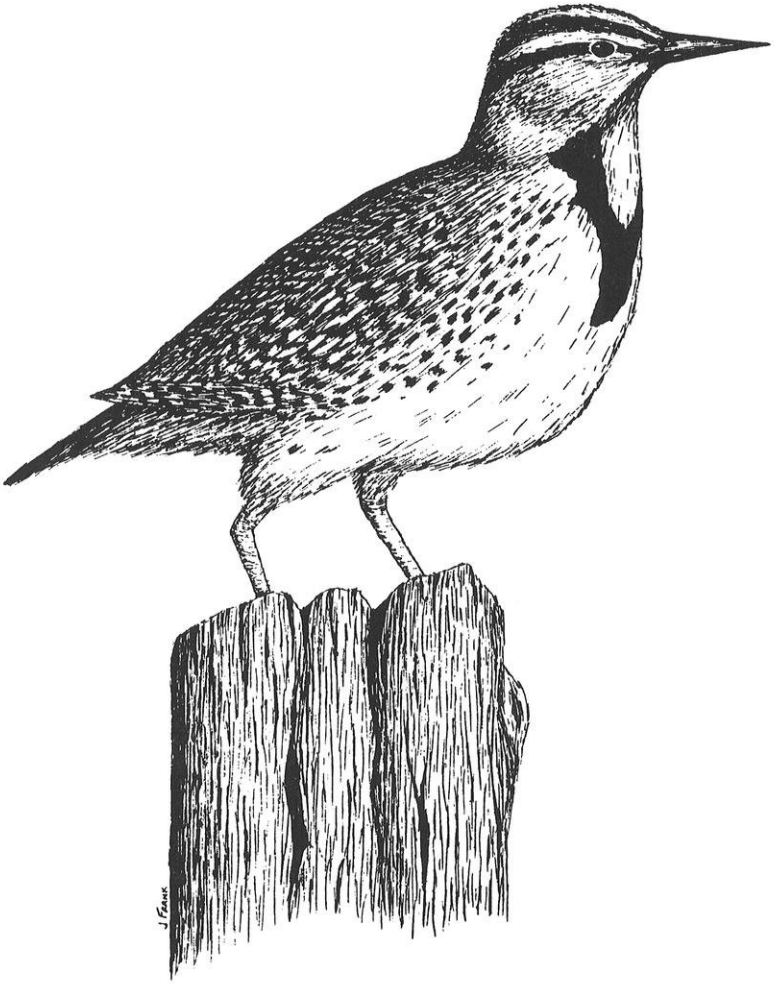


Great Gray Owl *by James C. Frank*



Eastern Meadowlark *by James C. Frank*

Sources and Sinks for Regional Bird Populations

by Stanley A. Temple

Most regional bird populations occupy a geographic range that is composed of a complex checkerboard of discrete habitat patches that are of different overall quality. Some local patches of habitat, such as a forest stand or a marsh, may be of high quality, whereas other patches, although suitable for the bird, may be of low quality. The specific features that make the quality of a patch of habitat either good or poor, of course, vary widely among different species. But, for each species there will be patches of habitat featuring characteristics that allow the birds living there to thrive. They will enjoy good survival, and they will reproduce at near their maximum rate. In contrast, birds in poor quality habitat will typically have lower rates of survival and reproduction.

As a result of this relationship, bird populations in habitat patches of good quality have the potential to produce a surplus of individuals, more than the local habitat patch can support. When the local habitat patch has reached its carrying capacity, the surplus birds disperse away from the area in search of habitat patches where the local population is below carrying capacity and, hence, capable of accepting new recruits.

In contrast, local populations in habitat patches of poor quality may survive and reproduce at such low rates that they are unable to maintain their numbers. Reproduction falls short of compensating for mortality. These populations, in a sense, will be "operating in the red," and their deficit must be covered by birds that move into the population from elsewhere. These immigrants bolster the unproductive population and may, in fact, maintain these failing populations at near the carrying capacity of the habitat. The essential feature of this relationship is, of course, that bird populations in poor quality habitat are subsidized by the excess productivity of bird populations in good quality habitat. Without this subsidy, the populations in poor quality habitat would eventually collapse.

Population biologists have long recognized this pattern among natural populations, and they have coined terms to describe it. Local populations that produce a surplus are termed

"source populations," whereas local populations that run a deficit are termed "sink populations" (Pulliam 1988). Source populations can be thought of as subsidizing sink populations through a "rescue effect" (Brown and Kodric-Brown 1977).

This dynamic give-and-take relationship between local populations can, under some conditions, result in all of the available habitat for a species—both good and poor quality—being occupied. Casual observation might lead to the false impression that the birds are doing well in all habitat patches because their densities are high in all areas of suitable habitat. This situation only occurs when there are sufficiently productive source populations to subsidize all of the sink populations. If the number of local source populations in a region drops, or the productivity of these source populations is reduced, they will be unable to rescue all the sink populations, which will then start to dwindle in size and perhaps disappear.

Among Wisconsin birds, we see examples of this dynamic relationship between sources and sinks. Wisconsin encompasses the geographic range limits for many species; it is near the eastern limit of some prairie grassland birds, like the Sharp-tailed Grouse, near the western and northern limits of some deciduous forest birds, like the Tufted Titmouse, and near the southern limits of some boreal coniferous forest birds, like the Great Gray Owl. For many of these peripheral populations, habitat conditions in Wisconsin are of marginal quality; and many of these Wisconsin populations may, in fact, be sinks that persist because they have been continually rescued by source populations nearer to the center of the species' range, where habitat conditions are optimal. The status of Great Gray Owls in Wisconsin is surely more dependent on a flow of immigrants from further north than it is on local productivity. Similarly, Wisconsin's Common Barn-Owl population has probably always been a sink population, subsidized by source populations to the south. When those source populations started to suffer from habitat loss and other problems, the subsidies to Wisconsin dropped, and our local populations collapsed and became endangered.

Even within Wisconsin, we have source and sink populations. Many forest-interior songbirds in the heavily fragmented forests of southern Wisconsin are reproducing poorly because of nest predation and brood parasitism from Brown-headed Cowbirds. These southern Wisconsin populations have become sinks because of the fragmented nature of their habitats. In contrast, forest-interior songbirds are much more productive in the more extensive forest tracts of northern Wisconsin; birds there are probably important source populations. The continued presence of Ovenbirds and other forest-interior species in southern forests can probably be attributed to a rescue effect provided by northerly populations (Temple and Cary 1988).

There is an important conservation message in this pattern of sources and sinks. Without nearby, healthy source populations, where reproduction exceeds mortality, many sink populations are doomed. Bird conservationists should begin to identify regional source populations and protect those areas. To do this, we must look beyond the mere presence or absence, or even

density, of birds in a local habitat patch. Instead, we must also see how well birds survive and reproduce there. Only these admittedly difficult-to-obtain pieces of information will permit us to clearly separate the sources from the sinks and identify important patches of highly productive habitat that may need protection.

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Lesser Scaup *by Jonathan Wilde*

Flooded Sedge Meadow, Duck Creek Marsh, Columbia Co., Wisconsin (*photo by Michael J. Mossman*)

Sedge Meadow, Peshtigo Harbor, Marinette County, Wisconsin (*photo by Michael J. Mossman*)

Birds of Wisconsin Sedge Meadows

by Michael J. Mossman and David W. Sample

Sedge meadows are wet or damp "grassy" meadows dominated by sedges (*Carex* spp.) and often grasses. Once common through most of Wisconsin, most have succumbed to ditching, draining, and filling. Although in the past these native meadows were viewed by society primarily as an impediment to agricultural and urban development, or at best as a source of "marsh hay", they have become increasingly recognized and appreciated for their roles in water purification, groundwater recharge, and in providing habitat for wildlife. Hunters, trappers and wildlife managers have long recognized the value of sedge meadows for game such as mink, Mallard, and Blue-winged Teal, and have promoted their protection, management and restoration in state wildlife areas, where the largest, highest quality sedge meadows now remain.

These meadows are important for nongame birds as well. Characteristic birds include common species such as Red-winged Blackbird and Common Yellowthroat, less widespread species such as Sedge Wren and Sandhill Crane, and uncommon, specialized birds that occur in almost no other Wisconsin habitat type: Sharp-tailed Sparrow, LeConte's Sparrow, Wilson's Phalarope, and Yellow Rail.

Although many of us have watched and listened for sedge meadow birds from roadsides or dikes, few are willing to brave these wet, boggy or hummocky places to acquire a more intimate knowledge of the meadow communities. As one cooperator noted in his report of a Cherokee Marsh survey, conducted by walking through the meadow and along old ditches:

> "Mosquitoes tolerable, footing atrocious. Most ditches have to be jumped. Treacherous and hidden holes along overgrown ditch banks—breaking a leg would be easy, so be careful. Expect to get thoroughly wet from the waist down."

And yet the meadows can be incredibly fascinating, for instance at night when the sounds and cooling darkness lend a peculiar enchantment. Some of the boggy sites even make for pleasant, springy walking. As a cooperator on nocturnal surveys noted, "I hear periodic booms and . . . thuds that seem

to come from the sedge mat and bog. It sounds like pressure being released with each step I take. . . . This is a great habitat, very nice underfoot." Lisa Hartman (1989) described another experience during a nocturnal survey for Yellow Rails at Reeds Lake Bog-Meadow:

> "Upon our aural palate landed a wonderful, musical pastiche. There rained the whoops and whoos of pied-billed grebes and great horned owls, the pumping glugs of American bitterns, snipes a-winnowing and 'scaip'ing every which way, and whip-poor-wills-whip-poor-wills-whip-poor-wills. Less loud, but equally incessant were the ratchets, rasps and hissings of well-territoried sedge wrens, sharp-tailed sparrows and LeConte's sparrows. The anurans alone were deafening . . . chorus frogs and eastern grey treefrogs creaking and blurting their way through the night, with any gaps in the sound assortment iced smoothly over by the harmonies of toads. And had I known nothing of the large Canada goose population on the refuge, I'd have sworn that all horizons were kenneled with hungry dogs barking for food and attention. Don't be led to believe the sedge meadow is a quiet place at night. At least the northern lights, very much at play in the sky above, were doing so silently and did not add to the uproar."

In Wisconsin, sedge meadows can be conveniently divided into those north and south of the tension zone. A southward extension of the northern meadows occurs in the bed of extinct Glacial Lake Wisconsin—the central "sand counties"—often in association with conifer swamps. Sedge meadows are still relatively common in some parts of these central counties. They are least common in the hilly Driftless Area of southwestern Wisconsin.

Southern sedge meadows are related to the fens and wet prairies, but are dominated more heavily by sedges and less by grasses and forbs than are the prairies. The most common sedge is tussock sedge (*C. stricta*), which typically forms hummocks containing two types of roots that allow the plants to survive in both flooded and unflooded conditions.

According to Curtis (1959), southern sedge meadows typically lie just at or above the permanent water table, and experience periodic flooding, especially in spring. The substrate is usually peat, which develops from the poorly decomposed roots and leaves of the sedges; or muck, which forms from decomposition of peat, often with mineral material washed in from surrounding uplands. These wetlands usually occur in extinct glacial lake beds, "kettle" depressions of glacial moraines or outwash, and around shores of lakes and streams. Because of spring flooding and drainage of cool air into these low areas, sedge meadows are generally slow to "green-up" in the spring. By summer they are typically rank with sedges and bluejoint grass (*Calamagrostis canadensis*), and accented with the colorful blossoms of forbs such as swamp milkweed (*Asclepias incarnata*), Joe-pye weed (*Eupatorium maculatum*), boneset (*E. perfoliatum*), meadow rue (*Thalictrum dasycarpum*) and angelica (*Angelica atropurpurea*). A few shrubs may be present, usually willows (*Salix* spp.), red osier dogwood (*Cornus stolonifera*), or silky dogwood (*C. obliqua*). On wet sites, sedge meadows tend to maintain themselves, although they may succeed slowly to wet prairie. On drier sites, or where water levels are lowered by drought or drainage, succession tends

towards shrub communities. Slightly varying, local topography may produce a natural mosaic of sedge meadow, wet prairie and patches of shrubs. In presettlement times, many of the drier meadows were undoubtedly kept relatively open by wildfires. Since then, many have succeeded to shrub-carr, but others have been maintained by intentional or accidental burning, or by mowing for marsh hay.

Northern sedge meadows most often occur in acidic environments, and usually on a fibrous peat substrate that may be many feet thick from centuries' accumulation of undecomposed sedge and sphagnum moss (*Sphagnum* spp.). Plants in these meadows must survive extremes in temperatures—cool air drainage can cause frost at any night of the year, and on a spring or summer day, the difference in temperature between a plant's roots (bathed in cool or even frozen water) and its sunbathed leaves may be as great as 50° F.

Northern sedge meadows are of various types, the interrelationships of which are poorly understood. Differences in their composition apparently result from differences in substrate, water levels, and available nutrient sources, and to a large extent from their histories of natural and cultural disturbances such as water level changes and fire. Some northern meadows contain tussock sedge and robust, broad-leaved sedges such as *C. lacustris*, and *C. rostrata* and therefore resemble the tall, rank meadows of southern Wisconsin. Others are more sparsely vegetated with thin, "wiregrass" sedges (e.g., *C. oligosperma*, *C. lasiocarpa*), tussock sedge, and bluejoint. Still others, called "sedge bogs" (Curtis 1959) or "bog-meadows", are more closely related to open bogs, and are characterized by sphagnum moss, wiregrass, *C. rostrata*, "cottongrass" rush (*Eriophorum* spp.), insectivorous plants such as sundew (*Drosera* spp.) and bladderwort (*Utricularia* spp.), and often contain low, ericaceous shrubs known as "heath", for example, leatherleaf (*Chamaedaphne calyculata*), bog rosemary (*Andromeda glaucophylla*), and bog laurel (*Kalmia polifolia*). In some bog-meadows, the slow accumulation of peat may eventually encourage succession to conifer swamp. Any type of northern sedge meadow may contain occasional low shrubs such as bog birch (*Betula pumila*), alder (*Alnus rugosa*) and meadow sweet (*Spiraea alba*). As with southern meadows, the lowering of water levels encourages encroachment by shrubs, particularly in the absence of fire.

In addition to drainage, ditching, and filling, sedge meadows may be altered or threatened by other land management practices. In diked, state and federal wildlife management impoundments, the same sort of water level manipulations that have been used to maintain or create sedge meadows can also flood them out, creating relatively natural "sedge marsh" communities of open water, sedges such as *C. stricta* and *C. aquatilis*, bluejoint, spikerush (*Eleocharis* spp.), and emergents such as cattail (*Typha* spp.) or bulrush (*Scirpus* spp.). In many cases the sedge meadow component is replaced entirely by emergents or open water. In central and northern Wisconsin, the impoundments of commercial cranberry operations have also inundated meadows. Commercial sphagnum "mossing" of central and northern bogs and meadows removes much of the characteristic bog flora noted

above, which may be succeeded at first by disturbance-tolerant species such as beggarticks (*Bidens* spp.) and smartweeds (*Polygonum* spp.), and then by a relatively simple community characterized by wiregrass sedges, bluejoint and other grasses, and a thin cover of sphagnum that eventually reclaims the exposed peat.

Some sedge meadows have also been altered by grazing. These wet pastures generally contain a prevalence of sedges, often along with other species such as bluejoint, spikerushes, and introduced or disturbance-tolerant species such as reed canary grass (*Phalaris arundinacea*), bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), and a variety of forbs. The features that most distinguish wet pastures from natural sedge meadows are: soil compaction, areas of trampled, exposed soil, exaggerated hummocks, the presence of exotic plant species, and relatively short vegetation. For obvious reasons, wet pastures do not occur on very boggy sites.

Today Wisconsin has about 30,000 acres of moderate to high quality sedge meadows, less than 3% of the 1,135,000 acres estimated to be present prior to settlement (Natural Heritage Inventory, unpubl. data). Most of the remaining meadows are highly fragmented, but several large tracts remain, mostly on public lands in the north and in the central sand counties. Examples include: Comstock Bog-Meadow (Marquette County), White River Marsh (Green Lake County), and Dewey Marsh (Portage County), Washburn Marsh (Jackson County), Crex Meadows and Fish Lake Wildlife Areas (Burnett County), Big Swamp (Oneida County), Powell Marsh (Vilas County), and Lake Noquebay and Peshtigo Harbor Wildlife Area (Marinette County). Sedge meadows owned and managed by The Nature Conservancy are at Summerton Bog (Marquette County) and Mink River (Door County).

In our following discussion of the breeding avifauna of sedge meadow communities, we distinguish three geographic regions in Wisconsin: north, south, and the central sand counties. We also consider several related habitat types. These include northern and southern sedge marshes—wetlands with at least 20% open water and generally co-dominated by sedges, spikerushes, bluejoint, and emergents. Central Wisconsin sedge marshes were considered northern if associated with sphagnum, and were otherwise considered southern. Excellent examples of northern sedge marshes are at Crex Meadows, Fish Lake, Peshtigo Harbor, and Powell Marsh Wildlife Areas. Southern sedge marshes are smaller, but include Fox River Crane Marsh and Lake Puckaway's West Marsh (Marquette County), Puchyan River and Prairie (Green Lake County), several sites around the Winnebago pool's upriver lakes (Winnebago and Waushara Counties), and Goose Lake (eastern Dane County).

We also discuss sphagnum bog communities disturbed by commercial mossing operations, which are represented here by four surveys from central Wisconsin. Wet pastures from throughout the state are combined as a single, related habitat type.

The final related habitat is one dominated by reed canary grass, an aggressive exotic that was formerly planted in lowlands as a source of marsh hay, or for soil conservation and wildlife habitat. Once established, intentionally or by natural dispersal of

its seed, it often spreads into surrounding areas. It generally forms tall, dense stands that are sometimes nearly monotypic and at other times include a significant component of sedges, bluegrass, brome grass (*Bromus inermis*), stinging nettle (*Urtica dioica*), or giant ragweed (*Ambrosia trifida*).

Data for our description of bird communities come from two sources: Sample's intensive study of 21 southern Wisconsin grassland habitats (Sample 1989, Sample and Hoffman 1989), and Mossman's less intensive single-visit counts throughout the state. The southern grassland studies included 3-visit bird counts and detailed habitat measurements within 100 × 200 m transects in 9 southern sedge meadows, 10 wet pastures, and 6 reed canary grass fields. Statewide single-visit counts were conducted on a wide range of northern and southern habitat types, including those in the southern grassland study, mostly using the walk-5-minute/stand-5-minute method suggested for Natural Areas breeding-bird surveys (Mossman and Matthiae 1988), and some by canoe. On most of these single-visit surveys, habitat was described by making cover estimates of various types and heights of vegetation, residual material, water, and open ground. We pooled the data from both studies for Table 1, a total of 135 sites.

Sedge meadows throughout Wisconsin do not harbor highly diverse bird communities, and tend to be dominated by a few characteristic species: Sedge Wren, Red-winged Blackbird, Common Yellowthroat, and Swamp Sparrow (Table 1). This is evidently because sedge meadows typically have a simple, homogeneous structure and do not vary locally or regionally as much as other native Wisconsin plant communities. However, what regional variation there is in vegetation structure is reflected in changes in the bird communities. For example, Yellowthroats and Swamp Sparrows, which prefer tall lush herbaceous cover (Sample 1989) are less common northward where dense, broad-leaved sedges tend to be replaced by sparser stands of more thin-leaved wiregrass sedges. Of these dominant species, the Sedge Wren is most distinctive of sedge meadows because it occurs in relatively few other Wisconsin habitats. This wren prefers habitats with fairly homogeneous stands of tall and dense vegetation, with a dense litter layer. The Swamp Sparrow also occurs in other wetland types, the Yellowthroat occurs in various wetland and shrubby upland sites, and the Red-wing is probably the most generally distributed of all open country birds, on both dry and wet sites. Other, fairly regular sedge meadow species statewide include various swallow species, Savannah Sparrow, Bobolink, and, increasingly over the past 30 years, Sandhill Crane. Savannah Sparrow and Bobolink occur most frequently in drier "prairie-like" sedge meadows with relatively many grasses and forbs, and relatively low vegetation height and density. These two species use forb stalks extensively as song perches. Bobolinks (and to a lesser degree Savannah Sparrows) will tolerate the presence of a few low, scattered shrubs used for song perches.

In our southern Wisconsin grassland bird study, the bird community of sedge meadows was most similar to those of wet prairie, reed canary grass, and switchgrass (*Panicum virgatum*). Switchgrass is planted as nesting cover for ducks and pheasants on wildlife

Table 1. Occurrence of breeding birds in Wisconsin sedge meadows and related communities.

	Sedge Meadow			Sedge Marsh		Related Communities		
Species	South (22)[b]	Central (15)	North (25)	South (17)	North (16)	Wet Pasture (18)	Mossed Bog (4)	Canary Grass (18)
Common Loon	—	—	—	—	FC	—	—	—
Pied-billed Grebe	—	—	—	U	A	—	—	—
Double-crested Cormorant	—	—	—	U	U	—	—	—
American Bittern	—	U	FC	FC	U	—	—	—
Least Bittern	—	—	R	FC	U	—	—	—
Great Blue Heron	—	U	R	FC	C			
Great Egret	—	—	R	U	—	—	—	—
Green-backed Heron	—	U	—	U	U	—	—	—
Black-crowned Night-Heron	—	—	R	U	U	—	—	—
Canada Goose	—	—	—	U	FC	—	—	—
Wood Duck	R	—	—	U	FC	—	—	—
Green-winged Teal	—	—	U	—	U	—	FC	—
American Black Duck	—	—	—	—	U	—	—	—
Mallard	U	U	FC	C	C	U	—	—
Northern Pintail	—	—	—	—	U	—	—	—
Blue-winged Teal	U	U	U	FC	C	—	—	U
Northern Shoveler	—	—	—	—	U	—	—	—
Gadwall	—	—	—	—	U	—	—	—
Ring-necked Duck	—	—	—	U	FC	—	—	—
Osprey	—	—	—	U	—	—	—	—
Bald Eagle	—	—	—	U	—	—	—	—
Northern Harrier	—	FC	U	—	U	—	FC	—
Red-tailed Hawk	—	—	R	—	—	—	—	—
Merlin	—	—	R	—	—	—	—	—
Peregrine Falcon	—	—	—	U	—	—	—	—
Gray Partridge	—	—	—	—	—	—	—	U
Ring-necked Pheasant	—	—	—	U	—	—	—	U
Sharp-tailed Grouse	—	U	R	—	—	—	—	—
Yellow Rail	—	—	U	—	U	—	—	—
King Rail	—	—	—	U	U	—	—	—
Virginia Rail	R	—	U	FC	U	—	—	—
Sora	R	—	U	FC	FC	—	—	—
Common Moorhen	—	—	—	U	U	—	—	—
American Coot	—	—	—	C	U	—	—	—
Sandhill Crane	FC	FC	U	C	FC	—	C	—
Killdeer	—	—	R	U	U	FC	—	—
Spotted Sandpiper	—	—	—	U	U	—	—	—
Upland Sandpiper	R	—	R	—	—	U	—	—
Common Snipe	R	U	FC	U	FC	U	—	—
Wilson's Phalarope	R	U	FC	U	FC	—	—	U
Ring-billed Gull	—	—	—	—	U	—	—	—
Herring Gull	—	—	—	U	U	—	—	—
Forster's Tern	—	—	—	FC	—	—	—	—
Black Tern	R	—	U	C	C	—	—	—
Short-eared Owl	—	—	R	—	—	—	—	—
Common Nighthawk	—	—	—	U	—	—	—	—
Chimney Swift	—	—	R	—	—	—	—	—
Ruby-throated Hummingbird	R	—	—	—	—	—	—	—
Belted Kingfisher	—	—	—	U	—	—	—	—
Northern Flicker	—	U	R	U	—	—	—	—
Alder Flycatcher	—	U	R	U	—	—	—	—

continued

Table 1. (*Continued*)

Species	Sedge Meadow			Sedge Marsh		Related Communities		
	South (22)[b]	Central (15)	North (25)	South (17)	North (16)	Wet Pasture (18)	Mossed Bog (4)	Canary Grass (18)
Willow Flycatcher	U	—	R	—	—	—	—	—
Eastern Kingbird	R	U	U	U	U	U	—	—
Purple Martin	R	—	U	FC	U	—	—	U
Tree Swallow	U	U	FC	C	C	FC	C	U
Northern Rough-winged Swallow	—	—	—	—	U	—	—	—
Bank Swallow	R	U	U	U	—	—	—	—
Cliff Swallow	—	—	U	U	U	U	—	U
Barn Swallow	U	—	U	FC	U	A	FC	C
Blue Jay	R	—	—	—	—	—	—	—
American Crow	—	—	R	—	U	—	—	—
Sedge Wren	A	C	A	U	FC	—	A	C
Marsh Wren	U	—	U	A	C	—	—	U
Eastern Bluebird	—	U	—	—	—	—	—	—
American Robin	—	U	R	—	—	FC	—	—
Gray Catbird	R	U	—	U	U	—	—	—
Cedar Waxwing	—	U	U	—	—	—	—	—
European Starling	—	—	R	—	—	—	—	—
Warbling Vireo	—	—	—	—	—	U	—	—
Yellow Warbler	U	U	U	U	U	—	—	—
Common Yellowthroat	A	A	FC	A	R	U	FC	C
Chipping Sparrow	—	—	—	—	—	—	—	U
Clay-colored Sparrow	—	—	U	—	—	—	—	U
Savannah Sparrow	U	FC	FC	U	—	A	A	FC
Henslow's Sparrow	R	U	—	—	—	—	A	U
Le Conte's Sparrow	—	U	C	—	—	—	FC	—
Sharp-tailed Sparrow	—	—	U	—	—	—	—	—
Song Sparrow	U	C	FC	U	U	U	FC	FC
Lincoln's Sparrow	—	—	U	—	—	—	—	—
Swamp Sparrow	A	C	C	A	C	FC	—	C
Bobolink	U	FC	C	U	—	A	FC	FC
Red-winged Blackbird	A	A	A	A	A	A	C	A
Eastern Meadowlark	U	—	U	—	—	C	—	FC
Western Meadowlark	—	—	—	—	—	U	—	—
Yellow-headed Blackbird	—	—	—	C	FC	—	—	—
Brewer's Blackbird	—	U	U	—	—	U	—	—
Common Grackle	—	—	R	C	U	—	—	U
Brown-headed Cowbird	U	U	U	—	—	—	—	—
Northern Oriole	—	U	—	—	—	—	—	—
American Goldfinch	U	FC	R	—	—	U	—	U

[a]Abundance codes: A = Abundant (occurred on over 75% of sites); C = Common (occurred on 50–75% of sites); FC = Fairly common (occurred on 25–50% of sites); U = Uncommon (occurred on 5–25% of sites); R = Rare (occurred on 1–5% of sites).

[b]Numbers in parentheses indicate number of sites surveyed.

management properties, often in dense stands that resemble reed canary grass meadows. Although occurring primarily on upland sites, switchgrass fields are characterized by the same four breeding bird species as are sedge meadows. In fact, among all 21 grassland and related habitat types included in that study, the Sedge Wren, Yellowthroat, and Swamp Sparrow had very

similar distributions and tended to occur together on tracts more than did any other group of species, due to their preference for very tall and dense vegetation. The Red-winged Blackbird, although consistently present in sedge meadows, was less distinctive because it occurred in almost all grassland habitats.

Many species are affected by shrubby invasion of southern sedge meadows. Sedge Wrens decline, although they will tolerate some low shrubs (<2% total cover) and will persist in local, open areas even in some meadows that have succeeded to the shrub carr stage. Many species typical of shrub carr (Hoffman 1989) begin to increase with the occurrence of just a few shrub or saplings per acre, especially Song Sparrow, American Goldfinch, Eastern Kingbird, Willow Flycatcher, Cedar Waxwing, Yellow Warbler and sometimes Ring-necked Pheasant. As density of woody cover increases further, many more species may appear (e.g., American Robin, Common Grackle, Gray Catbird, Downy Woodpecker, American Woodcock, Northern Cardinal, Brown-headed Cowbird, Blue-winged Warbler, and Mourning Dove). The addition of trees encourages Warbling Vireos, Northern Orioles, Eastern Kingbirds, and sometimes American Kestrels. Some species appear to maintain roughly similar densities in both open and shrubby meadows, including the Sandhill Crane, Virginia Rail, Yellowthroat, Swamp Sparrow, and Red-winged Blackbird.

With an increase in wetness, southern sedge meadows tend to experience an increase in waterfowl such as Mallard and Blue-winged Teal, rails, herons, and sometimes Wilson's Phalarope, while crane, snipe, Yellowthroat, Red-wing and Sedge Wren tend to remain just as abundant. As marsh conditions are reached with the addition of other emergent aquatic plants, Sedge Wren declines while Marsh Wren increases, as do Pied-billed Grebe, bitterns, herons, waterfowl, rails, Common Snipe, Common Moorhen, American Coot, Yellow-headed Blackbird, Common Grackle, Black Tern, and sometimes Forster's Tern (Table 1). Grassland species such as Bobolink and Eastern Meadowlark decline, while Yellowthroat and Swamp Sparrow still occur regularly.

In many of Wisconsin's sedge-dominated wetlands, local topographic variations, past disturbances and other factors produce mosaics of different habitat types, which may include deep marsh, shrub swamps, and lowland forests or various upland types. This results in a mixture of avifaunas. Moreover, the composition of a particular meadow or sedge marsh bird community depends partly on the nature of neighboring habitats, since individuals of most species can move across habitat boundaries. For example, Black Terns may feed over sedge meadows, but usually only if marshy nesting sites are nearby. Northern Harriers, because of their need for large, open territories, do not occur on 20-acre sedge meadows surrounded by woods or cropland, but may well occur on a similar-sized meadow that is adjacent to an extensive sedge marsh or upland grassland.

Although the breeding bird community of northern sedge meadows (Table 1) resembles that of our southern meadows, it is also distinguished by the addition or increased abundance of several species; one causative

factor is the relatively large size of many northern meadows, or their inclusion in extensive open tracts that include other grasslands, barrens, bogs or marsh. Sedge meadow species that apparently depend on large tracts of habitat in Wisconsin include Northern Harrier, Sharp-tailed Grouse (which requires proximity to shrubby meadows or barrens), Yellow Rail, Short-eared Owl, and possibly Sharp-tailed Sparrow and Wilson's Phalarope.

Several species seem favored by the particular structural features that distinguish northern from southern meadows, i.e., a lower density and height of herbaceous vegetation, and a greater predominance of wiregrass sedges, sphagnum, and heath. The Savannah Sparrow—not a particularly "northern" species—does well in sedge-sphagnum bogs although it is infrequent in the tall, dense sedges and grasses of southern meadows. Sharp-tailed Sparrow, LeConte's Sparrow, and Yellow Rail seem to favor wiregrass, in sites where thick prostrate residual material provides cover for nesting and possibly feeding. In general, bitterns, rails, Green-winged Teal, Common Snipe, and Brewer's Blackbird are more abundant in the north. Brewer's Blackbird occurs most often in sites recently burned. Wilson's Phalarope requires some standing water, and vegetation that is not tall and thick. Once common throughout most of Wisconsin, it now breeds mainly in northern and central meadows and marshes, possibly because of appropriate habitat structure, large tract size, and relatively stable water levels.

Most sedge meadows of the central sand plains resemble those of northern Wisconsin, with regard to floristics, habitat structure, and breeding bird fauna (Table 1). Sandhill Crane and Harrier are more common here than elsewhere in the state. Although reports of Yellow Rail and Sharp-tailed Sparrow are rare for this region, nesting is possible.

When northern and related central meadows succeed to open bog with scattered conifers, new species are introduced: Nashville Warblers, Yellow-rumped Warblers and Lincoln's Sparrow. Succession toward alder shrub swamp (Hoffman 1989) favors those same species noted for southern shrub-carr, with the addition of Alder Flycatcher (often in place of the more southern Willow Flycatcher), Veery, White-throated Sparrow, and sometimes Clay-colored Sparrow, while especially reducing numbers of Sedge Wren, Wilson's Phalarope, LeConte's Sparrow, and Yellow Rail.

Northern sedge marshes (Table 1) usually support many meadow birds with the addition or increase of a rich array of water and wading birds—most notably Common Loon, Pied-billed Grebe, Ring-necked Duck, Black Tern, and Marsh Wren.

The breeding bird community of wet pastures (Table 1) resembles that of sedge meadows only roughly. Although many of the same species occur in both habitat types, the grazed vegetation provides insufficient live and residual cover for Sedge Wren, and to some extent Yellowthroat and Swamp Sparrow, the latter two species surviving largely as a result of scattered shrubs or wet pockets of sedges and emergents that frequently occur in these pastures. Killdeer and Robin often occur, feeding in damp or trampled soil among short, sparse vegetation. Wet prairie species such as Bobolink, Eastern Meadowlark, and

Savannah Sparrow, with the nearly ubiquitous Red-winged Blackbird, are the most regular species of occurrence. In no Wisconsin habitat is the Savannah Sparrow found more regularly than in wet pasture.

Commercially mossed sphagnum bogs typically support a simple breeding avifauna (Table 1) dominated by Sedge Wren, Savannah Sparrow, and Henslow's Sparrow. The latter species is common in no other sedge-dominated habitat, nor in the sphagnum bogs prior to mossing; although it may become common in bog-meadows after repeated droughts, such as at Comstock Bog-Meadow in 1988 and 1989. The relatively thin or patchy herbaceous cover and shrubless aspect of this disturbed habitat type provide poor habitat for Yellowthroat and Swamp Sparrow. Sedge Wrens occur mainly in wet pockets. Our small sample doesn't indicate that the remaining bird species of mossed bogs differ substantially from the overall occurrence of species in sedge meadows.

Fields of reed canary grass (Table 1) are usually dominated by the same four species that occur so frequently in other sedge meadows—the Sedge Wren and Red-wing, both of which tend to occur in high densities, and the Yellowthroat and Swamp Sparrow. Wet prairie species (Bobolink, Eastern Meadowlark and Savannah Sparrow) are fairly common in canary grass, mostly where sedges are intermixed, and in dry sections, where the vegetation is relatively short.

Sedge meadows and their various, disturbed counterparts are not among the most diverse bird habitats in Wisconsin, and typically support a simple breeding-bird community dominated by just a few species. Sedge-dominated marshes, however, are characterized by a mixture of meadow and marsh conditions, and are thus richer in bird species; they provide some of the best bird watching in the state.

But sedge meadows, despite their simplicity, are incredibly interesting places, and are, more importantly, very important biologically to Wisconsin's avifauna. Many sedge meadow birds are declining statewide, according to the U.S. Fish and Wildlife Service's Breeding Bird Survey (BBS). These include species that are relatively common in sedge meadows, such as Sedge Wren, Savannah Sparrow, and Bobolink, and less abundant species such as Blue-winged Teal, Upland Sandpiper, Eastern Meadowlark, and LeConte's Sparrow. All of these species except LeConte's Sparrow occur in other native and disturbed habitats as well; but as the quality and extent of many of those other grassland and wetland habitats continue to decline, sedge meadows become more important breeding-bird habitats.

Sedge meadows are also important for other species that are too rare to be monitored accurately by BBS, but which are otherwise known or suspected to be declining. Among these, the Sharp-tailed Grouse and Short-eared Owl are area-dependent grassland species that often include sedge meadows as part of their large territories or feeding ranges, within extensive complexes of open habitats. Four species are particularly dependent on sedge marshes and meadows and would probably disappear from Wisconsin without them: Yellow Rail, Wilson's Phalarope, LeConte's Sparrow, and Sharp-tailed Sparrow. The Yellow Rail, formerly common along sections of Green Bay (University of Wisconsin-

Green Bay Richter Museum, unpubl. data) and probably elsewhere in the state, has recently been found in but a few sites despite extensive searching. Wilson's Phalarope, though more common than the Yellow Rail, has declined greatly since the turn of the century, when it was a "common summer resident in Wisconsin, breeding in larger or smaller colonies in many parts of the state . . . at any suitable place. One colony at Lake Koshkonong has been known to have more than two hundred pairs on the marsh at one time." Of the 2 sparrows, LeConte's now occurs in many of the remaining northern and central Wisconsin meadows, but the Sharp-tail probably breeds regularly in fewer than 20 local sites, most of them in the Crex Meadows and Fish Lake Wildlife Areas of Burnett County.

Sedge meadow bird communities have undergone various threats since the time of settlement. For example, Hoy (1885) noted that the Sedge Wrens which were abundant in the sedge meadows of southeastern Wisconsin in the 1840's had scarcely been seen since the 1860's, their song ". . . silenced by the click of the mower. The hay harvest comes before the young are fledged, hence the mower is fatal to this wren's best interests. They have gone, I hope, somewhere where carex abounds and mowers do not." Ironically, in the long run it was disturbances such as mowing that kept some meadows from succeeding to shrubs and trees.

Now, after decades of decimation by ditching, draining, filling, and conversion to other uses, most of our remaining sedge meadows have come under the purview of wetland protection laws. Yet conversion of sedge meadows to other wetland types remains a major threat to this community and its characteristic bird fauna: witness the flooding of meadows in cranberry and publicly-owned impoundments; in other areas a lack of appropriate management has allowed meadows to succeed to shrubs and even trees, often with the help of ditching or draining of adjacent lowlands, which eventually lowers the local water table.

The outlook for sedge meadows is not bleak, however. Most remaining meadows are on lands managed by public and private conservation agencies, and can be maintained or even expanded by appropriate burning, mowing, and water level manipulations. Next time you visit one of these areas, let the agency or site manager know how much you appreciate "their" sedge meadows and sedge marshes, and that you hope they continue managing for large, viable tracts of this increasingly rare but invaluable resource.

Description of Sites

The following three sites are among the best remaining examples of relatively large, intact sedge meadows in southern, central, and northern Wisconsin, respectively. We have also briefly described the locations of some sedge-dominated marshes, but have not included any of the other related habitats. Altogether, the sites described below harbor populations of almost all of the bird species discussed in this paper. Although the count data were gathered by walking through the meadows, we advise against entering these areas because of the wet, sometimes treacherous substrate and the

potential disturbance to nesting birds and sensitive plants. All sites can be observed from dikes, roads, railroad grades, or adjacent uplands. All are worth visiting not only during the breeding bird survey period of late May through early July, but also from late April through mid May; at this time visibility is better, migrant waders and waterfowl are often present, and many breeding species such as rails, bitterns, crane and snipe are most active and vocal.

Cherokee Sedge Meadow and Marsh Natural Area

Size.—About 350 acres, within a 2,000-acre wetland complex of shrub-carr, meadow, and marsh.

Location.—Associated with Cherokee City Park on Madison's north side, Dane County.

Access.—The best access is from the railroad tracks that border the meadow on the west. From Highway 51 (Stoughton Road) just south of the I90–94 ramp, turn west on Daentl Road, then left on Buckley Road to the unimproved parking area near the tracks. Follow the tracks south. The meadow begins about 1/4 mile down the tracks, and continues for another mile. Be careful of trains.

Site Description.—The north portion of the natural area is primarily a bluejoint-sedge meadow grading southward into a shrubby meadow where about half of the cover is provided by bog birch, willows, and dogwoods. Much of the southern portion was ditched and is somewhat more disturbed, including 20 acres that was filled and is dominated by reed canary grass, cane (*Phragmites australis*), and bulrushes. Twenty acres around a spring source from the east are relatively undisturbed cattail marsh and high quality sedge meadow. Other areas include marsh with low prairie, fen, and meadow elements containing rare plant species. The state-threatened Blandings turtle (*Emydoidea blandingi*) occurs here. The marsh has endured numerous ditching and draining attempts, development of the golf course to the west, and sod growing to the immediate west. Historically, marsh hay was cut from portions of the marsh.

Birds.—Numbers in Table 2 are from our survey of only sedge meadow sections of the natural area on 31 May 1988. David Fallow and we have also surveyed the sites several times in other years. The predominance of Willow Flycatcher, Sedge Wren, Yellowthroat, Swamp Sparrow and Red-winged Blackbird and the presence of Yellow Warbler and Goldfinch is typical for large, southern meadows that have a lush growth of broad-leaved and tussock sedges and moderate invasion by shrubs. A rare sighting is that of the Yellow Rail on 2 June 1982.

Comstock Bog-Meadow State Natural Area

Size.—The bog-meadow comprises approximately 400 acres within a natural wetland basin that covers about 1,000 acres. The meadow is bordered by upland oak woods, and small tracts of tamarack swamp and cattail-sedge marsh.

Location.—Eastern Marquette County.

Table 2. Numbers of birds encountered on breeding bird surveys in 3 sedge meadows.

Species	Number of Birds Encountered at:		
	Cherokee	Comstock	Reeds Lake
American Bittern	+[a]	—	6
Least Bittern	—	1	—
Green-backed Heron	1	—	—
Wood Duck	+	—	+
Green-winged Teal	—	—	10
Mallard	+	1	13
Blue-winged Teal	+	3	5
Northern Harrier	—	—	1
Broad-winged Hawk	+	—	—
Red-tailed Hawk	+	—	—
Ring-necked Pheasant	1	—	—
Sharp-tailed Grouse	—	—	10
Yellow Rail	+	—	4
Virginia Rail	+	2	+
Sora	+	2	2
Sandhill Crane	2	6	2
Killdeer	+	—	—
Upland Sandpiper	—	—	1
Common Snipe	+	6	8
American Woodcock	+	1	—
Wilson's Phalarope	—	3	18
Mourning Dove	+	—	—
Short-eared Owl	—	—	1
Common Nighthawk	+	—	—
Chimney Swift	+	—	—
Belted Kingfisher	+	+	—
Downy Woodpecker	+	—	—
Northern Flicker	+	—	—
Willow Flycatcher	15	—	—
Eastern Kingbird	+	—	1
Purple Martin	+	—	—
Tree Swallow	1	—	—
Northern Rough-winged Swallow	+	—	—
Bank Swallow	+	—	—
Barn Swallow	1	—	—
American Crow	+	—	—
Sedge Wren	23	+	23
Marsh Wren	+	2	—
American Robin	+	—	—
Gray Catbird	2	—	—
Cedar Waxwing	1	—	—
Warbling Vireo	+	—	—
Yellow Warbler	7	—	—
Common Yellowthroat	47	+	9
Northern Cardinal	+	—	—
Indigo Bunting	+	—	—
Savannah Sparrow	—	—	19
Henslow's Sparrow	+	—	—
Le Conte's Sparrow	—	1	7
Sharp-tailed Sparrow	—	—	7
Song Sparrow	3	—	—
Swamp Sparrow	29	17	18
Bobolink	—	43	19

continued

Table 2. (*Continued*)

Species	Number of Birds Encountered at: Cherokee	Comstock	Reeds Lake
Red-Winged Blackbird	51	63	74
Eastern Meadowlark	1	—	—
Common Grackle	1	—	—
Brown-headed Cowbird	1	—	—
Northern Oriole	+	—	—
American Goldfinch	5	—	—

[a]+ Recorded on other visit(s) during breeding season.

Access.—From Montello, drive north five miles on Highway 22, then east on Highway J for almost a mile. Turn north and east on Edgewood Road one mile to a parking lot at the southeast corner of the site. View the marsh from the old beach ridge northwest of this lot, or from the wood's edge to the north.

Site Description.—The southern end of the meadow is a quaking bog dominated by wiregrass and tussock sedges, with sphagnum and an unusual mixture of acid-bog species such as sundew and bladderwort, and others that are characteristic of calcareous conditions. Northward within the meadow, sphagnum and acid-loving species decrease while sedges increase.

The site is usually wet. For instance, during our survey in June 1984 the water was 1/2–6 inches deep and up to a foot deep when the bog mat sank beneath a person's weight. The meadow dried considerably in 1988 and 1989, from drought conditions that began in 1987. In 1989 there was no standing water although a person standing on the mat brought water just over the surface. There are also scattered low willow shrubs and patches of cane.

Birds.—Table 2 lists the birds encountered during a walk/stand survey in the southern half of the meadow on 7 June 1984. The absence of Sedge Wrens and Common Yellowthroats, and but one Swamp Sparrow, attest to the site's characteristic wetness, dense sphagnum, and sparse wiregrass sedges. The large population of Bobolinks was apparently encouraged by the presence of scattered willow shrubs. The site's high quality is indicated by the presence of sedge meadow specialists—the LeConte's Sparrow and Wilson's Phalarope. During the dry years of 1988 and 1989, Randy Hoffman noted an invasion of Henslow's Sparrows here, as well as the presence of Virginia Rails and—in patches of cane—Sedge Wren and Yellowthroat. Martin (1988) discussed the importance of this wetland as a staging area for a burgeoning population of Sandhill Cranes.

Reeds Lake Bog-Meadow

Size.—1200 acres, within a complex of sedge meadows, marshes, and shrubby barrens many square miles in extent.

Location.—In the northeastern por-

tion of Crex Meadows Wildlife Area, Burnett County.

Access.—From Grantsburg, follow road signs to the Crex Meadows Wildlife Area headquarters on the north side of town, at the junction of Highways D and F. It is usually worth stopping here for maps, directions, advice on recent bird sightings, and information on the interesting history and management of the wildlife area. Continue north and then east on Highway F about 11 miles, then east 1 1/2 miles on Reeds Lake Road, and south about 1/2 mile on North Refuge Road, beyond the water control structure and "Reeds Lake" sign, to where the meadow extends to the east and south. Listen and view from the roadside or adjacent ditch bank. To reach the south end of the meadow, continue west on North Refuge Road, then south (left) almost two miles on East Refuge Road, and turn east (left) on Main Dike Road about 1/2 mile to the Dike One pumphouse. Additional meadow extends even farther southward from here.

Site Description.—This site is of especially high quality, and is perhaps the largest undisturbed sedge meadow in the State. It extends from Reeds Lake south two miles to the Main Dike, interrupted by only a few narrow, wooded ridges and islands. Many bird watchers are familiar with the Dike One pumphouse area along the Main Dike, as a reliable site for Yellow Rail and Sharp-tailed Sparrow. However, the upper end of the meadow, nearer Reeds Lake, is less accessible and less disturbed, being relatively unaffected by water level manipulations and natural surface water flow near the pumphouse. The Reeds Lake meadow includes an ericaceous bog about a half mile east of the observation site described above on North Refuge Road, and a huge wiregrass tract adjacent and south of the observation site. The ericaceous bog is composed of a very deep layer of sphagnum, with a lush low growth of leatherleaf, and some bog birch, rosemary, laurel, and willow. Wiregrass and broad-leaved sedges, relatively deep prostrate residual material, and some standing water also occur. The majority of the meadow is thinly vegetated with wiregrass and a few broad-leaved sedges, bluejoint, purple cinquefoil (*Potentilla palustris*), and widely scattered low shrubs of bog birch, willow, meadow sweet, and leatherleaf. Prostrate residual material was thick and extensive when we visited in June 1989, and much of the area had standing water which in some spots reached above the knees when we traversed the quaking mat.

Birds.—We surveyed the site by the walk/stand method in two sections, including the leatherleaf-sedge bog, on the mornings of 9 and 10 June 1989 (Table 2), and also on the night of 9–10 June. Its value as a refuge for breeding birds is apparent from the large numbers of uncommon and rare sedge meadow specialists: Yellow Rail, Wilson's Phalarope, LeConte's Sparrow and Sharp-tailed Sparrow. Four other species of special concern are here, not because of specialized requirements for particular habitat structures, but because of their need for large tracts of grassland or marsh habitat: Northern Harrier, Sharp-tailed Grouse, Upland Sandpiper, and Short-eared Owl. Most bird species

here occur in both the wiregrass and leatherleaf habitats, although the rail, phalarope, LeConte's Sparrow, and Sharp-tailed Sparrow were restricted to the wiregrass. Furthermore, the rails and Sharp-tailed Sparrows were concentrated in one area far out in the meadow. The south end of the meadow near the pumphouse was flooded in 1989, and supported no Yellow Rails or either of the sparrows, although phalaropes were abundant.

Sedge Marshes

Many excellent sedge-dominated marshes occur in diked impoundments at Crex Meadows Wildlife Area (Burnett County) and can be readily observed from dikes, for example Refuge Extension, the upper part of Phantom Flowage, Dikes 1, 4, and 5, and Upper North Fork Flowage. Check the headquarters for maps. These marshes have especially good breeding populations of Common Loon, Pied-billed Grebe, Canada Goose, Ring-necked Duck, Bald Eagle, Wilson's Phalarope, and Black Tern.

In northeastern Wisconsin, good sedge marsh occurs at Peshtigo Harbor Wildlife Area (Marinette County). This is one of but a few remnants of the extensive marshes that once lined Green Bay's western shore. From the City of Peshtigo, drive southeast on East Front Street, and continue on Highway BB about 6 miles. Turn south on Johnson Road, and park before you reach the causeway, which will lead you, on foot, across the marsh. This is a good site from which to launch a canoe for explorations upstream. If you canoe downstream, be careful not to venture into the open water near the bay. The marsh includes a mixture of cattail, sedges, bluejoint, reed canary grass, bulrushes, burreed (*Sparganium* spp.), arrowhead (*Sagittaria* spp.), and shrubs. During the breeding season notable bird species include Black-crowned Night-Heron, American Bittern, Sora, Herring and Ring-billed Gulls, Black Tern, Yellow-headed Blackbird, and sometimes Wilson's Phalarope and Forster's Tern. Yellow Rails have been reported within earshot of the causeway at least as recently as 1983. High quality sedge meadows occur on the south side of the marsh along Harbor Road.

High quality, sedge-dominated marshes in southern Wisconsin have generally poor access except by canoe. However, the nature of many sites varies with annual water level changes. In Columbia County, near Grassy Lake Wildlife Area, some small wetlands are often dominated by sedges, bluejoint, and various emergents. To reach these from Highway 16 at Rio, travel east on Highway B/Z 3 miles to the ponds at the intersection with Erdman Road. Black Tern, Pied-billed Grebe, American Coot, and Sora often nest here.

The Fox River Crane Marsh (Marquette County) includes sedge meadow and marsh, canary grass stands, and deeper marsh, and is worth a 4-hour canoe trip. Leave a car at the take-out site, which is a public landing in the village of Endeavor, on the upper end of Buffalo Lake. To reach the "put-in", drive southeast about 4 miles on Highway T, then east on Highway O 1 1/2 miles to the river crossing. Sedge-canary grass-bluejoint meadow and marsh begin about 1/2 mile downstream, and this eventually grades into cattail marsh nearer Buffalo Lake. Recent breeding birds include Least Bittern, Sandhill Crane, Common

Moorhen, American Coot, Black Tern, Marsh and Sedge Wrens and Yellow-headed Blackbird.

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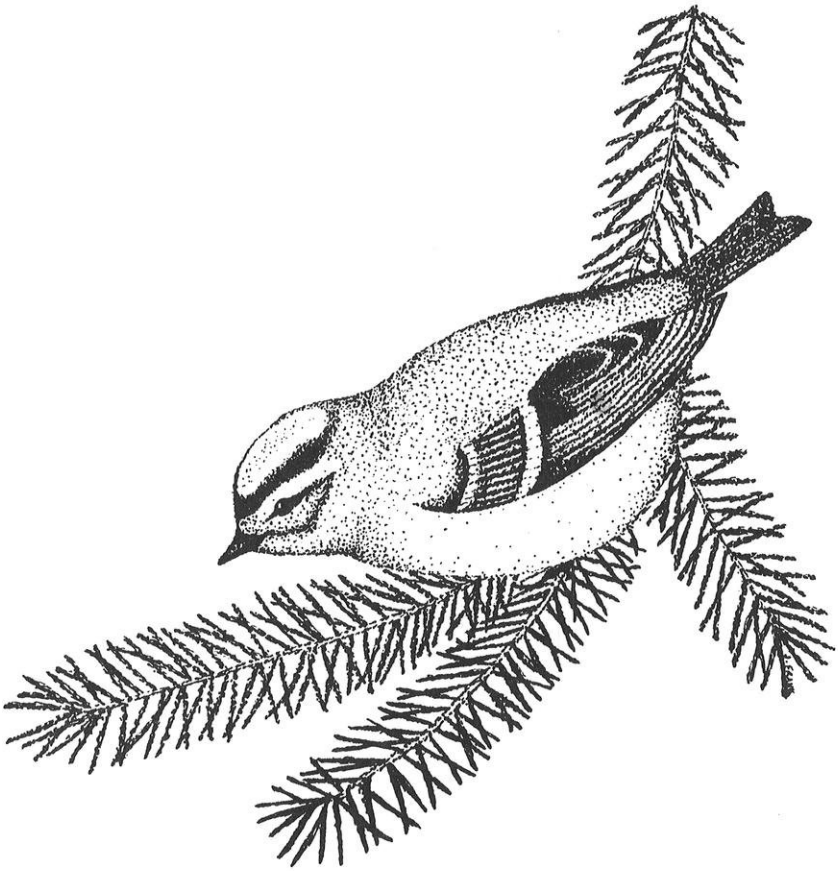

Golden-crowned Kinglet *by James C. Frank*

Homeowners Versus Woodpeckers

by Scott R. Craven

Woodpeckers are attractive, interesting visitors to bird feeders and yards. However, they are not as harmless as they may appear to be. One of the most serious wildlife problems many homeowners face is a woodpecker hammering on the side of the house. It may seem almost humorous, but the humor is quickly replaced by anger and frustration when your house is being attacked! Not only is the hammering annoying, especially when it occurs early in the morning, but it can also cause considerable structural damage to building siding.

Each year woodpecker problems rank among the top 3 of the hundreds of calls I receive on wildlife damage problems in Wisconsin. Experience, surveys of homeowners and wildlife control specialists, and published literature provide a pretty good picture of the woodpecker problem. Understanding and documenting the problem have done little to solve it, however. While there are steps a homeowner can take, woodpecker damage remains very difficult to control.

Nationally, the Northern Flicker is often identified as the primary culprit. Here in Wisconsin, homeowners identify Downy Woodpeckers or Hairy Woodpeckers in about half the cases in which they know the species responsible for damage. Flickers are involved in about a third of the cases, and a few are caused by Red-headed Woodpeckers and Pileated Woodpeckers.

The cause of the damage varies with season, region and building material. Territorial behavior is considered the primary cause of damage, closely followed by food-seeking. There are two distinct peaks in the incidence of damage; spring and fall, with spring damage usually exceeding the level of fall problems. Typically, spring damage is associated with territorial behavior and damage at other times of the year with food-seeking behavior. However, some "spring damage" may be winter food-seeking that goes unnoticed until the homeowner gets outside in the spring. Damage can occur at any time of the year and other causes, such as excavation of roost chambers or nest sites, may be involved. Several woodpeckers may feed on insects in or under siding, but usually only one bird is involved in territorial behavior.

Damage can vary from a single hole on one side of a building to numerous holes, up to baseball size or larger, over most of a building's surface. Cedar and plywood siding are the building materials most frequently damaged. It appears likely that any wood, particularly if it is not painted, may be subject to damage. Grooved plywood siding seems to be very susceptible as is board and batten construction with cedar boards. The plywood siding (especially a siding known as "T-1-11") problem results from a structural "defect" created in the manufacture of the plywood sheets. Internal plies are separated by a slight gap (approximately 0.5-cm wide). When the solid surface ply is grooved to simulate a reverse board and batten construction, the "core gaps" are opened to the outside. This creates tunnels throughout the sheet of plywood perpendicular to the groove. These tunnels are very attractive to insects and, in turn, to woodpeckers. The rough plywood surface provides secure footing, and the tunnels provide a food supply. The result is often extensive damage in the form of perfect rows of small holes which coincide with the location of the tunnels beneath the surface ply.

Damage to materials other than plywood is generally in the form of one or more large holes. These holes are often located near the eaves or at the corners of the building. Tennessee researchers found no strong correlation between location of damage and compass direction, even though other researchers had reported non-random orientation for woodpecker nest cavities. To the homeowner, the location of the damage is of little consequence and is not a factor in the need for, or success of, control.

Construction of some holes may penetrate insulation as well as the siding. Several homeowners in Wisconsin reported that woodpeckers had gone as far as the interior drywall. These large chambers are rarely occupied by the woodpecker, but three cases resulted in nesting attempts by House Sparrows, a White-breasted Nuthatch, and a Black-capped Chickadee.

A territorial response may result when a woodpecker sees its reflection in a window. Substantial damage ($3000 in one case in Ohio) may result as the bird attacks the molding around the window. In Tennessee this type of damage was often caused by Pileated Woodpeckers. In addition to the structural damage, drumming often occurs at dawn. Spring territorial drumming occurs on downspouts, chimney caps, and antennae, as well as siding. The noise created by such activity can be a source of severe annoyance.

The environment around damaged homes or buildings is usually characterized as wooded suburban or rural. In Wisconsin the expansion of subdivisions into the remaining wooded areas amidst intensive agriculture and the popularity of "natural look" wood siding has probably intensified the woodpecker problem.

The economic impact of woodpecker damage has not been well documented. Homeowners in Wisconsin reported a wide range of damage and a similar range of reaction to the damage. Of 23 individuals who provided a cost estimate for damage repair in 1983, the mean damage was $300, with a range of $40-$1000. Most estimates were between $150 and $250. This mean value does not include an esti-

mate of $5000 for damage to cedar siding on a 24-unit condominium.

The homeowners' perception of the damage is misleading, however, if the actual cost or professional restoration of the pre-damage condition is considered. A common response to damage is simply filling or covering the holes with a convenient material. While the homeowner will readily admit that this solution is unsightly, complete restoration is often cited as being too expensive. Thus, a cost of several dollars for a can of wood filler or a new board is an underestimate of the actual damage. In Michigan, the average cost of homeowner repair by patching was $200, by replacing the siding, $200–$500, and by professional restoration, $500–$2000 (G. Dudderar, personal. communication).

The most important aspect of woodpecker damage is how to avoid it or stop it once it starts. Several of the following techniques are worth a try, at least for temporary relief. Often a combination approach is more effective than a single technique. The key to success is to take action as soon as a woodpecker shows signs of becoming a pest. If a bird has a well established behavior pattern, it is much more difficult to stop.

- Scare the bird whenever you see it on the house. You can scare it by shooting cap guns, banging on pots and pans, or by just yelling, but you must be persistent.
- Tack aluminum foil streamers or a child's pinwheel to the damaged area so that they will move in the breeze.
- Place a toy (rubber or plastic) snake, an owl decoy, or a cut-out silhouette of a hawk near the spot. If you don't have a convenient ledge or roof, you can hang the snake on the side of the house with a string or mount the owl on a pole. As these two examples suggest, in devising woodpecker-scaring tactics, you are limited only by your imagination.
- Try to eliminate any ledges or cracks the woodpecker may be using for a foothold when it is hammering.
- Deaden the sound-producing properties of the spot where the bird is hammering by filling any hollow space beneath the siding.
- Cover the damaged area with screen, hardware cloth or sheet metal until the bird has been discouraged.

If insects in the siding seem to be the cause, you can eliminate that attraction by removing the insects. Caulk all the tunnels in the siding. Insecticides or wood preservatives may help in some situation, although getting an insecticide into the siding where it will kill the insects is usually difficult. Treatment of the siding with toxic wood preservatives also seems to repel woodpeckers as well as providing insecticidal and wood care benefits. Check with your paint dealer about incorporating a wood preservative with a coat of stain. If the siding needs stain or paint, a heavy application of a thick latex-based product may clog the open tunnels and provide some resistance to insect infestation.

Most of these recommendations have serious drawbacks as reported by the specialists and homeowners. For example, structural modifications, such as sealing the plywood tunnels, are only useful if the damage involves that particular type of siding. Most homeowners are unaware of potential woodpecker damage and do not take such steps until after the fact, rather

than as a preventive measure. Covering or repairing the damage can be helpful; however, recommended materials (e.g., sheet metal or hardware cloth) are unsightly, and the bird may simply shift to another area on the home. One material that does appear useful for covering large areas at low cost is plastic bird netting.

Chemical treatments are limited. There are no toxicants registered for woodpecker control. Odor repellents, such as naphthalene, have little effect. Sticky repellents can be effective but are difficult to use on home siding. Insecticides or toxic wood preservatives may provide temporary relief but do not prevent reinfestation.

Alternate feeding has been cited as an effective abatement technique, if food-seeking is the cause of damage. However, suet may attract more woodpeckers to the area.

If the woodpecker persists in spite of your efforts, or if the damage exceeds your tolerance level, the woodpecker may have to be killed. Woodpeckers are protected by both state and federal laws—anyone killing one without a written permit from the U.S. Fish and Wildlife Service is subject to a stiff fine. However, permits for killing damage-causing woodpeckers are available. Lethal control is a last resort and is distasteful to many people. However, in many cases it is the only hope to end the problem.

To obtain a permit application and more information, call or write:

USDA-APHIS-ADC
Room 305
750 Windsor Street
Sun Prairie, WI 53590
(608) 837–2727

The USDA office will send you an application with a return envelope. When they receive your completed application and determine that other control options have been tried or are inappropriate, the application is forwarded to the U.S. Fish and Wildlife Service with a recommendation.

Be advised that the whole process may take 3 weeks and that effective 1 January 1990 a $25.00 fee must accompany your permit application. The Fish and Wildlife Service will specify on the permit the number of woodpeckers that can be killed.

Once you have the permit, the troublesome woodpecker can be killed legally. You can use a shotgun or .22 caliber rifle loaded with bird shot. If gunfire is unsafe or illegal where you live, you can trap and kill the bird in a rat trap with a wooden base. Nail the trap to the side of the house near the damage. Bait the trap with a piece of suet tied or wired to the trigger and place the trap with trigger down toward the ground. **Make sure the trap is out of reach of children and pets.**

The next time you hear a tap-tap-tap on the house and there is no one at the door, look around, it could be the start of a very difficult problem with your backyard birdlife.

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Francis Zirrer: Unheralded Naturalist of the North Woods (Part I)

by Sumner W. Matteson

Reclusive, but unabashedly inquisitive, Francis Zirrer (1885–1968) spent thousands of hours alone observing the natural world in northwestern Wisconsin. Potentially one of Wisconsin's great naturalists, most of his work was documented in 40 years of field notes that were carelessly discarded after his death. And a 500-page novel he wrote that apparently contained much factual natural history information on life in Wisconsin's northern forests has been lost, most likely forever. Nevertheless, there is still an abundance of valuable information on bird observations in his correspondence with ornithologist A. W. Schorger during 1934–1949, and in eight articles written for the *Passenger Pigeon*. He also wrote a few natural history articles for the *Milwaukee Journal* in the late 1950s.

This is the first of a 3-part narrative presenting Zirrer and his striking observations of birds encountered in northwestern Wisconsin, as told by him and the naturalists who knew him.

Credited as the first person to prove conclusively the nesting of the Northern Goshawk in Wisconsin, Zirrer's admirers included Smithsonian Institution Secretary Alexander Wetmore, mammalogists H. H. T. Jackson and Paul Errington, naturalist and historian Walter Scott, and Milwaukee Public Museum ornithologist and wildlife artist Owen Gromme. At Zirrer's death, Kemper (1968) wrote: "No finer nature writing, in this editor's opinion, has ever appeared in any publication than the contributions of this humble man."

Born in Austria on 21 December 1885, Zirrer moved to Yugoslavia and became a citizen of that country before emigrating to the United States. It is not known when he arrived in the U.S. The earliest reference to his activities here is a trip to Glacier National Park in 1915 at the age of 29. In a 12 March 1942 letter to Schorger, he wrote: "I visited the park in the summer of 1915. Not as a tourist, I was too poor for that, but being young it did not make much difference. I stayed over 6 weeks, camped in the open, and liv[ed] from a bag of supplies supplemented by fish and an occasional rabbit. With the mountains (and the Water Ouzel) I [felt I was back at] my alpine home. So

many other things, esp. plants, were alike or very similar. The same *Dryas octopetala* decorated the rockslides; a pretty blue Gentian, very much like the alpine *Gentiana acaulis*, colored the meadows above the timber line, and there were others."

Zirrer lived in Milwaukee with his wife Clara Kullmann during the early to mid–1920s. In 1928, he moved with Clara, whom he described as an invalid in correspondence to Schorger, to northwestern Wisconsin. For 17 consecutive years, Zirrer lived in remote parts of northwestern counties, settling in three different locations, each more secluded than the previous one. From 1928 to 1932 the Zirrers lived on a "timbered farm" north of Hayward in Sawyer County. From late September 1932 until the summer of 1940 they lived in a one-room cabin in the mixed hardwood-conifer forest of northwestern Rusk County, southeast of Birchwood and "miles from the nearest human habitation" (Zirrer 1956). In 1940, the Zirrers moved to the edge of a conifer bog that today is known as the Kissick Alkaline Bog Scientific Area, part of the Kissick Swamp Wildlife Area managed by the Wisconsin Department of Natural Resources in northwestern Sawyer County.

Sadly, Zirrer's wife passed away on his 59th birthday, but he stayed on at the bog site until July 1945. He returned to Milwaukee until the following spring, then moved back to the north woods for about 6 months before leaving for Chicago for 2 years. In the fall of 1948, at the age of 62, Zirrer returned alone to northwestern Wisconsin to a cabin at a fourth site not far from the Totogatic River in northwestern Sawyer County. Here was a place even more remote than his bog locale:

"I am living so far from my rural mailbox that it requires 5 hours of strenuous walking through a wilderness to go there and back; therefore I do not go often. An enormously interesting country, full of wildlife, but too far from everything." (letter to A. W. Schorger, 15 May 1949).

It is not clear how long Zirrer lived in the Totogatic River area or elsewhere in the north woods. His last article for the *Passenger Pigeon* in 1956 suggests he was living in a cabin somewhere in the Hayward area. According to an editor's note, however, to a 29 November 1958 piece by Zirrer in the *Milwaukee Journal*, he was an employee of the Krueger Lithographing Company in Milwaukee "until last summer." This would seem to indicate that Zirrer moved back to Milwaukee in 1956 or 1957. By the fall of 1958 he was back in the north woods.

Ten years later he died.

Had it not been for Schorger's constant encouragement and support during the 1930s and 1940s, Zirrer's observations of the natural world may never have come to light. Schorger became Zirrer's mentor in the mid-1930s, provided him with North American bird books (to complement Zirrer's collection of European natural history works), sent him copies of his (Schorger's) published papers, and arranged for him to become a member of the Wisconsin Society for Ornithology in 1942 and a member of the Wisconsin Academy of Science, Arts, and Letters in 1943. Zirrer also joined the Wilson Ornithological Club (later renamed Wilson Ornithological Society) in 1943.

It was Schorger's constant prodding

to publish that probably persuaded Zirrer to submit articles to the *Passenger Pigeon*, beginning in 1944. And he might have published earlier had he not thought himself inarticulate, a person with poor writing skills. Schorger (letter to R. Works, 11 July 1968) noted ironically: "His command of the English language would put many of our college graduates to shame. Yet, he was very reluctant to prepare his observations for publication."

Zirrer's correspondence with Schorger ran intermittently from 1934 through 1949. Owen Gromme (letter to S. Matteson 30 January 1989) stated that it was through him that both men "became acquainted." Thanks to Schorger's foresight, most of Zirrer's letters to him are available for study at the Wisconsin State Historical Society Archives in Madison.

Zirrer was out at all times of the day and night and in all types of weather. Although anthropomorphic at times in his descriptions of birds, there is no doubt that he possessed a keen scientific curiosity and was a reliable and accurate observer, as Schorger affirmed in a 11 July 1968 letter to Ruth Works, a close friend of Zirrer: "During a correspondence extending over the period 1934–1949 I acquired a profound respect for his ability as a naturalist. He was a very careful observer and, if any uncertainty arose in his mind, he sought further information before reaching a conclusion."

Zirrer's earliest known Wisconsin observations occurred on forays to the Namekagon River in northwestern Sawyer County in the late 1920s and early 1930s. In a 1956 *Passenger Pigeon* article on the Great Horned Owl (*Bubo virginianus*), he described a nest site and a cache of prey:

> "A pair of these owls, which nested in 1931 in the woods on the banks of the Namekagon River, deposited its set of three eggs on the slightly hollowed top of a broken white pine stump, some five feet in diameter and about fifteen feet high. Next to the big stump there grew, almost touching it, a young balsam fir about twenty feet high, whose dense crown of branches screened the nest from above. Under this stump, which stood on its root as on stilts—indicating the enormous amount of fertile forest soil burned, blown away and washed off since the lumbering days—there was a hollow of considerable size, apparently utilized by the owls as a pantry. Hardly a day passed that I did not see in there one or more carcasses of snowshoe hares, cottontail rabbits, muskrats, various squirrels, mice, voles, and once a female Mallard with a hard-shelled though broken egg inside. But the chief prey consisted of house rats . . . of which I found as many as eight at one time. These the owls obtained on a large farm nearby [Zirrer found and examined numerous pellets near a hayloft], where we had then been living."

Zirrer (1956) had another memorable experience with this species at his secluded cabin home in Rusk County. Here, in late September 1932, he lived in a "long unoccupied dwelling with its underground, partly hollow logs and many crevices . . . inhabited by many small rodents, shrews and bats.":

> "The first night we were disturbed not only inside by many woodland mice, but also outside by something continually dropping on and running over the roof. When I went out to see what was causing all that noise, I frightened what it was and for a while everything remained quiet. The night was almost as bright as the day. The full moon hung like a detached yellow disk in the intensely clear, crisp night sky, making every object,

every twig and leaf clearly visible. Rigid, resembling a jagged wall, stood the great trees, hemming in the little dwelling from all sides. Stepping under a big maple, a few yards from the cabin, I waited. Before long I heard a slight rustle among the trees in the rear. Following the sound with my eyes I saw something stirring near the top of a tall balsam fir. A dark something leaped into space and floated lightly upon the roof. It was a flying squirrel. Then I saw others, from other trees, all around the tiny clearing, following the first one onto the roof or sailing across the clearing from one tree to another. The whole space above the cabin and the clearing had become alive with animated animal forms.

"It was a pleasant, moonlit night and the pretty woodland creatures were frolicking. But it was also the harvest time. The summer of 1932 had been unusually favorable and bountiful. The trees and the shrubbery were loaded with fruit, seeds, acorns, [and] nuts . . . . The many big, old trees offered not only food but storage and shelter in abundance. As I stood there watching these lovely, gentle creatures, of which I have never seen so many at any one place . . . my eyes fell on a big spruce in the rear. There I saw a big dark form that I had not noticed before, leaping from a limb and floating noiselessly on broad, wide spread wings toward the roof. When I realized that it was that fierce, grim 'flying terror of the night,' the Great Horned Owl, I was actually stunned. I did not know what to do. My first thought was to help, to save one of the . . . creatures from death; but years of necessary caution exercised in observing wildlife restrained the impulse to move, to shout, to pick up and throw a stick at the owl.

"I heard a dull thud as the owl struck, followed by an agonizingly shrill, broken, gasping shriek and a rolling patter of many tiny feet scampering from the roof; and I saw the big bird with a limp little body dangling from its talons, flying toward the trees in the rear and vanishing among the foliage. Then I heard a loud, triumphant hoot 'whoo, whoo, whoo, whooa!' penetrating the stillness of the wilderness night."

Another owl that fascinated Zirrer (1944) in Rusk County was the Sawwhet (*Aegolius acadicus*): ". . . these little owls visited us upon several occasions, mostly from the latter part of September until the first permanent snowfall, which usually takes place before the first half of November. On warm autumn nights when windows were left open we heard them calling, at times from several directions at once, indicating that several of them were around. With a light inside and window shades up, one of them would sit on a branch or a woodpile a few feet away, stare into the lighted window and call softly. Although they are usually quite tame and often permit a very close approach, they are alert and of very keen hearing. Sneaking through the rear door as noiselessly as possible I occasionally tried to approach them from the side or from the rare but found this impossible; the owl would let me come to a distance of three to four feet without showing alarm, but when I stretched my hand to get hold of it, it would glide away and disappear into the darkness."

The woods Zirrer inhabited and explored in northwestern Rusk County, beginning in 1932, probably contained patches of old-growth hardwoods. According to Zirrer, some of the yellow birch (*Betula lutea*) in his neighborhood had a diameter of two feet and at least one he mentioned, about a mile and a half from his cabin, was recorded with a diameter of 3 feet, 9 inches. In such areas white pine (*Pinus strobus*) and hemlock (*Tsuga canadensis*) had

been selectively harvested prior to hardwood clear-cuts. This was common practice during the lumbering years of the late nineteenth and early twentieth centuries. By 1910, 65% of the total land area of ten northern Wisconsin counties, including Sawyer County, was reported cut-over, with most remaining areas culled for white pine (Wilson 1982).

When Owen Gromme (1934a) first visited Zirrer at the Rusk County site in 1934, he remarked that the land en route to Zirrer's cabin was "burned over country where tremendous pine stumps gave mute evidence of a former wooded paradise." Gromme (1935) described the locale where Zirrer lived as "a great expanse of second growth timber consisting of maple, birch and other characteristic flora which has replaced the original pine forest."

This forest would eventually be cut, as had the vast majority of hardwoods in the Rusk County region by this time. Zirrer was keenly mindful of the advance of the loggers and this may have been the impetus for his moves to areas remote from logging. He lamented the lack of Spruce Grouse (*Canachites canadensis*) and Canada Jays (now Gray Jay, *Perisoreus canadensis*) in a letter to Schorger dated 12 July 1934: ". . . if the conditions are all over the N.W. the same and coniferous forest as scarce, then the Spruce Grouse and Canada Jay must be very rare nowadays." Zirrer was led to believe that both species might formerly have been common in northwestern Wisconsin based on articles he had read (dates not given) in the *Milwaukee Journal*. Schorger then wrote to Zirrer with more information on the status of both species and Zirrer responded on 6 November:

> "I have read your letter of Oct. 27 with a great deal of interest—regret. It confirms my fear that the Canada Jay is practically extinct as a Wisconsin bird. It probably never was very abundant here: a bird of [the] coniferous region had to go like so many others when its original haunts were destroyed. I presume that the status of *Canachites canadensis canace* [Spruce Grouse] is about as hopeless."

Today, Spruce Grouse are rarely observed in Wisconsin and the Gray Jay, a winter and summer resident in certain northern counties, nests in some lowland conifer forests.

In 1933, Zirrer (1947) made an important discovery that attracted the attention of Owen Gromme. "While on a field trip through the extensive, heavy hardwood and mixed timber surrounding our log cabin and stretching for miles in every direction," Zirrer wrote, "I heard suddenly a loud, angry *keek, keek, keek, keek, keek*. At the same time something struck me on the head from behind, knocking my cap off. In the semidarkness, caused by the dense foliage, I saw a dark, shadowy form pass with lightning speed above my head and disappear among the leaves." It was a Northern Goshawk (*Accipiter gentilis*):

> "The bird passed above my head and alighted on the lower limb of a big sugar maple about two hundred feet away. Getting myself a stick for protection, I scrutinized the neighboring trees for the nest. Of course I had no intention of striking the bird, but when the hawk, screaming at the top of its voice, its eyes ablaze with fury, flew at me again, I raised the stick which the bird dodged. Though knowing that the nest could not be far away, it took a while before I located it in a crotch of a giant yellow birch, next to the tree trunk about thirty-five feet above the ground. I saw one

nearly fully grown young at the rim of the nest, and, after some search, three others among the foliage of this and a neighboring tree. While thus engaged, I was attacked again and again by the old bird, which, after a few minutes was joined by another, probably the male. Swinging the stick above my head, I was able to keep the attacking birds at a respectful distance. Not wanting to frighten the birds unduly, I went home, while the hawk followed me to the road, screaming.

"Next day when visiting the nest again I was attacked so unexpectedly by the angry bird, that it not only knocked my cap off, but hit me so severely on the head that it drew blood, and I felt the swelling fully two weeks after."

There seems to be a difference of opinion as to when Zirrer actually first found the Goshawk nest and if the nest contained 3 or 4 young. Gromme (1935) reported that Zirrer found the nest during the winter of 1932 and watched it during the spring of 1933 "from the time [the female laid] eggs until the last of the three young left the nesting tree." Until Zirrer's 1933 record, only Schoenebeck (1939) had claimed to have found Goshawks nesting in the state (4 nests in 1891), but he provided no data beyond the number of nests.

When Zirrer saw the birds returning to the same nest tree in 1934, he knew that the rarity of his find would interest the Milwaukee Public Museum. He informed Gromme of the nesting, and soon after sent a special delivery letter to him with instructions to contact a Reverend Senger of Rice Lake. Senger, Zirrer's cousin, would direct Gromme to Zirrer's cabin.

In his personal field notes (now housed in the Milwaukee Public Museum), Gromme (1934b) made this entry for 15 May 1934:

"The other day I received his first letter stating that he had under observation last spring and this the nest of a goshawk. He wrote us as a matter of record and invited us to verify his find if we wished. He wrote in the style of a man of some scientific knowledge, and is evidently a confirmed conservationist. He gave me to understand that if we come up there it must be with the understanding that we would not molest the birds unduly, and under no circumstances kill the birds or take the nest."

Zirrer was no doubt aware that Gromme might wish to collect a bird or two for the Milwaukee Public Museum, but he was reluctant to permit it. He wrote to Schorger (10 June 1935): "I am not a scientist and not very anxious for a new record, so I hardly ever use the gun. In this I am in accord with the late Hermann Laus: 'Lieber eine Lucke in der Wissenschaft, als eine in der Natur.'" Translation: Rather a hole (or gap) in science than one in nature.

Zirrer was also very sensitive to the plight of raptors. He railed against the predominant negative view of these bird and vented some of his anger towards the Wisconsin Conservation Commission (now Wisconsin DNR). In a 6 November 1934 letter to Schorger he wrote:

"This splendid hawk [Goshawk] as well as his smaller relatives *velox* [now *Accipiter striatus*, the Sharp-shinned Hawk] and *cooperi* [Cooper's Hawk] are condemned to death by the Wisconsin Conservation Commission. That means that every bloodthirsty idiot can empty his gun at everything that looks like a hawk with the excuse that it was a 'bad hawk.' It is tragic that men of that body do not

view the natural necessity with a little more understanding and liberality. I do not deny that our fierce bird is at times very destructive, but what is the difference if a few of the grouse or rabbits are destroyed and eaten by it or die through disease as this is the case right now, when there are practically no grouse or rabbits left."

In the latter part of this letter, Zirrer refers to a crash in the snowshoe hare population. Between 1934 and 1949 he never again saw the number of snowshoe hares that were present from 1932 through the summer of 1933 in northwestern Wisconsin. Commenting on the abundance of hares and cottontail rabbits during the early 1930s, Zirrer (1947) wrote:

"It was nothing unusual to see fifty to sixty of them in less than a mile walk. . . . They also furnished an abundance of food to our goshawks. The thirty to forty acres surrounding the nest tree were at times actually littered with the skeletons and partly devoured cadavers of these hares. Usually they could be found stretched across fallen trees or on the tops of old stumps. . . .

"The end of summer 1933 saw the end of the varying hares and the cottontail rabbits. Suddenly, almost at once, they had disappeared, swept away as by an epidemic. Their smelly cadavers, lying everywhere and persisting a while longer, told of their extraordinary numbers before. The comparatively few that were spared retired then to their original habitat, the sphagnum bogs, swamps, and marshes, especially those with an abundance of willows, where they recuperate, and from whence they populate the upland woods after their renewed increase."

Back to the Goshawk story. On 15 May, Gromme travelled north with an assistant, Walter Pelzer. In the late afternoon of 16 May, they arrived at Zirrer's cabin. After meeting him, Gromme (1934c) made this journal entry:

"Mr. Zirrer is a very quiet man and after becoming acquainted with him one can understand his reason for seclusion from prying eyes and wagging tongues. He has a peculiar but probably reasonable philosophy regarding human contacts. He is caring for an invalid wife who requires most of his time. During what spare time he has he studies birds, insects and plants, and has an exceptionally keen and scientific mind. He does remarkably well with what few books he has. He is a very short but very active man; has keen blue eyes and rugged physique. His little feeding shelter is a source of joy to both he and his unfortunate wife. He never kills anything, not even a rabbit for food. He . . . speaks English poorly, but strange enough one does not seem to be aware of this after knowing him."

On 17 May, Pelzer and Gromme selected a large yellow birch about 25 feet from the nest tree as a site to erect a photographic blind. Gromme, however, did not like the view from the blind because the nest was partly obstructed by some branches. The following day he asked Pelzer to remove several small branches from the nest tree (Gromme 1934d, Zirrer 1947). Zirrer (1947) recalled what happened next:

"Pelzer, armed with a small saw and a hatchet, was sent up. But . . . as he began to approach the nest from below, the fierce female struck. . . . screaming at the top of her shrill, angry and savage voice. . . . The position of the young may was truly precarious. Encumbered with tools, he could not use his hands to ward off the attacking bird. Pounded with hard, powerful wings and slashed with

long, razor sharp talons, he bent his head to protect his eyes and face. . . . Had he not been held to the tree by the strong leather belt, he most certainly would have been knocked from it. . . . Pelzer reached the nest . . . . obstructing branches were cut and Pelzer could descend before the bird was ready for another attack. On the ground he looked with a mixture of sadness and amusement at his shirt, which was hanging in tatters."

From the blind, Gromme had caught much of the action on film, including shots of the female at the nest, but later that day, Pelzer received word that his grandmother had died. He and Gromme quickly departed, their photography unfinished.

On the afternoon of 26 May, Gromme, Pelzer, and Warren Dettman of the MPM staff returned to Zirrer's cabin and proceeded to the blind to resume photography. Zirrer (1947) described what ensued."

"Although it was late when they arrived, they decided to get some pictures. Somehow the old birds remained quiet and did not fly at us when we approached the nest tree, in fact the birds were not even seen. So all precautions were foolishly cast aside and Gromme started up the tree to the blind. He was only half way up the big trunk when, with a fierce, savage scream, and coming like a bolt of lightning, the female struck. The excited calls of warning from the ground came too late. Gromme, holding to the heavy spike, reeled for a moment as if he had lost his balance and would tumble down, but fortunately he held and in a few seconds recovered sufficiently to descend. Fortunately for him the female did not strike again. I fear to think what could or would have happened had she kept at it; our hawk investigating affair would probably have had a tragic ending. An examination revealed eight deep gashes across his head, one of them across his right temple and dangerously near his eye."

Gromme (1934e) recalled the incident this way: "I had climbed about half way up to the platform tree when the boys shouted warning to me just in time for me to see the female bird coming straight at me. I drove my left fist at her but she deftly 'shot' in between my fist and bare head and struck me a terrific and painful [blow]. . . ." He (1935) added: ". . . by a mere flip of a wing . . . she struck a blow that made my senses reel. It felt like a crack across the head with a heavy whip. . . . She had evidently taken hold with both feet as she struck and dragged her hind claws about four inches. From that time on, all ascents to either tree were made with the head well protected by heavy burlap or a sheepskin-lined leather helmet."

Before Gromme departed for Milwaukee he had apparently managed to convince Zirrer of the importance of collecting one of the Goshawk young for the museum. Pelzer, wearing a sheepwool-lined helmet provided by Zirrer, climbed the nest tree once more, withstood repeated blows to the head by the female, and retrieved one of the young (Gromme 1934f).

It was not long before it became known in the area that a rare bird was nesting nearby and, according to Zirrer (1947), there was "speculation as to the monetary gain that might be made from the hawks." Apparently fearing the worst, Zirrer took it upon himself to prevent the birds from returning to the nest tree. The following spring, in 1935, he knocked part of the nest down with a long pole.

"After this I did not visit the old tree

for about a week, but I cannot describe my consternation when I did get to the old nesting site again. Although it was the first week of April, a blizzard was raging and the thermometer stood at zero. . . . A dark object loosened itself from the top of a yellow birch in front and above me, and before I had a chance to duck, struck, me on the head. Then I saw that the hawks had begun to build another nest, not more than sixty to eight yards from the old one."

He returned the following day and recorded some of the first observations ever published in North America on nest-building by the goshawk (Zirrer 1947):

"Unseen by the birds I hid behind some storm broken tree tops and a group of balsam firs. According to my notes, gathered then and upon many another occasion, the female builds alone. The material for it, for the most part the thin, and when older, easily breakable twigs of the white birch, she finds on the ground or breaks them from the prostrate young trees whose straight white boles, a few inches in diameter, often crisscross the forest floor. After a stick is placed, which usually takes a considerable amount of time . . . she flies again downward to find another. The selection of a suitable stick takes at times wholly five minutes and even longer. . . . All sticks are carried in the beak. . . . According to my notes she builds only in the forenoon for about an hour."

Zirrer's observations on nest-building and other aspects of the bird's breeding biology are still cited in the life histories of the goshawk.

On 23 May 1935, Zirrer wrote Schorger and invited him to see the nesting birds. And he asked him to keep the nesting "strictly confidential. I want to protect these birds and this is only possible if nobody knows of it." Zirrer provided detailed directions to his cabin and hoped that Schorger would not stop to ask directions because the "curiosity of people in these little country places is annoying." But Schorger did not come.

Afraid that "foolish bragging" by the property owner (a fire warden named De Jung) would lead to unwanted visitors, Zirrer (letter to Schorger, 17 June 1935) decided that "this should be the last nesting of these hawks in our immediate neighborhood." So he knocked the nest down. Is it possible that the nest contained young when he dislodged it? This is unclear. On 17 June he wrote Schorger:

"It was my wish last winter to procure something unusual for you. . . . So I am sending you one of our baby [goshawks]." Schorger later thanked Zirrer, but his 18 June 1935 private journal entry read: "This morning there arrived by post a young Goshawk. This was shot and forwarded to me by F. Zirrer, Birchwood, Wisconsin. He wrote that he wanted to send me something unusual, but I am sorry that he selected a Goshawk."

Zirrer held Schorger in such high regard that he may have believed the Goshawk fledgling was an appropriate gift and a significant museum specimen as well. A 29 July 1935 response to Schorger's inquiry about the collection date [16 June] included these words: "It pleases me to know that you are satisfied with it, as I dislike to destroy such a fine creature, unless there is a perfectly good reason to do so."

Zirrer (1947) learned at the end of 1935 that the forty acres "harboring the old and the new [nest sites] was sold to be logged off. By the middle of March, 1936, the logging progressed

to the new nest tree, which, found worthless for logging purposes, was left standing. When, a few days later, the hawks appeared to begin their nuptial flight, I did the same as the previous year, I knocked the nest down. This, the transformation of the forty to bareness, and the disturbance caused by logging, I held to be sufficient to frighten the birds away. But again I calculated without taking the persistence of these birds into consideration. To my surprise the birds returned, and, in spite of all the work, noise, and commotion, started to build again. This time they selected a very large yellow birch, about a hundred yards from the second nest. On the tenth of April the female was sitting again. Knowing, however, that this would not do, that sooner or later the birds will be noticed by the lumbermen, and others, and very probably destroyed, I decided to get rid of them by all means."

After several visits to the nest tree at night to harass the nesting Goshawks, Zirrer (1947) eventually destroyed the nest through the use of his long pole, but not before "the female had returned, thrown out the frozen eggs, and commenced to sit again. This was too much, however. I realized that for their own safety and well-being the birds must go."

With the destruction of the nest, the site was abandoned. Zirrer (1947) did not think the hawks would attempt to nest again that year "being disturbed thrice and having one clutch of eggs destroyed. . . . But I figured wrongly again":

> "July 28 I was on a field trip about a mile and a half from our cabin and more than a mile from the road, when I came upon a most dismal and forbidding tract of heavy timber. In spite of the countrywide drought, the tract, a deep depression of considerable size, was still wet. A row of small but deep holes filled with dark inky appearing water, long clusters of old man's beard (*Usnea*) hanging from the branches of great trees, whose trunks and big limbs were beside it overgrown thickly with masses of dark green moss and gray lichens. . . ."

Then he heard the call notes of two Goshawk fledglings, located two more, and found the nest: "In spite of many tall white pines and a considerable number of big hemlocks the nest was built again in an enormous, partly dead yellow birch, the largest I have ever seen. Measured two feet above the base it had a diameter of three feet and nine inches. I estimated the height of the nest to be fifty to fifty-five feet."

According to Zirrer (1947), the Goshawks nested there undisturbed, in the same yellow birch, and raised young in each year from 1937 to 1940. He returned to the area again in 1946 for a visit and "found the tract of timber still the same, only the old birch had gone. Decaying at the base, it had become top heavy and collapsed not more than a few months previously, judging by the appearance of the splinters."

Another of Zirrer's favorites during his years in northwestern Wisconsin was the Common Raven (*Corvus corax*), and he delighted in recording new observations of this bird. In a 6 November 1934 letter to Schorger, he wrote:

> "[I] never miss an opportunity to watch them. Sept. 5 I accidentally discovered that they are unexpectedly good singers. In search of some plants I sat down on a fallen tree to rest, when I heard a most unusual, strange melody coming from a group of tall white ash a few hundred feet away. It started with a

long-drawn 'pee yuuk' followed by a line of gurgling, melodious tunes of great variety—then a short pause and a repetition of the melody over and over again, but always with a considerable difference in tone and volume as if from a different performer (something entirely different from the spring song of the crow). I . . . decided to get a little closer, but—did you every [try] to sneak in on a Raven? Barely I made a few steps as carefully as possible, when the song ceased. . . ."

Schorger wanted Zirrer to locate a Raven nest, but he was never able to do so despite many hours afield; this left Zirrer impressed with the secretiveness of the bird. He did, however, note pairs and families in Rusk County, as noted in his 12 July 1934 letter to Schorger: "In this locality we see pairs circling and playing as early as the beginning of March and if a third one tries to join the pair, then we see fierce fighting going on above the tree tops with lots of croaking. . . . That they breed very early, I judge by the fact that families of 5–6 were observed by me as early as the middle of May. . . . there must be at least several pairs breeding in this locality."

Zirrer (1945) was the first to publish information about Raven food habits in Wisconsin. He observed Ravens in spring "when the ice on our isolated lakes and ponds begins to melt . . . walking upon the ice picking various water insects and even small [frozen] fish." He noted during summer that "those parts of heavy timber which remain under water well into June" populated with "numerous frogs, toads, salamanders and other animal life" were "visited by the ravens daily. Swinging their heavy bodies from side to side they walk sedately over the nearly bare ground, while turning leaves and pieces of decaying wood, or boring holes in the soft black soil. Often they run and jump awkwardly after a frog or some other nimble prey."

He also observed Ravens foraging daily for grasshoppers along roads and fire lanes during the drought years of the 1930s. And he watched the birds take "poorly chewed, undigested mice" regurgitated by domestic cats. Regarding the latter, Zirrer (1945) described a sort of ambush strategy associated with prey recently caught by a cat:

> "Early one morning in April, while standing on the porch watching with binoculars the entrance to our narrow road, I noticed our unusually big white tomcat approaching the entrance with a big meadow mouse in his mouth. Suddenly, without noticing the birds before, I heard the familiar swish of the wings and saw, like a bolt of lightning, a big, black object diving down at the cat's head; which caused the surprised animal to drop the mouse and jump three to four feet high and out of the way. At the same moment another black object dived at the mouse and in a second or two both birds vanished among the trees. Although the woods were still bare and I was on the spot in a few seconds, I was unable to detect a trace of the birds."

Zirrer's (1945) article "The Raven" is worth reading in its entirety. It is typical of his perceptive observations and captivating style of writing. It is fitting now to conclude Part I on Zirrer's life and work with further excerpts from that article:

> "There is no more impressive sight in the northern Wisconsin woods than a flock of ravens flying with slow, steady, regular wing beats just above the tree tops, perhaps their most common height of flying. The sound made by the swish

of the wings resembles an approaching storm and may be heard on a quiet, calm day long before the birds come in sight—to my mind the grandest spectacle of northern Wisconsin woodlands. Such flocks are composed usually of five or six, sometimes of eight, nine, or ten birds, but the largest flock seen by the writer contained twelve birds. According to my observations large flocks, composed of more than one family, are seen during the autumn months only. Before the first snowfall the flocks disperse and disappear from the neighborhood. . . .

"Sometimes, though rarely, a raven will rise high in the blue sky, very often beyond the sight of the naked eye, while its course croak is heard plainly by the listener below. After watching this from a sphagnum bog for a number of years, I have come to associate these comparatively rare occasions with the blooming of *Arethusa* and the yellow and the pink lady's slippers.

"Until the end of May or the beginning of June the young remain in or near the vicinity of the bog where they were hatched and where the food is to that time comparatively easily obtainable. With the growing density of the vegetation in the bogs the family moves to the more open upland woods, where it spends the summer and early fall. The change of habitat falls in line with the exodus of frogs—the mainstay of food for so many birds and mammals—from their wet spring habitat into a drier territory. From then and until the middle of October their clucking and gurgling notes are heard daily, as a rule all day long, reverberating through the heavy timber of the upland woods. . . .

"Although the ravens sometimes brave very strong winds and fly when no other bird ventures in the open, they become extremely upset by those terrible summer thunderstorms which have visited the northland woods in recent years with considerable and disastrous frequency.

"When the night-like darkness envelops the landscape, the strokes of wind, slight at first, increase in frequency, violence and fury to a mad, rushing torrent of air, trees sway and bend and, broken and uprooted, crash with dull thud to the ground, the horizon is aflame, clouds burn in ceaseless strokes of lightning, deafening crash of thunder follows one after another, clouds burst, heavy hail rattles down and torrents of rain flood the woods. . . .

". . . . I have heard their anxious, anguished, pitiful cries from the nearby woods upon several occasions. Investigating, I have discovered them sitting in streaming hail and rain on the lower, horizontal branches close to the tree trunk under the dense canopy of evergreens of hardwood foliage, displaying all the signs of fear. Craning and twisting their necks, swinging their heads sideways and back and forth while emitting an indescribable medley of the most unusual, fearful, lamenting notes, they sat there apparently scared out of their wits and usual jauntiness to such an extent that they forgot everything else. Under these circumstances I have been able to approach them within less than twenty feet without appearing alarming or causing them to move. The birds of course kept staring at me uneasily, but the fear of the pandemonium reigning around was greater then their fear of man. . . .

"Besides the already mentioned croaking, clucking, gurgling and warbling calls, songs, and notes, there is another, to my mind the most remarkable call, which is heard but a short time only. This is a loud, metallic, bell-like note which may be fairly well imitated by the stroke of light hammer on a heavy piece of tin. From about the beginning of August until the third part of September one may hear this loud, ringing, resonant sound whenever ravens are in the neighborhood, but mostly in the morning and toward evening. No one, upon hearing it the first time, can pass it with-

out a surprise and a comment. . . . There is not a sound in the northland woods comparable to this call of our grandest, most mysterious bird—The Raven."

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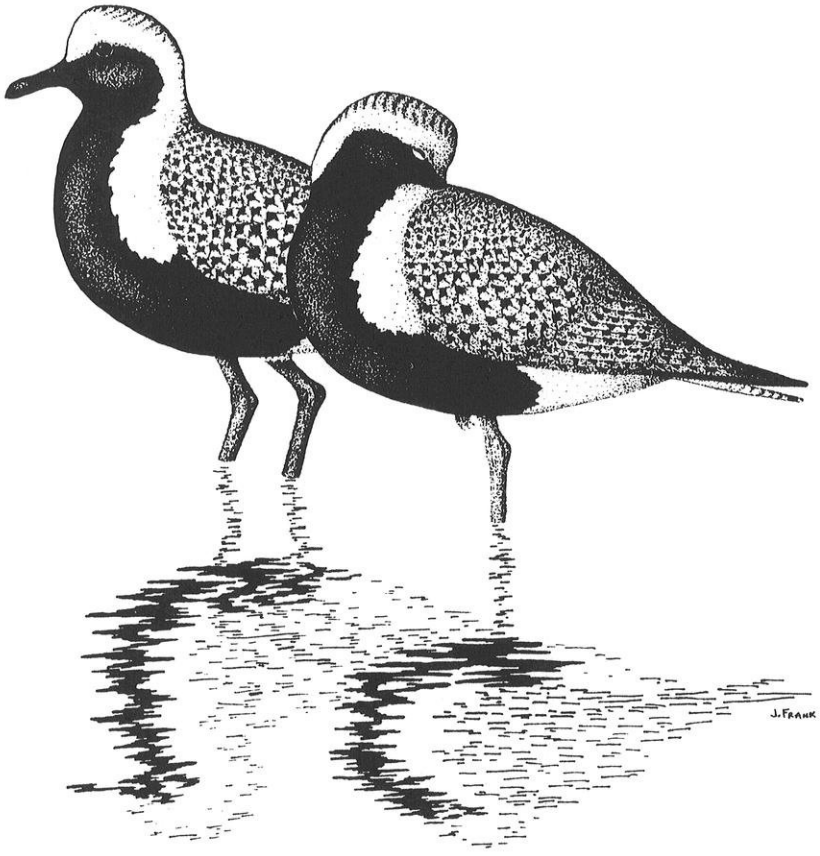
Francis Zirrer's 1933 Goshawk nest (*photo by Owen J. Gromme*)



Black-bellied Plovers *by James C. Frank*

The Summer Season: 1989

by Thomas K. Soulen

After last year's extreme weather, this season seemed tame by comparison. The weather of 1988 evoked numerous comments by observers; there were few in 1989. Whereas nearly every week last year produced temperatures near or above 100 somewhere in the state, those extremes were reached on only a few days this year, and some weeks the thermometer didn't even get to 90 in most sections. Night temperatures below freezing occurred on several scattered days through mid–June, and some frost was noted in northern areas on June 29. The mercury dipped to almost 40 somewhere during nearly every week of the summer.

Even better news was this summer's precipitation, after last year's disastrous drought. Although rainfall was not heavy overall compared to the average, it was quite well spaced through the season. June began with the state having had 80–85% of normal precipitation since April 1, and July ended at about the same level, with a dip in midseason to no lower than 50–60%. Many parts of the state received heavy rainfall at least once during the season, although as is frequently true with summer weather patterns, rainfall amounts varied widely with the passage of most frontal systems. Little storm activity was violent, although some areas experienced high winds and hail or even tornado touchdowns June 26–27. Observers made few comments relating weather to bird presence or survival; some of what was suggested dealt more with the residual effects of last year's drought in some areas.

Wisconsin observers reported a total of 260 species during the season, close to the average of recent years. Of these, 74 were common and widespread enough to be reported from more than 25 counties; they are not included in the listings below. An additional 41 species were observed in 10–25 counties. The figure following each of these species is the number of counties in which it was observed: Pied-billed Grebe (24), American Bittern (15), Least Bittern (10), Great Egret (13), Black-crowned Night-Heron (11), Green-winged Teal (15), American Black Duck (13), Redhead (10), Hooded Merganser (12), Ruddy Duck (11), Cooper's Hawk (20),

Broad-winged Hawk (25), Ring-necked Pheasant (18), Ruffed Grouse (25), Sora (16), American Coot (16), Sandhill Crane (20), Spotted Sandpiper (25), Upland Sandpiper (18), Common Snipe (20), American Woodcock (16), Bonaparte's Gull (11), Herring Gull (12), Black Tern (24), Yellow-billed Cuckoo (20), Great Horned Owl (20), Barred Owl (19), Whip-poor-will (14), Yellow-bellied Sapsucker (25), Winter Wren (14), Marsh Wren (24), Blue-winged Warbler (17), Golden-winged Warbler (20), Nashville Warbler (23), Black-and-White Warbler (22), Northern Waterthrush (13), Canada Warbler (10), Yellow-headed Blackbird (21), Brewer's Blackbird (22), Purple Finch (17), and Evening Grosbeak (10). The remaining 145 species are dealt with in the summary below.

Headlining the summer's rarities was a new Wisconsin record, a Fulvous Whistling Duck that spent July 3–4 moving between Goose Pond and Schoenberg Marsh in Columbia County. News of its appearance traveled fast enough so that quite a few observers were able to see it. Several observers who happened to be at the Madison sludge lagoons during the right part of June 3 were treated to the sight of two striking Black-necked Stilts. Two Tricolored Herons put in a rare summer appearance at the Barkhausen Preserve near Green Bay at the end of July. A Long-tailed Jaeger came into view in the Ashland harbor one day in mid–July long enough to have its presence well-documented. Douglas County provided reports of a Great Gray Owl and a Three-toed Woodpecker, and Monroe County became a new summer reporting location for a Chuck-will's-widow. A male Blue Grosbeak spent part of a day near a feeder in Sheboygan County.

A number of other species that might have made a "top of the rarities list" in other seasons must take a back seat to the preceding this year. Yellow Rails in Door and Oconto Counties represent new locations, at least in recent years. There were one to several records each of Eared Grebe, Western Grebe, Yellow-crowned Night Heron, White-winged Scoter, Whimbrel, Laughing Gull, Little Gull, Glaucous Gull, Great Gray Owl, Western Kingbird, Carolina Wren, Northern Mockingbird, White-eyed Vireo, Yellow-throated Warbler, Prairie Warbler, and Sharp-tailed Sparrow, plus a White-crowned Sparrow that spent the summer in Door County.

A heartening number of contributors indicated their perceptions of how the relative abundance of at least some species compared in 1989 with former years. At least three observers mentioned that the following were less common this year than last: American Black Duck, Ruffed Grouse, Virginia Rail, American Coot, Upland Sandpiper, Black Tern, Yellow-billed Cuckoo, Common Nighthawk, Ruby-throated Hummingbird, Red-headed Woodpecker, Tree Swallow, Cliff Swallow, Common Raven, White-breasted Nuthatch, Brown Thrasher, Warbling Vireo, Golden-winged Warbler, and Dickcissel. Only one species showed the opposite pattern: six observers thought Eastern Bluebird numbers were up this season, continuing the trend of recent years.

This year's 63 contributors were fewer than have submitted reports in most recent summers. In addition, no less than 14 counties went completely without mention, the largest number

of "omissions" in recent years. Let's hope this situation can be explained as an accident of everyone's schedules for this particular year or by observers just not really getting back in the swing of summer birding after last year's discouraging weather. It was good to welcome some new contributors and also to welcome back some who had not submitted reports for several years. In terms of keeping track of population trends, the breeding season does afford us some unique opportunities. As environmental issues loom ever larger and the need for more and better data on wildlife populations and habitats increases, let's try to do our part. Even if your coverage can only be limited, whetever information you gather and submit still may be of help.

REPORTS (JUNE 1–JULY 31, 1989)

Common Loon.—A bird in Dane Co. July 22 was unusual (Tessen). Noted also in Monroe Co. June 25 (Epstein) and in 18 northern counties. Strong, who coordinates LoonWatch, noting that second year birds rarely summer in northern Wisconsin, commented that two such birds in Iron Co. June 28 were unusual.

Red-necked Grebe.—Reported from Sawyer Co. July 21 (Robinson) and also from Green Lake (Peterson, Schultz), St. Croix (Smith) and Winnebago (Ziebell) Counties.

Eared Grebe.—Ziebell found one in Winnebago Co. June 9.

Western Grebe.—There were four in Green Lake Co. June 24 (Schultz) and 11 in St. Croix Co. June 4 (Smith).

Double-crested Cormorant.—Observed in Dane Co. June 4 (Hansen). Other reports came from 19 additional counties.

Snowy Egret.—Single birds appeared in Brown Co. July 29–31 (Peterson, Tessen) and Green Lake Co. June 15 (Schultz).

Tricolored Heron.—Two of these rarely seen birds were present off and on at the Barkhausen Preserve in Brown Co. July 26–31 (Norris, Denise Friedrick, Peterson, Sunby, Tessen).

Cattle Egret.—Noted in Brown Co. July 31 (Tessen).

Yellow-crowned Night-Heron.—Three were in Rock Co. in early June (Hoffman fide Tessen). A single bird was seen in Oconto Co. July 13 (Lindberg).

Fulvous Whistling Duck.—The individual that spent July 3 and 4 shuttling between two locations in Columbia Co. provided a number of observers with a chance to see a new addition to Wisconsin's bird list. It was first seen by Mueller and Schwartz; their accounts and those of Hansen and Robbins were accepted by the Records Committee. See "By the Wayside".

Tundra Swan.—A bird present in Dane Co. through July 7 was unusual (Ashman, Robbins, Soulen), as was an individual in Marathon Co. June 11 through July 2 (Belter, Munson).

Trumpeter Swan.—A pair that spent the summer at Oakridge Lake, St. Croix Co. (Smith) likely were products of the reintroduction program in the Twin Cities area.

Mute Swan.—Noted throughout the season in Ashland, Dane and Douglas Counties. Also present in Door Co. until June 14 (the Lukes) and in Price Co. June 8 (Hardy).

Common Pintail.—Observed in Ashland, Dane, Door, Green Lake, Marathon, Milwaukee and St. Croix Counties.

Northern Shoveler.—This species was reported from more counties than usual: Ashland/Bayfield, Burnett, Chippewa, Columbia, Dane, Dunn, Eau Claire, Green Lake, Manitowoc, Marathon and Vilas.

Gadwall.—Noted only in Dodge (Haseleu, Sunby), Dunn (Polk), Oconto (Norris) and Winnebago (Ziebell) Counties.

American Wigeon.—Present in these seven counties: Ashland, Chippewa, Columbia, Dane, Dodge, Eau Claire and Oconto.

Canvasback.—Observed in Ashland/Bayfield (Verch), Columbia (Ashman) and Marathon (Belter, Hoeft) Counties.

Ring-necked Duck.—Observers found this species in Columbia, Langlade, Manitowoc, Marathon, Monroe, Oneida, St. Croix and Vilas Counties.

Greater Scaup.—Still present in early June in Ashland/Bayfield (Verch) and Douglas (Johnson) Counties.

Lesser Scaup.—Noted in these counties: Ashland/Bayfield, Chippewa, Columbia, Dane, Dunn, Manitowoc, Marathon and Milwaukee.

White-winged Scoter.—One was still present in Douglas Co. June 2 (Johnson).

Common Goldeneye.—The only observations were of females with young in Door Co. through July 12 (Kopitzke, the Lukes) and in Sawyer Co. July 21 (Robinson).

Bufflehead.—Two were present in Marathon Co. June 4–25 (Belter).

Common Merganser.—Noted in Ashland/Bayfield (Semo, Verch), Door (Kopitzke, Robbins), Sawyer (Merkel) and Vilas (Baughman, Reardon, Spahn) Counties.

Red-breasted Merganser.—Observed in Ashland/Bayfield (Semo, Verch), Door (Kopitzke, the Lukes, Robbins) and Vilas (the Engbergs) Counties.

Osprey.—A bird in La Crosse Co. July 5 (Tessen) provided the season's most southern report. Except for Green Lake Co. (Schultz), the other 15 counties in which this species was observed were northern.

Bald Eagle.—A bird in Manitowoc Co. July 23 was unusual (Sontag). The other 19 reporting counties were in more normal range.

Sharp-shinned Hawk.—Noted in Dane Co. July 31 (Hansen), Ozaukee Co. July 2 (Frank) and in Walworth Co. throughout the season (Parsons). Other reports came from 18 northern counties.

Northern Goshawk.—Reported from Door (the Lukes), Marathon (Hoeft) and Taylor (the LaValleys, Risch) Counties.

Red-shouldered Hawk.—This season's most northern reports came from Forest (Reardon), Door (the Lukes) and Oconto (Norris) Counties in the east and Bayfield and Sawyer (Robinson) and Burnett (Dempsey) Counties in the west. The other eight observations were in more southern counties.

Merlin.—Recorded in Ashland/Bayfield (Verch), Burnett (Dempsey) and Vilas (Baughman) Counties.

Peregrine Falcon.—Birds seen in Milwaukee (Sunby, Zehner) likely were from the reintroduction program there.

Gray Partridge.—There were reports from these scattered counties: Columbia (Ashman, Martin), Monroe (Epstein), Oconto (Norris), Ozaukee (Frank) and Walworth (Parsons).

Spruce Grouse.—No reports this season.

Greater Prairie-Chicken.—Noted in Burnett (Robinson), Marathon (Belter) and Taylor (Risch) Counties.

Sharp-tailed Grouse.—Reported from Burnett (Robinson), Taylor (the LaValleys, Offord, Risch) and Vilas (Spahn) Counties.

Wild Turkey.—Observers found this species in Burnett (Dempsey), Dunn (Polk), Iowa (Sunby), Monroe (Epstein, Richter), Walworth (Parsons) and Waupaca (Peterson) Counties.

Northern Bobwhite.—Noted in 11 counties overall, with a July 2 observation in Taylor Co. being north of the usual range (Risch).

Yellow Rail.—Oconto Marsh provided a number of observers the chance to hear this rarely encountered species. Norris heard one bird in May and again on June 1. Michael Grimm (fide Howe) heard eight and saw two on June 2;

he heard two in that location at least through June 16. Howe and Andy Zovnic found at least three individuals, seeing one very well, in the Mink River area of Door Co. June 24. Birds were heard in this location, which is accessible only by canoe, for at least two additional weeks. No birds were found this season at Crex Meadows because of high water in their usual location.

King Rail.—The season's only report came from Green Lake Co. July 11 (Schultz).

Virginia Rail.—Reported from only nine counties this year: Ashland, Dane, Door, Douglas, Green Lake, Monroe, Oconto, Sawyer and Sheboygan.

Common Moorhen.—Noted in Columbia, Dane, Dodge, Oconto, Waukesha and Winnebago Counties.

Lesser Golden-Plover.—An adult in full breeding plumage was present in Dane Co. June 18 (Robbins).

Semipalmated Plover.—Spring migrants were still in Dane Co. June 4 (Hansen) and Eau Claire Co. June 10 (Polk). Birds had reappeared in Dane Co. by July 8 (Hansen) but were not observed elsewhere for another two weeks.

Piping Plover.—For the first time in recent years, there were no summer reports.

Black-necked Stilt.—Two of these striking birds, rarely encountered in Wisconsin, were present June 3 at the sludge lagoons in Madison (Hansen, Sutton). The documentation for this observation, submitted by Sutton, was accepted by the Records Committee. See "By the Wayside".

Greater Yellowlegs.—It is sometimes difficult to know which way June birds might be migrating. Birds in Ashland/Bayfield Counties through June 4 (Verch) and in Eau Claire Co. through June 17 (Polk) apparently were still northbound. Fall migration was suggested by a June 26 report in Sawyer Co. (Robinson), followed by several others within the next week.

Lesser Yellowlegs.—The last spring migrants were noted June 10 in Dane (Ashman) and Eau Claire (Polk) Counties. The earliest fall reports came from these counties: St. Croix June 25 (Smith), Dane June 28 (Hansen) and Dodge July 1 (Sunby).

Solitary Sandpiper.—Had returned to Dodge Co. by July 1 (Sunby) and to four additional locations by July 4.

Whimbrel.—The season's only report came from Washington Island, Door Co., on July 29 (Kopitzke).

Ruddy Turnstone.—Noted only in Manitowoc Co., where they remained through June 19, with 600 present there June 1 (Sontag).

Red Knot.—Last seen in Manitowoc Co. June 9 (Henning, Mueller).

Sanderling.—Six reports total: remained until June 3–6 in Ashland (Verch), Manitowoc (Sontag) and Sheboygan (the Brassers) Counties, and returned by July 21–23 to Dane (Tessen), Douglas (Johnson) and Manitowoc (Sontag) Counties.

Semipalmated Sandpiper.—Lingered until June 13 in Dane Co. (Hansen) and June 15 in Eau Claire Co. (Polk). Returning birds in Dane Co. June 24 (Hansen) were over two weeks earlier than those noted elsewhere.

Least Sandpiper.—Had returned to Dane Co. by June 28 (Hansen) and to several other locations within the next week.

White-rumped Sandpiper.—Remained until June 6 in Manitowoc Co. (Sontag), June 12 in Eau Claire Co. (Polk) and June 13 in Dane Co. (Hansen). Also noted in Oconto Co. July 13 (Lindberg).

Baird's Sandpiper.—Observed only in Chippewa Co., until June 9 and after July 17 (Polk), and in Douglas Co. July 30 (Johnson).

Pectoral Sandpiper.—Noted until June 3 in Dane Co. (Hansen) and June 9 in Chippewa Co. (Polk). Birds had returned to Eau Claire Co. by July 8 (Polk) and to three other widely scattered counties by the next day.

Dunlin.—Observed in early June in five widely scattered counties. Three of these provided the latest date, June 4.

Stilt Sandpiper.—Recorded June 3 in Dane Co. (Ashman). July reports came from Dane (Ashman, Hansen, Tessen), Columbia and Sheboygan (Tessen), St. Croix (Smith) and Trempealeau (Polk) Counties.

Short-billed Dowitcher.—Still present in Dane Co. June 1 (Hansen). The earliest fall migrants were observed in Dodge Co. July 1 (Sunby) and Dane Co. July 2 (Ashman).

Long-billed Dowitcher.—Reported July 13 in Oconto Co. (Lindberg).

Dowitcher (species unknown).—The spring migration of Long-bills is considered to begin and end earlier than that of Short-bills, and fall migration of Long-bills presumably begins and ends later (apparently occurring primarily in September and October). It is important for observers to indicate the basis for their identification of these two species if we are to be able to determine how well these generalizations hold. Therefore, please include information about plumage characteristics and/or calls heard, especially for summer Long-billed reports. Only one observer (out of 12) gave such information (about a Short-billed) for this season's reports.

Wilson's Phalarope.—Present through most of the season in Dane Co. (Hansen) and through June 12 in Eau Claire Co. (Polk). Other June reports came from Ashland/Bayfield, Burnett, Marathon and Taylor Counties; there were July observations in Brown, Dunn, Marathon and Oconto Counties.

Long-tailed Jaeger.—Jaegers are seen rarely in Wisconsin, with most reports coming during fall migration. The brief summer appearance of this species in Ashland Co. July 16 is therefore of particular interest (Knue). Accepted by the Records Committee. Excellent drawings accompanied Knue's written account of this sighting, which appears in "By the Wayside".

Laughing Gull.—Reported from Douglas Co. July 15 (Robinson), Manitowoc Co. June 30 (Sontag) and Sheboygan Co. July 29 (Tessen). All these reports were accepted by the Records Committee.

Franklin's Gull.—Present in Manitowoc Co. until July 12, with a maximum there of 15 on June 1 (Sontag). Also noted in Kewaunee Co. June 15 (Robbins) and Sheboygan Co. July 29 (Tessen).

Little Gull.—The maximum of two observed in Manitowoc Co. during the season is less than have occurred there in a number of recent years (Sontag). Reported also from Kewaunee Co. June 15 (Robbins) and Sheboygan Co. July 29 (Tessen).

Glaucous Gull.—One was still present in Douglas Co. June 2 (Johnson).

Caspian Tern.—Noted in 11 counties in all, with the only ones not bordering Lakes Michigan or Superior being Chippewa and Dunn (Polk, July 17–20) and Winnebago (Ziebell, June 9).

Common Tern.—Recorded in exactly the same counties as the preceding species.

Forster's Tern.—Observed in Chippewa, Dane, Dodge, Green Lake, Manitowoc, Oconto, Sheboygan and Winnebago Counties.

Eastern Screech-Owl.—The fewest summer reports in a number of years: Monroe Co. July 28 (Epstein) and Washington Co. June 20 (Haseleu).

Great Gray Owl.—Many wondered whether any birds would linger after last winter's invasion. No birds were sighted this season, but Hoffman heard one at dawn in Douglas Co. June 25 ("a series of 9–11 low hoo's").

Northern Saw-whet Owl.—Two were heard in Bayfield Co. June 9, and four were heard and a nest found in Douglas Co. (Semo). Other reports came from Sawyer Co. June 15 (Robinson) and Vilas Co. June 3 (Reardon).

Chuck-will's-widow.—One was heard well in Monroe Co. June 20 (Ayers). Accepted by the Records Committee. See "By the Wayside".

Red-bellied Woodpecker.—Of the 25 counties from which this species was reported, the most northern were Barron (Goff), Marathon (Belter, Hoeft), Sawyer (Polk) and Taylor (the LaValleys).

Three-toed Woodpecker.—Wisconsin's first summer record in some time came from Douglas Co., where Hoffman got an excellent look at an adult male June 25. See "By the Wayside".

Black-backed Woodpecker.—Single adult males were seen in Douglas Co. June 18 (Semo) and Vilas Co. June 4 (Jeff, Jim and Scott Baughman). Adult males feeding young were in Forest Co. July 8 and Vilas Co. July 18 (Spahn).

Olive-sided Flycatcher.—Reported from only three counties this season, less than half the average of recent years. Birds in Burnett Co. June 4 likely were migrants (Dempsey). Noted also in Douglas (Johnson) and Vilas (Baughman, Spahn) Counties.

Yellow-bellied Flycatcher.—Birds in Sauk Co. on June 8 (Robbins) and July 22 (Tessen) could have been spring and fall migrants, respectively. Reported also from eight northern counties.

Acadian Flycatcher.—Observers found this species in Dane, Iowa, Monroe, Ozaukee, Rock and Sauk Counties.

Alder Flycatcher.—Southernmost among the 20 reporting counties were Walworth and Waukesha (Frank).

Willow Flycatcher.—Northernmost among the 23 reporting counties were Brown (Wierzbicki), Marathon (Belter), Oconto (Norris) and St. Croix (Smith).

Western Kingbird.—Nesting birds first discovered in Dane Co. by John Romano provided a number of observers with a marvelous opportunity to observe this seldom-encountered species. Hansen's July 16 report was the latest.

Gray Jay.—Reported from Douglas, Forest, Price, Sawyer and Vilas Counties.

Common Raven.—A Waupaca Co. report July 4 was somewhat south of the usual range of this species (Peterson). Noted also in 16 more northern counties.

Boreal Chickadee.—Noted only in Oneida (Peterson) and Vilas (Baughman, Spahn) Counties.

Tufted Titmouse.—Observed only in Chippewa, Dunn and Eau Claire (Polk), Dane (Ashman, Hansen) and St. Croix (Smith) Counties.

Red-breasted Nuthatch.—Most of the 16 reporting counties were northern, but birds were noted also in Dane, Milwaukee, Sauk and Sheboygan Counties.

Brown Creeper.—All of the 11 counties in which this species was observed were northern.

Carolina Wren.—A bird heard and seen well on Washington Island, Door Co. June 25 was rather far north (Kopitzke). Reported also from Dane Co. July 24 (Hansen) and Rock Co. in early June (Hoffman fide Tessen).

Golden-crowned Kinglet.—Noted in these northern counties: Bayfield, Door, Douglas, Forest, Oneida, Sawyer and Vilas.

Ruby-crowned Kinglet.—Recorded in Ashland/Bayfield, Douglas, Sawyer, Taylor and Vilas Counties.

Blue-gray Gnatcatcher.—Among the 24 reporting counties, the most northern were Door (the Lukes), Marathon (Belter), Menominee (Tessen) and Oconto (Norris).

Swainson's Thrush.—Lingered in Milwaukee Co. until June 1 (Bontly). A bird in Taylor Co. through the season was south of this species' usual range (the LaValleys). Noted also in Ashland (Verch), Bayfield (Johnson, Semo, Verch) and Forest (Reardon) Counties.

Hermit Thrush.—Noted in Jackson (Soulen) and 16 more northern counties.

Northern Mockingbird.—One was present in Douglas Co. June 16 (Soulen).

Loggerhead Shrike.—Reported from Burnett Co., somewhat north of the former usual range of this species in the western part of the state (Dempsey). Also noted in St. Croix Co., with a maximum of four birds on June 22 (Smith).

White-eyed Vireo.—Two were present in Rock Co. in early June (Hoffman fide Tessen).

Bell's Vireo.—The only reports came from Dane and Iowa Counties June 29 (Robbins).

Solitary Vireo.—A bird in St. Croix Co. July 4 was south of the usual range of this species (Smith). Noted also in eight more northern counties.

Yellow-throated Vireo.—As usual, more observers found birds in southern and central counties, but there were reports from Douglas (Johnson), Forest (Robbins), and Oconto and Vilas (Spahn) Counties. Noted in 30 counties overall.

Tennessee Warbler.—Still present in Oconto Co. June 1 (Norris). Although this species is not a regular summer resident, we still receive occasional summer reports. This year a singing male was in Sawyer Co. June 19 (Polk), and a bird was noted in Price Co. June 25 (Hardy). Presumed fall migrants had appeared in Douglas Co. by July 15 (Johnson, Robinson).

Northern Parula Warbler.—Reported from nine northern counties.

Chesnut-sided Warbler.—Present in Dane, Iowa, Ozaukee, Sauk and Waukesha Counties, as well as 21 more northern counties.

Magnolia Warbler.—Observed in eight northern counties.

Cape May Warbler.—Reported from Forest Co. July 8 (Spahn) and Oconto Co. June 16 (Howe fide Tessen).

Black-throated Blue Warbler.—Noted in Bayfield (Johnson, Robinson, Semo), Door (Kopitzke), Forest (Reardon), Shawano (Peterson) and Vilas (Baughman, Spahn) Counties.

Yellow-rumped Warbler.—A migrant in Manitowoc Co. June 8 was late (Sontag). Two territorial birds in Portage Co. were unusual (Munson). The other southernmost reports came from Jackson (Soulen) and Waupaca (Peterson, Tessen) Counties. Observed also in 16 more northern counties.

Black-throated Green Warbler.—Birds were still present in Sheboygan Co. June 3 (the Brassers) and Milwaukee Co. June 5 (Bontly). A territorial bird was present in Portage Co. (Munson), and this species was observed through the season in Green Lake Co. (Schultz). Except for reports from the Baraboo Hills, Sauk Co., where this warbler sometimes summers, all the other 13 reporting counties were northern.

Blackburnian Warbler.—Noted in Milwaukee Co. at least until June 15 (Bontly), in Sauk Co. until June 21 (Hansen), and in 11 northern counties.

Yellow-throated Warbler.—Hoffman found five singing males in the Avon Bottoms area along the Sugar River in Rock Co. in early June.

Pine Warbler.—Present again in the mature pine area of Kettle Moraine State Forest in Waukesha Co. (Soulen). Observed thoughout the season in Sheboygan Co. (the Brassers). Noted also in 17 northern counties.

Kirtland's Warbler.—The hopes Wisconsin birders may have had after last year's surprising discovery of eight singing males in three counties were not realized this season. Although one bird appeared in May in Douglas Co., there were no summer reports.

Prairie Warbler.—Still present near the Cedarburg Bog in Ozaukee Co. July 8 (Soulen).

Palm Warbler.—Reported from Douglas Co. until July 8 (Johnson) and Vilas Co. throughout the period (Baughman, Spahn).

Bay-breasted Warbler.—The sole report came from Bayfield Co. July 23 (Robinson). Considering the fact that there have been recent June records from this county, it is difficult to know whether this was a resident or migrant.

Blackpoll Warbler.—Lingered until early June in Door (the Lukes) and Oconto (Norris) Counties.

Cerulean Warbler.—Of the eight counties from which this species was reported, St. Croix was the most northern (Robinson).

Prothonotary Warbler.—Noted in Buf-

falo, La Crosse, Monroe, Pierce, Rock and St. Croix Counties.

Worm-eating Warbler.—Reported from its usual haunts in Sauk Co. until at least July 22 (Hansen, Soulen, Tessen). Hansen found two birds there with a fledgling cowbird on June 21.

Louisiana Waterthrush.—A bird singing in Ozaukee Co. provided the first summer report of this species from this part of the state in some time (Frank). Other observations came from Burnett (Robinson), St. Croix (Robinson, Smith), Juneau (Munson) and Sauk (Hansen, Robbins, Soulen) Counties.

Kentucky Warbler.—Quite remarkable was a singing male, seen well, on Wisconsin Point in Douglas Co. on June 27 (Johnson). Also noted in Sauk Co. June 3–28 (Hansen, Henning, Mueller).

Connecticut Warbler.—Still present in Outagamie Co. June 3 (Anderson, Petznick). Six birds singing in jack pine areas of Burnett Co. June 4 seemed to be territorial (Dempsey). Polk found one June 17 in Jackson Co., where territorial males are heard in some summers. Other June and early July reports came from Ashland/Bayfield (Verch), Douglas (Johnson; Soulen, 20 males on June 16) and Vilas (Baughman, Reardon, Spahn) Counties. Noted in late July in Price (Hardy) and Taylor (the LaValleys) Counties.

Hooded Warbler.—A male found on Washington Island, Door Co. on July 2 was still singing July 27 (Kopitzke). Also observed in Sauk Co. June 9–28 (Hansen) and Waukesha Co. June 17 (Sunby) and July 8 (Soulen).

Wilson's Warbler.—Lingered in Milwaukee Co. until June 1 (Bontly). A bird heard in Sawyer Co. June 19 was unusual (Polk).

Yellow-breasted Chat.—Two were present in Dane Co. through July 1 (Ashman, Robbins) and also in Rock Co. in early June (Hoffman fide Tessen). Observations in Waupaca Co. June 4–6 were unusual (Peterson).

Northern Cardinal.—A Bayfield Co. observation July 5 is one of the most northern summer reports ever (Semo). Most of the remaining observations were at least one or two counties removed from Wisconsin's northern border.

Blue Grosbeak.—A male was seen well by the Kuhn family in Sheboygan Co. June 1. Accepted by the Records Committee. See "By the Wayside".

Dickcissel.—Although birds were not nearly as widespread or numerous as in 1988, this year's crop was still one of the more widely distributed ones in recent years. There were reports from 24 counties (44 last year), the most northern being Ashland/Bayfield (Verch, one bird July 5), Burnett (Soulen), Door (Kopitzke), Oconto (Norris), Shawano (Peterson) and Wood (Munson).

Clay-colored Sparrow.—Several observers reported figures this year that show how numerous this species can be in some areas. The east central part of the state may contain more than some of us realize: Sontag counted 8 in Manitowoc Co., and Schultz counted 14 in Winnebago Co. June 24. Munson found 50 territorial males in one square mile of Portage Co., and Spahn tallied no less than 80 in Oneida Co. July 9. Except for Columbia (Ashman, 4 on July 2) and Sauk (Soulen), the other reporting counties were northern and/or western. Noted in 26 counties overall.

Field Sparrow.—The most northern of the 34 reporting counties were Barron (Goff), Door (the Lukes), Douglas (Johnson), Marathon (Belter), Oconto (Norris), Shawano (Peterson), Taylor (Risch) and Vilas (Reardon, Spahn).

Lark Sparrow.—A bird in Marathon Co. July 15 was considerably north and east of areas where this species is normally reported (Hoeft). Other observations were in Dunn (Polk), Iowa (Hansen), Jackson and Pepin (Soulen) and Sauk (Robbins) Counties.

Grasshopper Sparrow.—Observers in 18 counties found this species this season. Most northern among them were Burnett (Robinson), Marathon (Hoeft), Oconto (Norris) and Shawano (Peterson).

Henslow's Sparrow.—Reported less than in most recent years, from Green Lake (Schultz), Iowa (Sunby), Juneau (Richter), Oconto (Norris), Outagamie (Tessen) and Ozaukee (Soulen) Counties.

LeConte's Sparrow.—Noted in Ashland/

Bayfield (Verch), Douglas (Johnson, Semo) and Vilas (Spahn) Counties.

Sharp-tailed Sparrow.—Reported only from Fish Lake Wildlife Area, Burnett Co., June 15 (Soulen).

Lincoln's Sparrow.—Although many of these sparrows migrate relatively early, observers sometimes encounter them in very late May. This year there were even two early June reports: Sheboygan Co. through June 4 (the Brassers) and Walworth Co. June 5 (Parsons, two birds). Observations of summer residents came from Douglas (Johnson), Forest (Peterson), Langlade (Robbins), Oneida (Peterson, Spahn) and Vilas (Baughman) Counties.

White-throated Sparrow.—There are no good explanations for the occasional mid–June reports of this species from southern counties. This year's came from Iowa Co. June 16 (Sunby). A bird in Manitowoc Co. through June 26 also was unusual (Sontag). All 20 remaining reporting counties were within normal range.

White-crowned Sparrow.—One of the most unusual summer records of recent years is of a bird of this species that spent the season in a secluded, wooded backyard in Door Co. (the Lukes). It was easily seen on a number of occasions from distances of less than 15 feet.

Dark-eyed Junco.—Recorded in Ashland/Bayfield (Verch), Forest (Peterson) and Vilas (Baughman, Reardon, Spahn) Counties.

Western Meadowlark.—Noted in 26 counties, compared to 44 for the Eastern.

Orchard Oriole.—Reported from Dunn (Polk), Iowa and Sauk (Robbins), Monroe (Richter), Ozaukee (Frank) and Shawano (Peterson) Counties.

House Finch.—Wisconsin's first summer records were in 1986, from four counties. That increased to five in 1987 and eight in 1988. This season produced reports from no less than 17 counties. Five successful nestings occurred in Portage Co. (Munson), and there were observations in Door (the Lukes), Marathon (Belter), Oconto (Tessen) and Shawano and Waupaca (Peterson) Counties. The remaining reporting counties were south and east of these. Observers should keep watch for this species in western Wisconsin counties as well, as they are increasing and spreading north in eastern Minnesota.

Red Crossbill.—Noted in Bayfield (Frank), Douglas (Johnson) and Vilas (Baughman, Reardon, Spahn) Counties.

White-winged Crossbill.—This summer's invasion appeared to be more widespread than that of the summer of 1987. Birds were noted through most of the season in Sawyer Co. (Merkel, Robinson), but observers elsewhere did not encounter this species until July, in Bayfield (Robinson, Semo), Door (Kopitzke, flocks of up to 150 on Washington Island), Douglas (Johnson, Semo), Milwaukee (Woodmansee, adult female window kill July 12) and Vilas (Spahn) Counties. Several observers heard considerable singing, and Johnson noted that again this year, males were "a beautiful dark red—very unlike the winter birds. Breeding?"

Pine Siskin.—Observed in Portage (Munson) and nine more northern counties.

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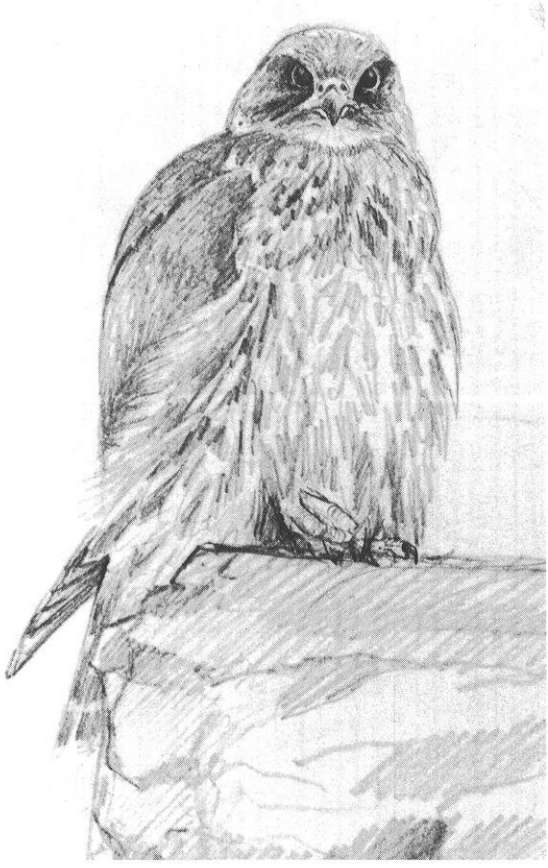
Winter Wren *by Brian P. Henrickson*



Gyrfalcon *by Jonathan Wilde*

"By the Wayside"

Tricolored Heron, Fulvous Whistling Duck, Black-necked Stilt, Long-tailed Jaeger, Chuck-will's-widow, Three-toed Woodpecker, and Blue Grosbeak were the noteworthy species of the past season.

TRICOLORED HERON (*Egretta tricolor*)

26 July 1989, Brown County.—I pulled into the entrance of the Barkhausen Preserve in my car and followed it until it skirted the man-made ponds and stopped. From my car, with 7×35 binoculars, I noticed several great blue herons feeding in the east pond (the one with three parallel islands perpendicular to the road), and *immediately* a much smaller heron with a "white belly" [quotes taken from field notes, written before consulting field guides] stood out among them. Its back was "blue-grey", with some "rusty feathers." It had a "long, snaky, chesnut neck," with a "white stripe on throat," as well as a "uniform bluish/white bill, dark towards the tip." The long head plume trailing back from the nape was "white." I did not note the leg colors. This bird was "actively feeding among the water lilies," about 40–50 feet away, until it flew away and revealed "light underwings." The observation lasted about 5 minutes.—*William R. Norris, 13496 Velp Avenue, Little Suamico, WI 54141.*

30 July 1989, Brown County.—I arrived at the nature center about 11 A.M. and began driving the gravel road that looped through the nature center property. After almost completing the loop, I saw a small heron-shaped bird standing in the shallow pond next to the road. The bird was approximately 2 feet tall, with a gray back, a white belly, and a darker gray area between the neck and white belly. The neck and head appeared to be mostly gray. The legs appeared to be a dark gray color. The bill was a light gray at the base and almost black at the tip. The sun was behind a cloud at the time, which was apparently the reason for the lack of more distinct coloration. I backed up about 100 yards to get a better look at the bird. When I was about ready to get a better look at the bird, a snowy egret came along and chased the bird away. The bird flew through the area of the sun, which didn't allow much more than a silhouette look at the bird. I returned to the pond about 15–20 minutes later and again found the bird standing in the pond.—*Mark S. Peterson, Box 53, Caroline, WI 54928.*

29 July 1989, Brown County.—First spotted the bird flying into a pond. Rec-

ognized it as a Tricolor by its medium size and white belly contrasting with a dark chest. Upon landing I observed the bird through a scope. A medium-sized heron—although the two Tricolors were alone in their pond [a second bird appeared later] there were lots of Great-Blues, Black-crowned Night-Herons and Green-backed Herons in surrounding ponds. The Tricolor was roughly the size of a Night-Heron but much slimmer and longer necked. The bill was very long and spear-like, proportionately a much longer bill than any other herons. Both birds were adults, with a dark slaty-blue head, neck, upper back and wings and chest. The lower back, composed of long plumy feathers was a tan or light brown. Contrasting with the dark upperparts was a white belly. The front of the neck and the throat were white as well. The bill was grayish-yellow. I don't remember what color the legs were.

The birds were active feeders, walking quickly through the water, chasing fish, and at one point one even spread its wings to shade the water for a better view into the water. This action is reminiscent of a Reddish Egret.—*Paul Sunby, 7909 W. Lorraine Pl., Milwaukee, WI 53222.*

31 July 1989, Brown County.—After an unsuccessful attempt to find the heron on 7/29 I returned around 5:30 P.M. 7/31 to the Barkhausen Waterfowl Preserve. After briefly checking the man-made pond on the scenic loop we continued along the larger pond. Near the south side of the pond was the Tricolored Heron, successfully fishing with the Great Blue Herons. It was a medium sized heron, quite similar to a breeding plumage Little Blue Heron except it has a distinct white belly, a white line down the front of the neck, and a thin white plume. The remainder of the body is a bluish-gray, with a little lighter coloring on the middle back. The legs were a greenish color, the bill a lighter color, mainly at the base. The bird was restless as it fed, flew back amongst several islands. After I watched Cattle Egrets and Snowy Egrets the bird returned, circled the road and landed by the nature center.—*Daryl Tessen, 2 Pioneer Park Place, Elgin, IL 60123.*

Fulvous Whistling Duck (*Dendrocygna bicolor*)

3 July 1989, Columbia County.—This duck was smaller than nearby mallards and had a long neck. Rich warm light brown color was present on the face, neck, breast, sides, and belly area. The bill and legs were a very dark gray. It was dark brownish black over the top of the head and down the back of the neck. The back was also darker with some lighter streaking. There was a whitish stripe along its side below the wing and white on the rump area. A lighter patch was present on the front and side of the neck below the throat which appeared to have some faint streaking. In flight the wings looked dark and appeared blackish on the underside.

This duck was very active. When feeding, it dove under water instead of tipping like mallards. I could tell where it was located by watching the water being churned by its feet. It appeared skittish and several times it flew a very short distance.—*Ellen Hansen, 630 W. Badger Rd., Madison, WI 53713.*

3 July 1989, Columbia County.—Dennis Schwartz and I found this bird in the east pond, at Goose Pond Sanctuary, along Goose Pond Road, in Columbia County. As we were checking both of

the ponds, I saw the bird, which I first thought to possibly be a Cinnamon Teal. Upon getting out of the car, and as we approached the east side of the road, the bird flew, along with a group of Mallards it had been swimming with. In flight, it showed a white semicircular area of feathers at the base of the tail, in the same position as the similar-appearing semicircular area of feathers on a Canada Goose. We then got out the telescope, and observed the following other field marks: the color of the body, neck, and side of the face was a rusty-tan; the crown was dark brown, and this color extended down the nape, narrowing to a thin brown line, which reached the brownish-black back; the back color was mottled with rusty-tan, also; (this was something I myself did not see well; Dennis, on the other hand, did observe this, and mentioned it as we took notes in the next fifteen minutes;) a pale, whitish patch on the side of the neck, at about the midpoint of the neck; in flight, the underside of the wings were a dark brownish-black; the upper surface of the wings were also dark brownish-black; the overall size was 3 to 4 inches shorter than nearby Mallards, (approx. 20 inches in length, or a little less); the bill appeared steel-blue in color; the crown appeared somewhat flattened; no calls were heard. This bird was unlike any I had seen. I *did* need to check a field guide, in order to be certain that my identification was correct. After ten or fifteen minutes, we drove to the house to look for the Martins, to tell them. No one was home, so we went to try to find a telephone, somewhere.—*William P. Mueller, 2317 W. Merrill St., Milwaukee, WI 53204.*

4 July 1989, Columbia County.—At Schoeneberg's several telescopes were already trained on the duck, swimming and feeding among 8–10 mallards 350–400 yards away. At first I could see no significant difference in size and shape between the mallards and the whistling duck. But the flanks of the latter were more of a buffy-yellow color, as were the cheeks and face. A narrow band of white was located at the rear of the flanks. The back and folded wings were a mixture of the same buffy hue and a dark gray-brown background color.

When the bird stopped feeding momentarily and assumed a more erect posture, I could see that the neck was longer than that of the mallards. At this distance I could not pinpoint exactly the color I was seeing on the neck, but it was more light gray than tan. The bill was dark, with no distinctively different shape.

I was fortunate to have the scope focused on the duck when it flew. Although the bird flew out of the field of the scope quickly, I saw a distinct white band across the tail and a dark terminal band. Then I switched from telescope to binoculars and followed the bird in flight. The legs appeared to be dangling, almost coot-like, as the whistling duck landed among another group of mallards 500 yards distant.—*Sam Robbins, 14 S. Roby Road, Madison, WI 53705.*

3 July 1989, Columbia County.—We first spotted the bird right at the roadside in the water amongst about 6 mallards, 50 feet away. Using 7×50 binoculars, I noticed the bird had a black stripe down the back of its neck, was cinnamon in color, and was about 3 to 4 inches smaller than the mallards it was with. At this point, the bird flew about 40 feet straight away from us, when I saw the white band across the tail, similar to that of a Canada Goose,

and the black underwings, when my friend Bill exclaimed "Whistling Duck." At this point, Bill went for his scope, 15× to 40×. I observed the duck through the scope at about 25× to have mottled, cinnamon, and black wings, a bluish green bill, a white throat, and white under the wings towards the rump. By this time, there was no doubt in our minds of what we had found: a Wisconsin first sighting of a Fulvous Whistling Duck.—*Dennis R. Schwartz, 2223 S. 28th St., Milwaukee, WI 53215.*

Black-necked Stilt (*Himantopus mexicanus*)

3 June 1989, Dane County.—On June 3rd, I was alone at the Nine Springs Sludge Lagoons observing shorebirds. The time was 6:00 A.M., when I heard 2 birds calling that reminded me of Black Terns. I had a Stilt Sandpiper in my scope and didn't bother to look up until the birds called again. To my astonishment, there were 2 Black-necked Stilts about 30 feet away from me with set wings "stooping" in to the mixed flock of sandpipers that I was observing. Their bizarre black and white patterns and long red legs, coupled with the delicate upturned bills immediately identified them as Black-necked Stilts. I called Al and Sue Shea and Ellen Hansen, who later saw the bird.—*Jon Sutton, 329 Kedzie St., Madison, WI 53704.*

Long-tailed Jaeger (*Stercorarius longicaudus*)

16 July 1989, Ashland County.—When first spotted, the bird was playing in the wind and over the surf, about 100 yards from the marina. The back lighting effect made the bird appear very dark, without distinguishing features; the tail streamers were difficult to make out, except when the bird silhouetted against the sky, but the length of these was difficult to discern. (Since this sighting was just happenstance, I did not have my binoculars with me, a good reason to now never go anywhere without them.) The bird was slim overall, with long pointed wings, wedge shaped tail with streamers, and a somewhat long bill, slightly hooked. It flew very gracefully over the water, very tern-like, bouyant and light. It flew in shallow arcs over the surface of the water, occasionally hovering and wheeling about. In size, the bird was distinctly smaller and slimmer than nearby Ring-billed Gulls, and larger and heavier than the Common and Black Terns feeding nearby. (This bird would probably have been closest to Franklin's Gull in size, maybe even Bonaparte's.)

Finally, the bird flew toward me and proceeded to fly directly overhead at a distance about 10 feet. The following field marks were seen very well: (1) Neat dark cap, seeming to end at the hind crown; (2) Light throat and breast, becoming dusky and nearly blackish toward undertail coverts; (3) No breastband or hint of one; (4) No distinctive white patch at base of underside of primaries; (5) Wings, below, fairly uniform and dark; and (6) Very long tail streamers, at least twice the length of the tail (one feather was distinctly shorter than the other of the streamers). The streamers were very floppy in the wind. The upperparts were not seen well, especially coloration and contrast, but no white patches could be discerned on upperwings either. The mark of contrasting primaries and trailing edge (darker than rest of upperwing) was a field mark I was not aware of, and subsequently did not look for. The bird continued to play

about the bay, at which time I decided to contact Dr. Verch so that he might see it. It was not located later that day nor that week by him and others.

The bird thus appeared to be an adult light phase Long-tailed Jaeger, apparently lost and mixed up, otherwise, why would it be in Ashland in July!?—*Alan J. Knue, Northland College, Ashland, WI 54806.*

Chuck-will's-widow (*Caprimulgus carolinensis*)

20 June 1989, Monroe County.—The Chuck-will's-widow was identified by voice only. I was setting up camp for the night when I heard the diagnostic call from approximately 30 feet away. The dark woods prevented visual observation of the bird. The bird called approximately 12 times over a span of 30–40 seconds, and was not heard again after that.

The call was a distinct four syllable call with emphasis on the first and third syllables. For lack of better words to describe it, the call clearly sounded like Chuck-wills-wid-ow. The first syllable was a quick sharp "Chk." The second syllable was a softer "will" sound. The third syllable, unlike the name, was a sharp "wi" without the "d" being sounded out. The last syllable was a soft muffled "ow" sound. The call was easily distinguished from the three syllable call of the Whip-poor-will, and the 2–3 syllable poor-will call of the Common Poorwill.—*Loren W. Ayers, 1067 13 1/2 14th Ave., Barron, WI 54812.*

Three-toed Woodpecker (*Picoides tridactylus*)

25 June 1989, Douglas County.—The Three-toed Woodpecker was a male. First heard. The sharp pik was not immediately identifiable. I then saw the bird fly and land in a balsam fir that was mostly dead. It proceeded to forage. The bird was about 50 feet away. It had a distinctive yellow crown. The back was heavily barred and the black wings made for a superb contrast.—*Randy Hoffman, 305 Fifth Street, Waunakee, WI 53597.*

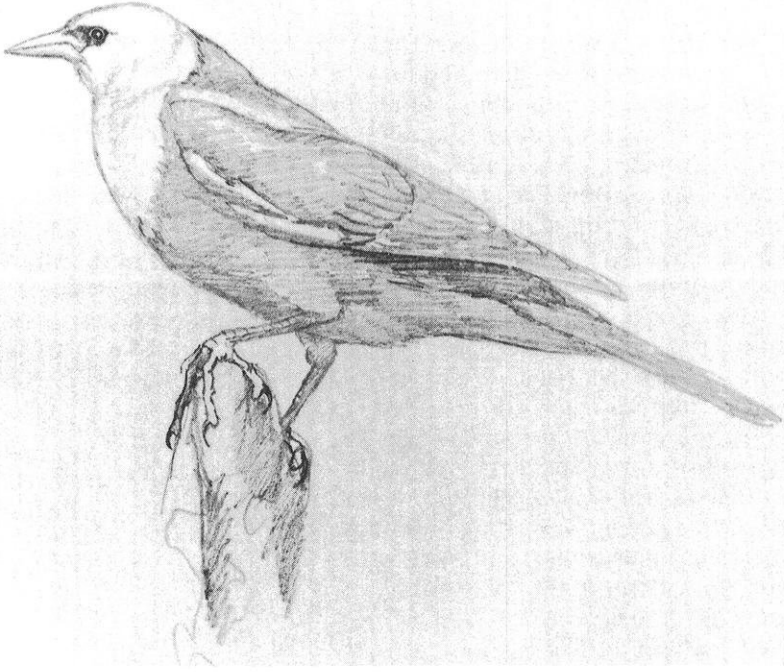
Blue Grosbeak (*Guiraca caerulea*)

1 June 1989, Sheboygan County.—The surprising appearance of a Blue Grosbeak feeding on seeds, alongside house sparrows, was probably only the second time I've seen this bird at this location.

It seemed to be "taking turns" with house sparrows at the feeder. House sparrows being considerably smaller and sleeker, the blue on the Grosbeak and its brown wing markings were most distinctive. He was apparently feeding either his mate or young. And if we had not seen him before, it may be that our yard was not his regular beat. The female did not come to the feeder.

At this location we have mixed hardwoods and an old orchard just east of the house; it was in this direction that he would fly and return.

We have indigo buntings at this location in other years (but not in 1989—to our knowledge). It was too large to be the indigo. And the bill was larger—though not as large/prominent as a Cardinal's.—*Eleanor G. Kuhn, Route 1, Box 306, Kuhn Road, Elkhart Lake, WI 53020.*



Yellow-headed Blackbird *by Jonathan Wilde*

EDNA MARQUARDT KOENIG
1900–1989

"I am perfectly contented to remain at home, for this is where my heart is. There is never a vacation except once a year when we try to go to the WSO convention for a day if it isn't too far away." So wrote Edna Koenig, in *The Passenger Pigeon*, as she described her life as a bird rehabilitator. From 1959 to 1987 she rarely traveled herself, but opened her home to care for birds whose travels were temporarily or permanently interrupted by injury.

Sauk City was Edna's home base for most of her 90 years. She was born there on February 17, 1900, the daughter of August and Emily (Cunradi) Marquardt. Following high school she trained for teaching at the State Teachers College at Platteville. After teaching briefly at Platteville, she returned to Sauk City to teach in the elementary school there.

In 1944 she married Henry Koenig, and they took over a rambling house at 215 Jackson Street that was destined to become widely known as "The Bird House." What started out as a modest backyard feeding program expanded as Henry devised one type of feeder after another. By 1949 their yard had 25 winter feeders, and often hundreds of Evening Grosbeaks and Purple Finches.

During an exceptionally heavy Purple Finch invasion in 1958–59, one finch injured a wing flying against a car. Henry and Edna obtained rehabilitation permits, and cared for Honey for the next three years. Other feathered patients followed. Some were too badly injured to be saved. Others recovered fully and were released. But there was a growing number of crippled survivors that required round-the-clock nursing. There was Marty the Purple Martin who lived seven years, Fluffy the Nighthawk for five years, Cliffie the Cliff Swallow for ten years, and Robbie the Robin for seventeen years.

In 1962 Edna and Henry became licensed bird banders. Their occasional recoveries of "foreign" banded birds helped document the east-west movements of Evening Grosbeaks and Purple Finches.

Throughout her rehabilitator career, Edna made copious behavioral notes about her patients. Few ornithological publications can match in detail what she published in her book, *The Bird House* (1974), and her series of eleven articles in *The Passenger Pigeon* (1962–1979).

At one peak time Koenigs cared for 43 patients, feeding mealworms by the thousands, constantly replacing toweling that covered floors and furniture. Only rarely were birds caged.

Activity diminished following Henry's death in 1982, finally ceasing in 1987 as Edna's health faltered. Her death on December 30, 1989, ended the life of a remarkably dedicated bird nurse.—*Samuel D. Robbins, Jr., 14 South Roby Road, Madison, WI 53705.*

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

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