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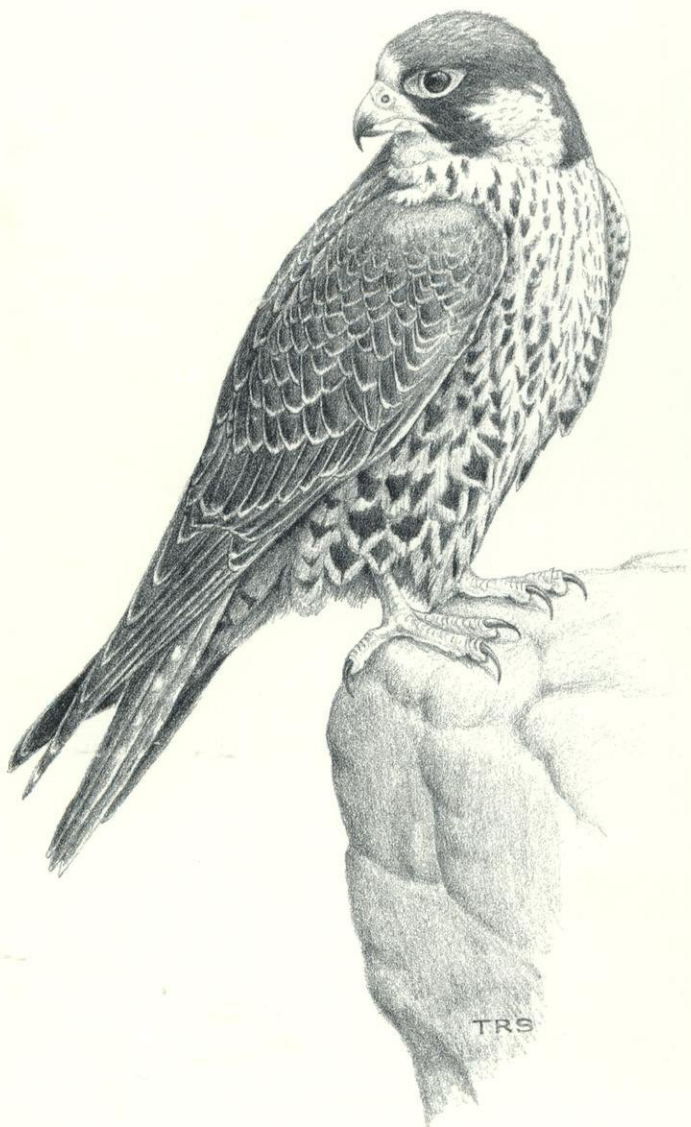


THE PASSENGER PIGEON

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T H E 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.

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A New Editor

Many of you will have realized by now that a significant change in the make-up of the Society's Board of Directors occurred this past spring: Stan Temple resigned as Editor of the *Passenger Pigeon* and has been replaced by Becky Isenring. Before formally welcoming our new editor, I want to first focus briefly on Stan's accomplishments as Editor.

After serving ten years as Chairperson of WSO's Research Committee, Stan enthusiastically took over as Editor in 1988. At that time, he agreed to serve as Editor for five years and set out an ambitious schedule for improving both the quality and timeliness of the *Passenger Pigeon*. In normal fashion, Stan not only met but exceeded those goals; the result of which is that the *Passenger Pigeon* is now one of the premier state ornithological publications in the nation. Stan's ideas for publishing long-running series of articles on "Birding the Habitat Way," the historical accounts of Wisconsin's early ornithologists, and other features brought new knowledge and many hours of reading pleasure to all of us.

Stan, the Society will always be indebted for your many accomplishments as Editor. Thanks!!!

As I have stated before, however, the Society is blessed by the number of able and willing volunteers we have in our membership. I am pleased to introduce one such individual who has consented to be our new Editor: Becky Isenring.

Becky has been a long-time member of WSO and brings an abundance of computer skills, ornithological experience, and enthusiasm to her new position. Becky and her husband Jeff have two children—Erin, age 15 and Amber, age 9—and live south of Sauk City on a small farm. Becky currently works in the Department of Natural Resource's Bureau of Endangered Resources as an endangered resources impact review specialist. Her bird related activities include serving as compiler of the Sauk City Christmas Bird Count, participating on the Poynette CBC, conducting breeding bird surveys on State Natural Areas, and serving as an ornithologist for the Baraboo Hills Inventory.

I and the rest of WSO's Board of Directors are confident that Becky will not only continue the fundamental improvements that Stan brought to the *Passenger Pigeon*, but through her own insight and creativity will help in creating an even better publication. Welcome aboard, Becky!!!

A handwritten signature in dark ink, appearing to read "Al Shaw". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

President



Common Yellowthroat by *Thomas R. Schultz*.

The 1992 Wisconsin Christmas Bird Counts

With a total of 85 counts taken, the 1992 Christmas Bird Counts produced three new species for Wisconsin Christmas Counts: White Pelicans, Anna's Hummingbird and Golden-crowned Sparrow.

by William L. Hilsenhoff

Records for Wisconsin Christmas Bird Counts date back to 1939, so it is unusual to find species that have never before been seen on a Wisconsin Christmas Count. In 1992 three new species were added to Wisconsin's list of Christmas Count birds. Included were 2 White Pelicans on the Green Bay Count, an Anna's Hummingbird on the Racine count, and a Golden-crowned Sparrow on the Kettle Moraine count. The latter two species are exceptional records in any season, with the Anna's Hummingbird being only the second record for Wisconsin and the Golden-crowned Sparrow observation being the only documented sighting of that species in this century.

Only eight other species were reported that had been seen in less than ten previous years. These included Trumpeter Swans (3rd year) at Hudson, Madison, and Beloit, an Osprey (6th year) at Peshtigo, three Black Scoters (7th year) at Kenosha, a Thayer's Gull (7th year) and a Northern Oriole (7th year) at Milwaukee, a Yellow-

headed Blackbird (9th year) at Horicon Marsh, and an American Woodcock (10th year) at Bridgeport. House Finches (7th year), which first were found on Christmas Counts in 1986, have been found in increasing numbers every year since and are now common and widespread; 4,778 were recorded on the 1992 counts. In winter they often occur in flocks, with flocks of 50 to 100 or more having been sighted on some southern counts. Hopefully, like House Finches and Wild Turkeys, Trumpeter Swans someday will also become more abundant on Christmas Counts as a result of its re-introduction into Wisconsin and neighboring states. The Trumpeter Swans seen at Madison and Beloit, although fledged in 1991, were among a group that was captured and quarantined for treatment of a disease. Because of this experience they lost their fear of humans and behaved like many urban geese and ducks that overwinter.

LOCATION AND DETAILS OF THE COUNTS

The addition of new counts at Spooner, Kewaunee, and LaFarge, and the return of counts that were not taken or not compiled last year boosted the total to 85. This is the greatest number of counts since 1983. Participation reached record levels, with 1,105 field observers (previous high 1,034) and 3,480 party hours. The latter was 21% above the average for the last ten years and 417.5 party hours more than the previous high in 1989. The date, and details of weather and participation are compiled for each count in Table 1. The location of each count is shown in Figure 1. Counts are numbered in groups from north to south and west to east. An alphabetical listing of counts follows (bold face type) which gives the count number (Figure 1), the location of the count center, and the name, address, and telephone number of the compiler.

Adams (50); 1.25 miles S of Dellwood on Hwy. Z; Ted May, Rt. 1, 1803 Abrams St., Whitehall, WI, 54773; (715) 538-4370. **Amherst** (30); Jct. Hwys. A and B; David Borchardt, 10296 Yellowbrick Rd., Amherst, WI 54406; (715) 824-3971. **Appleton** (39); Jct. Hwys. 10 and 45; John Shillinglaw, 1952 Palisades Dr., Appleton, WI 54915; (414) 731-4222. **Ashland** (2); Jct. Hwys. 2 and 118; 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) 981-2282. **Bayfield** (1); T 50 N, R 5 W, S-22; Albert Roy, 906 Water St., Ashland, WI 54806; (715) 682-5334. **Beloit** (75); Jct. Tracy and Eau

Claire Rd.; John & Edith Brakefield, 6701 Fenrick Rd. W., Evansville, WI 53536; (608) 876-6242. **Black River Falls** (25); Jct. Hwys. H and 54; Judy Allen, Rt. 2, Box 128, Black River Falls, WI 54615; (608) 488-4154. **Blanchardville** (58); 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. **Bridgeport** (59); 2 miles SE of Bridgeport; Al Shea, 2202 Manor Green Dr., Madison, WI 53711; (608) 274-8380. **Burlington** (73); Jct. Hwy A and Crossway Rd.; Gerald DeBoer, 15935 2 mile Rd., Franksville, WI 53126 (414) 835-4642. **Caroline** (29); 2 miles W of Caroline; Mark Peterson, Box 53, Caroline, WI 54928; (715) 754-2661. **Chippewa Falls** (19); Jct. Hwys. 178 and S; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723 3815. **Clam Lake** (7); 7 miles SE of Clam Lake; Keith Merkel, 201 N. Ash Ave., Marshfield, WI 54449; (715) 384-2383. **Clyde** (56); Jct. Hwy. ZZ and Weaver Rd.; Steven Greb, 3402 Rutland-Dunn Rd., Stoughton, WI 53589; (608) 295-3225. **Columbus** (67); Jct. Johnson and Jahnke Sts.; Phyllis Johnson, W12156 Johnson Rd., Columbus, WI 53925; (414) 623-2447. **Cooksville** (69); Cooksville; John Wilde, 11033 N. Wilder Rd., Evansville, WI 53536; (608) 882-5352. **Durand** (46); Jct. Hwys. 25 and DD 3 miles N of Durand; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **Ephraim** (76); Hwy. A 3 miles S of Jct. with Hwy 42; Paul Regnier, P.O. Box 152, Baileys Harbor, WI 54202; (414) 839-2802. **Fi-field** (9); Fifield Post Office; Thomas Nicholls, 2160 Draper Ave., Roseville, MN 55113; (612) 636-2592. **Fond du**

Table 1. Details of the Counts.

Name of Count	Date	Sky	Snow (in)	Wind Dir.	Wind Vel.	Temp °F		Observers		Parties	Party Hours	Owl Hours
						Low	High	Feeder	Field			
Adams	12/19	Cloudy	3	NW	5-15	26	30	5	3	3	23	0
Amherst	12/19	Partly Cloudy	1	WNW	10-30	10	20	1	9	6	21.5	0
Appleton	12/19	Cloudy-PCI	2	SW-NW	10	24	31	3	20	15	82	2
Ashland	12/19	Cloudy-MCI	3	W	3-7	25	27	2	8	4	32	0
Baraboo	12/29	Fog	2		calm	35	35	3	9	4	28.5	0
Bayfield	12/22	PCI-Snow	3	S	10-15	15	24	1	6	3	25	5
Beloit	12/19	PCI-Fair	0	S	0-5	30	35	6	21	10	86	0
Black River Falls	12/19	Cloudy-PCI	2	S-N	10-20	22	28	7	8	3	11.5	0.5
Blanchardville	12/28	Fair	2	SW	5	8	25	0	8	3	26.25	2.75
Bridgeport	12/17	Cloudy-PCI	2	NW	10	19	31	0	17	8	60.75	9
Burlington	1/1	Fair	0	NW-N	15-5	5	16	0	5	3	26	3
Caroline	1/1	Fair	6	W	5-15	-3	6	0	2	1	8.5	0
Chippewa Falls	12/26	Fair-PCI	2	S	2-10	-19	4	0	8	4	26	0
Clam Lake	1/2	Cloudy-Snow	12	SE	5-20	4	23	0	8	4	33	1.5
Clyde	12/31	Cloudy	2	NW	5-15	10	17	0	5	3	32	1
Columbus	12/19	Cloudy	1	SW-NW	5-8	31	35	3	3	1	10	0
Cooksville	1/1	Fair	tr	NW	15-5	3	14	2	4	2	15	2
Durand	12/19	Cloudy	2	S	10-20	23	29	0	11	5	38	0
Ephraim	12/19	Cloudy	2	SW	5-15	22	33	11	32	15	126.75	0.25
Fifield	12/20	Fair-PCI	6	SW	0-10	-18	8	20	7	5	31.5	0
Fond du Lac	1/2	Cloudy	1	S	5-15	12	24	2	12	5	20	0.5
Fort Atkinson	1/2	Cloudy	tr	SE	14	25	1	6	3	3	9.9	0
Fremont	1/1	Fair	2	NW	5-12	-5	10	1	4	2	15	0.5
Gilman	12/20	Fair	6	NW	0-5	-14	15	7	8	4	37.5	4
Grantsburg	12/19	Cloudy-Fair	3	W-SW	20-21	5	23	0	11	8	41.75	1
Green Bay	12/19	Cloudy	2	WSW-W	0-12	18	34	28	19	12	76	8
Green Lake	12/19	Cloudy	1	WSW-W	5-10	27	30	1	9	4	20.5	1
Gurney	12/2	Fair-PCI	7	W	5-15	-10	5	1	11	4	19.5	0
Hales Corners	12/20	Fair	0	NW	10	15	20	1	13	7	35.2	1
Hartford	1/2	Cloudy	0	SE	0-15	17	26	3	13	5	39	1.25
Hofa Park	12/19	Cloudy	2		10-15	-2	10	4	7	4	23	0
Holcombe	12/29	Cloudy	3	S	0-2	28	35	0	9	42	32.5	0
Horicon Marsh	12/19	Cloudy	1	NW	0-10	32	35	0	9	6	40	5.25
Hudson	1/1	Fair	5	W	3	-16	7	0	5	2	8	0
Kenosha	1/2	Cloudy	1	SE	4-16	20	40	0	2	1	10	0
Kettle Moraine	1/3	Cloudy	2	SE	0-10	34	38	2	6	3	25.5	0.5
Kewaunee	12/19	Cloudy	1	SW	10-20	31	34	0	9	3	16.75	0
Kickapoo Valley	12/20	Fair	4	SW-S	5	-3	12	0	6	3	19	1.5
LaCrosse	12/19	Fair-Cloudy	6	WNW	0-15	13	31	4	23	12	79	2
Lafarge	1/2	Cloudy	2	SW	5-10	12	23	6	6	3	14	1
Lake Geneva	12/19	Cloudy	0	SE	8-10	32	34	2	12	4	25.5	6
Lakewood	1/1	Fair	8	W	5-15	-6	6	0	1	1	9	0
Luck	12/29	Fog-Mist	5	SE	10-15	20	28	9	12	7	21.5	2
Madison	12/19	Cloudy-PCI	4	NW	5-15	16	34	18	75	28	276.75	15.75
Medford	1/2	Cloudy-Snow	7	S-SE	15-5	8	20	5	6	5	34	0
Merrill	12/28	Fair-Cloudy	3	E-NE	1	10	30	2	6	3	19.5	0.5
Milwaukee	12/19	MCI-Cloudy	0	SW	10	35	36	5	28	11	73	4
Mount Horeb	1/3	Fog-Drizzle	1	S-SE	5-10	30	38	7	38	16	64	3.5
Nelson	1/2	Cloudy-Snow	2	S-SE	5-15	13	23	0	18	7	41.5	0
New Richmond	12/19	Cloudy-Fair	3	SW-NW	10-20	13	28	1	4	2	14	0
Oconomowoc	12/27	Cloudy	tr	SE	25-5	20	40	0	12	7	46.5	0.5
Oshkosh	12/19	Cloudy	2	WSW	8-15	32	33	4	16	10	66.25	0
Owen	12/19	Snow-PCI	5	S	0-5	17	26	10	10	6	55.5	0.75
Oxbo	12/19	Cloudy	6	NW	0-3	10	20	6	12	9	45	0
Pensaukee	12/27	Cloudy	3	SW	10-22	18	26	1	4	2	18	1
Peshigo	12/19	Cloudy	2	S	2-4	30	32	0	6	3	25.25	0.75
Phelps	12/19	Cloudy	8	SW	5-10	15	20	3	4	3	18	0
Platteville	12/20	Fair	2	WSW	15-0	5	27	5	12	7	25.25	2.33
Plymouth	12/19	Cloudy	tr	SW-W	10-15	32	34	3	10	4	23	0
Poynette	1/2	Cloudy-Snow	1	SE	15	15	26	13	24	11	80.75	5
Racine	12/19	Cloudy	0	SW	5-10	30	40	0	21	13	91?	1?
Randolph	12/17	Cloudy	2	SE	5	28	28	0	2	1	10	0
Rhineland	12/19	Snow	6	SW	0-5	15	19	22	5	4	12	0
Richland Center	12/20	Fair	2	SW	5-10	3	20	4	45	20	100	2
Riveredge	12/19	Cloudy	tr	SW	0-10	28	40	22	87	33	157	22.25
Sauk City	12/27	Fair-PCI	1	SW	0-5	18	26	1	32	14	114.25	6
Shawano	12/26	Fair-PCI	4	SW	5-15	-7	5	8	5	3	21	1.5

continued

Table 1. (Continued)

Name of Count	Date	Sky	Snow (in)	Wind Dir.	Wind Vel.	Temp °F		Observers			Party Hours	Owl Hours
						Low	High	Feeder	Field	Parties		
Shiocton	12/18	Cloudy	1	SE	4-8	21	27	4	16	7	36.5	0
Spencer	12/29	Cloudy	6	SE	0-10	27	36	4	12	6	48	3.25
Spooner	1/3	Rain-Cloudy	4	NW	5-10	20	30	3	8	5	26	1
Spruce	1/2	Cloudy	4	SE	1-5	0	27	0	3	2	16.5	0.75
Stevens Point	12/19	Snow-Cloudy	7	SW-NW	8-25	21	29	7	27	9	45	0
Stockbridge	12/19	Cloudy	1	SW	0-15	29	35	0	10	5	30	0
Surgeon Bay	12/19	Cloudy-MCI	1	SW	5-10	20	33	1	1	1	7.5	0
Three Lakes	12/26	Fair-Cloudy	8	S	5	-15	5	3	7	7	34	0
Trempealeau	12/26	Cloudy-PCI	2	NNW	0-5	5	20	2	17	7	50.5	0
Waukesha	12/19	MCI-Cloudy	tr	SW-W	5-15	32	35	6	23	10	74	8
Wausau	12/19	Cloudy	6	W-NW	5-15	2	28	7	16	11	61.5	0.75
Wautoma	12/31	Mostly Cloudy	3	W	20-30	8	9	46	12	9	32	0.5
Willard	12/27	Partly Cloudy	1	S	0-5	15	35	2	10	5	44.75	1.5
Wisconsin Rapids	12/19	Snow-Cloudy	6	SSW	8-10	4	29	8	18	8	43.5	0.5
Woodland Dunes NW	1/2	tr	tr	SE	8-12	10	28	2	9	4?	23	1
Woodland Dunes NE	1/3	Cloudy-Rain	tr	SE	5-8	34	39	4	11	7	37.25	1
Woodland Dunes SW	12/19	Cloudy	1	W	2-10	24	32	1	8	7	25.25	1
Woodland Dunes SE	12/20	Fair	1	NW-W	5-10	3	15	5	8	6	31.75	0
TOTAL								381	1105	547	3479.85	148.58

Lac (45); Jct. Tower and Cody Roads; Jeffrey Baughman, W8985 CTH SS, Adell, WI 53001; (414) 626-4713. **Fort Atkinson** (70); Jct. Main St. and Sherman Ave.; Richard Wanie, W5920 Lee Dr., Fort Atkinson, WI 53538; (414) 563-6274. **Fremont** (37); Jct. Hwys. I and HH 4 miles SW of Fremont; Daryl Tessen, 2 Pioneer Park Place, Elgin, IL 60123; (708) 695-2464. **Gilman** (20); 1 mile W of Miller Dam; Janice Luepke, B-894 Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Grantsburg** (4); Jct. Hwys. 70 and 48; Dennis Allaman, 506 W. St. George, Grantsburg, WI 54840; (715) 463-2366. **Green Bay** (35); Jct. Al-louez and S. Webster Avenues; John Jacobs, Neville Public Museum, 210 Museum Pl., Green Bay, WI 54303; (414) 448-4460. **Green Lake** (44); Jct. Hwy. J and Swamp Rd.; Thomas Schultz, N6104 Honeysuckle Lane, Green Lake, WI 54941; (414) 294-3021. **Gurney** (3); Gurney; John Elias, HCR 780, Saxon, WI 54559; (715) 893-2358. **Hales Corners** (83); Jct. Hwy 41 and Puetz Rd. (Milwaukee Co. only); John Schaeffer, 6636 W.

Coldspring Rd., Greenfield WI 53220; (414) 543-3429. **Hartford** (66); Jct. Hwys. 60 and 83; Judy Haseleu, 337 W. State St., Hartford, WI 53027; (414) 673-5865. **Hofa Park** (34); Jct. Hofa Park Dr. and Parkview; Elaine Friedrich, 1776 Hofa Park Dr., Seymour, WI 54165; (414) 822-3016. **Holcombe** (18); 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** (63) Jct. Main Ditch and Main Dike in Refuge; Bill Volkert, 1210 N. Palmatory St., Horicon, WI 53032; (414) 485-3018. **Hudson** (17); Afton, MN; Boyd & Helen Lien, 5148 29th Ave. S., Minneapolis, MN 55417; (612) 729-5982. **Kenosha** (85); Jct. Hwys. 158 and HH (Kenosha Co. only); Ron Hoffmann, Box 886, Kenosha, WI 53141; (414) 654-5854. **Kettle Moraine** (65); Hwy. DD, W of Auburn Lake; Bill Volkert, 1210 N. Palmatory St., Horicon, WI 53032; (414) 485-3018. **Kewaunee** (78); Jct. Hwys. 42 and D; William Mueller, 1244 S. 45 St., Milwaukee, WI 53214; (414) 645-2856. **Kickapoo Valley**

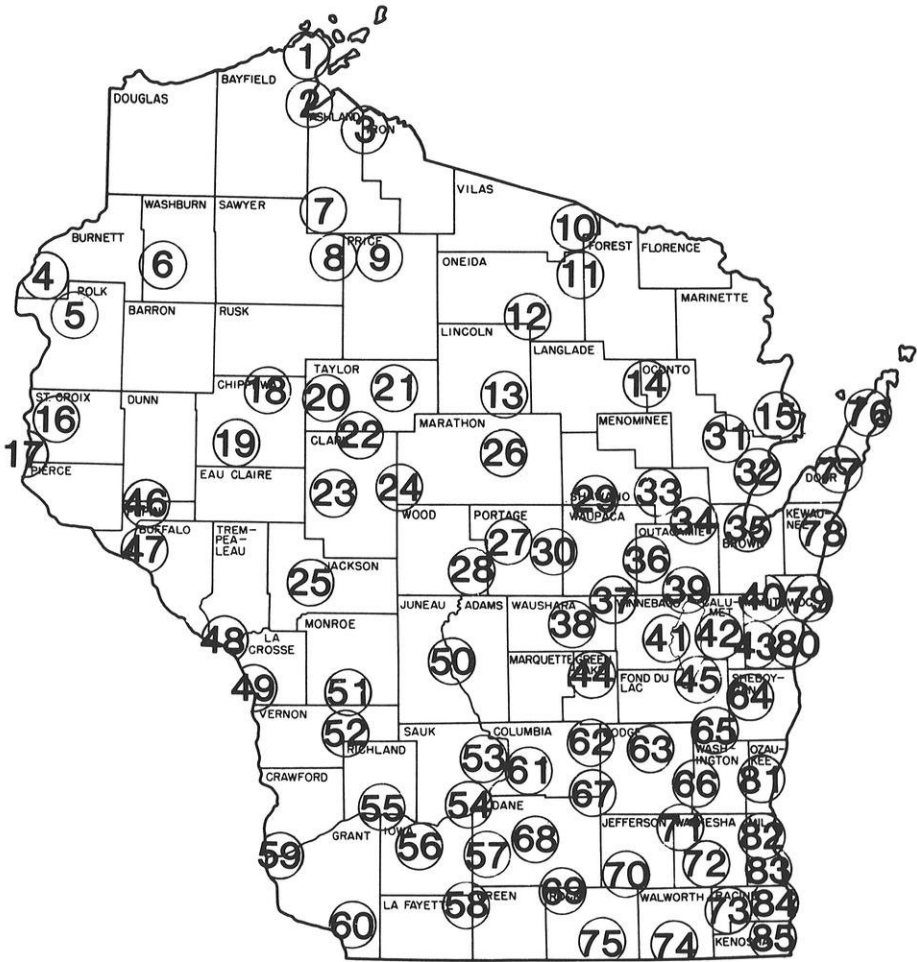


Figure 1. Locations of the 1992 Wisconsin Christmas Bird Counts.

(51); Jct. Hwys. T and 131; Eric Epstein, Rt. 2, Box 100, Norwalk, WI 54648; (608) 823-7837. **LaCrosse** (49); LaCrosse Courthouse; Fred Leshner, 509 Winona St., LaCrosse, WI 54603; (608) 783-1149. **LaFarge** (52); Jct. Hwys. 131 and 82; Dan Hazlett, Rt. 1, Box 264, LaFarge, WI 54639. **Lake Geneva** (74); 42° 15' Lat., 88° 30' Long., near William Bay; Gaylord Culp, 1749 Summit Dr., Lake Geneva, WI 53147; (414) 248-3163. **Lake-**

wood (14); Jct. Hwys. T and FR 2117; John Woodcock, 1718 Cedar Grove Dr., Apt. 3A, Manitowoc, WI 54220; (414) 684-0447. **Luck** (5); Jct. Roads 180 NS and 180 EW in Polk Co.; John Nygren, 920 3rd Ave., Luck, WI 54853; (715) 472-2508. **Madison** (68); State Capitol; Sam Robbins and Al Shea, 14 S. Roby Rd., Madison, WI 53705; (608) 233-3581. **Medford** (21); Hwy. M 1.5 miles E, 0.5 miles N of Hwy 13; Bill Armbrust, 507 E. Con-

rad Dr., Medford, WI 54451; (715) 748-3595. **Merrill** (13); Jct. South End Rd. and Hwy. 107; Alan Rusch, 3342 Westview Lane, Madison, WI 53713; (608) 274-1224. **Milwaukee** (82); Jct. Port Washington Rd. and Hampton Ave.; Jim Frank, 4339 W. Laverna Ave., Mequon, WI 53092; (414) 242-2443. **Mount Horeb** (57); Mount Horeb; Sharon & Warren Gaskill, 10405 Bell Rd., Black Earth, WI 53515; (608) 767-3642. **Nelson** (47); 1 mile S of Jct. Hwys. I and D; C.A. Kemper, 733 Maple St., Chippewa Falls, WI 54729; (715) 723-3815. **New Richmond** (16); 2 miles E of Boardman; Joseph Merchak, 210 Ilwaco Rd., River Falls, WI 54022; (715) 425-1169. **Oconomowoc** (71); Hwy 67, 2 miles N of Oconomowoc; Alex Kailing, W330 N8275 W. Shore Dr., Hartland, WI 53029; (414) 966-1072. **Oshkosh** (41); Jct. Hwys. 21 and 41; Thomas Ziebell, 1322 Ceape Ave., Oshkosh, WI 54901; (414) 235-0326. **Owen** (22); Hwy. D 2.5 miles N of Hwy. 29; June Niemi, W5810 Willow Rd., Withee, WI 54498; (715) 229-2759. **Oxbo** (8); Jct. Hwys. EE and 70; Maybelle Hardy, N15210 Pine Creek Rd., Park Falls, WI 54552; (715) 762-3178. **Pensaukee** (32); Pensaukee; Thomas Erdman, 4093 Hwy. S, Route 2, Oconto, WI 54153; (414) 465-2713. **Peshtigo** (15); Harmony Corners; Leo Feller, 530 Rainbow Circle, Peshtigo, WI 54157; (715) 582-3373. **Phelps** (10); Jct. FR 2139 and FR 2533, 2 miles SW of Phelps; Bill Reardon, 2547 Hwy. 70 E, Eagle River, WI 54521; (715) 479-8055. **Platteville** (60); Cornelia; Tom Goltry, 660 Pioneer Rd., Platteville, WI 53818; (608) 348-9666. **Plymouth** (64); 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** (84); Hwy. H 0.5 miles S of Hwy. K (Racine Co. only); James Buckson, 1844 Johnson Ave., Racine, WI 53402; (414) 639-3538. **Randolph** (62); Hwy P midway between Cambria and Randolph; Charles Gilmore, 115 Meadowood Dr., Randolph, WI 53956; (414) 326-3221. **Rhineland** (12); Rhineland; Ced Vig, 919 Birch Bend, Rhineland, WI 54501; (715) 362-3047. **Richland Center** (55); Jct. Hwys. O and TB SE of Richland Center; Robert Hirschy, University of Wisconsin Center-Richland, Richland Center, WI 53581; (608) 647-6186. **Riveredge** (81); Jct. Hwys. 33 and Lakewood School Rd.; Susan Stromberg, Riveredge Nature Center, P.O. Box 26, Newburg, WI 53060; (414) 675-6888. **Sauk City** (54); 2.5 miles SE of Witwen; Becky Isenring, 6869 Taylor Road, Sauk City, WI 53583; (608) 643-6906. **Shawano** (33); 1.5 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, N3880 Rogers Rd., New London, WI 54961; (414) 779-6433. **Spencer** (24); Jct. Hwys. F and 153; Janice Luepke, B-894 Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Spooner** (6); Spooner; John Haack, Rt. 1, Box 19, Shell Lake, WI 54871; (715) 468-2066. **Spruce** (31); 1 1/2 miles N of Spruce on Hwy. B; Jerry Smith, 6865 Fredrickson Road, Lena, WI 54139; (414) 829-6353. **Stevens Point** (27); Old Main Building, University of Wisconsin-Stevens Point; Nancy Stevenson, 1890 Red Pine Lane, Stevens

Point, WI 54481; (715) 341-0084. **Stockbridge** (42); Kloten Swamp, 3 miles SE of Stockbridge; Carroll Rudy, W3866 Hwy. H, Chilton, WI 53014; (414) 849-9021. **Sturgeon Bay** (77); Sturgeon Bay; Paul Regnier, P.O. Box 152, Baileys Harbor, WI 54202; (414) 839-2802. **Three Lakes** (11); 6 miles E of Three Lakes; Bill Reardon, 2547 Hwy. 70 E, Eagle River, WI 54521; (715) 479-8055. **Trempealeau** (48); Jct. Hwy K and Fremont St., Trempealeau; Thomas Hunter, 575 Jay St., Trempealeau, WI 54661; (608) 534-6233. **Waukesha** (72); John Bielefeldt, N3066 Hardscrabble, Dousman, WI 53118; (414) 495-8397. **Wausau** (26); Jct. Grand Ave. and Thomas St.; Duane Goetsch, 3005 Heron Ave., Wausau, WI 54401; (715) 845-2651. **Wautoma** (38); Mount Morris; Delbert Greenman, 1218 Hwy W, Redgranite, WI 54970; (414) 787-3036. **Willard** (23); 1 mile E and 1.5 miles S of Willard; Janice Luepke, B-894 Eau Pleine Rd., Spencer, WI 54479; (715) 659-3910. **Wisconsin Rapids** (28); Wisconsin Rapids Airport; LaVonne Middleton, 210 Shorewood Ter., Wisconsin Rapids, WI 54494; (715) 423-3242. **Woodland Dunes NW** (40); 1 mile SE of Menchalville, **NE** (79); 1 mile S of Mishicot; **SW** (43); 2 miles W of St. Nazianz; **and SE** (80); 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 to-

gether 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). Uncommon and rare species are listed in Table 8 in the order of their count number, the same order used in Tables 2 to 7. Some reports that lacked the requested documentation were included in Table 8; these reports are marked with an asterisk. Reports of 2 Peregrine Falcons and a Surf Scoter during the count period, and a Merlin and Savannah Sparrows on counts were not included because documentation was lacking or unconvincing.

Because of increased participation and generally good weather, most counts were very good. Sixteen counts reported 50 or more species; eight counts reported more than 60 species. The latter include Madison (87), Appleton (78), Milwaukee (74), Riveredge (70), Poynette (65), Green Lake (64), Green Bay (63), and Sauk City (63). A summary of general abundance within various groups of species follows.

Waterfowl—With most rivers and some larger lakes open at the beginning of the count period, it was a good year for sighting waterfowl. Among common species (Tables 2-7), Canada Geese and Mallards were distinctly less abundant, while Common Goldeneyes were 44% above the average for the previous ten years. All the less common species were found, except the White-winged Scoter. Numbers of Wood Ducks, Northern Pintails, Gadwalls, and Canvasbacks were down; however, numbers of Redheads, Lesser Scaup, and Buffleheads were well above the 10-year average. Mute Swans occurred in record numbers.

Table 2. Number of each species in northern Wisconsin found on 18 or more counts.

Species	1 Bayfield	2 Ashland	3 Curney	4 Grantsburg	5 Luck	6 Spooner	7 Clam Lake	8 Odo	9 Fittfield	10 Phelps	11 Three Lakes	12 Rhinelander	13 Merrill	14 Lakewood	15 Peshigo
Great Blue Heron	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada Goose	0	4	0	1172	0	1	0	0	0	0	0	0	0	0	0
American Black Duck	0	76	0	0	0	0	0	0	0	0	0	0	4	0	6
Mallard	0	127	0	75	0	2	1	0	2	0	0	200	177	0	0
Common Goldeneye	63	66	5	0	0	0	1	0	2	0	0	0	0	0	5
Common Merganser	73	9	0	0	0	0	0	0	0	0	0	0	6	0	9
Bald Eagle	3	6	1	17	2	2	1	7	1	1	1	1	1	1	4
Northern Harrier	0	0	0	0	*	0	0	0	0	0	0	0	0	0	0
Sharp-shinned Hawk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooper's Hawk	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Northern Goshawk	0	0	1	0	0	0	1	1	2	0	2	0	1	1	2
Red-tailed Hawk	0	0	0	1	0	0	0	1	0	0	0	2	1	0	5
Rough-legged Hawk	0	3	7	15	0	0	0	25	17	0	0	0	0	0	2
American Kestrel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ring-necked Pheasant	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1
Ruffed Grouse	4	3	*	2	2	1	5	18	8	2	5	1	1	2	0
Wild Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ring-billed Gull	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	561	35	0	0	0	0	0	0	0	0	0	0	0	0	26
Rock Dove	10	212	0	246	10	91	0	0	39	0	1	74	164	0	174
Mourning Dove	22	49	0	0	3	6	0	1	3	0	9	100	79	1	329
Eastern Screech-Owl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Horned Owl	0	0	0	0	2	1	0	0	1	0	0	0	0	0	1
Barred Owl	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Belted Kingfisher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red-headed Woodpecker	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Red-bellied Woodpecker	0	0	0	6	16	4	0	0	0	0	0	1	0	0	5
Downy Woodpecker	7	5	5	26	33	8	7	42	22	31	54	42	6	4	22
Hairy Woodpecker	2	6	4	14	21	12	7	24	42	27	24	43	6	3	17
Northern Flicker	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Pileated Woodpecker	0	1	1	5	11	2	1	2	2	1	0	8	0	0	1
Horned Lark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Blue Jay	45	29	4	105	80	75	10	23	39	64	33	77	66	25	100
American Crow	23	157	3	163	40	48	4	61	252	60	24	10	124	11	353
Common Raven	6	53	92	12	10	3	119	62	36	14	28	5	2	3	7
Black-capped Chickadee	89	196	104	319	166	193	227	315	588	379	399	622	218	110	444
Red-breasted Nuthatch	8	5	0	23	8	1	1	9	37	46	83	37	16	9	12
White-breasted Nuthatch	4	4	1	39	58	31	1	27	32	26	24	57	13	3	20
Brown Creeper	2	0	0	1	0	0	0	1	1	1	1	8	0	2	1
Golden-crowned Kinglet	0	2	0	0	0	0	0	0	0	0	0	0	3	1	1
American Robin	0	7	0	0	*	0	0	0	0	0	0	0	*	0	0
Cedar Waxwing	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
Northern Shrike	1	3	2	3	0	0	1	0	1	0	0	0	3	0	4
European Starling	58	227	17	23	49	31	0	0	93	34	29	70	193	0	962
Northern Cardinal	0	0	0	5	44	1	0	1	3	0	0	1	7	0	14
American Tree Sparrow	0	0	0	5	4	0	0	0	3	0	0	0	42	0	67
Song Sparrow	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
White-throated Sparrow	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Dark-eyed Junco	4	1	0	40	46	0	0	1	20	0	0	0	0	0	29
Snow Bunting	1	0	50	0	*	53	0	20	8	0	215	0	0	0	497
Red-winged Blackbird	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
Common Grackle	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0
Purple Finch	11	0	0	0	47	0	0	1	6	32	3	39	11	1	0
House Finch	5	0	0	0	1	0	0	0	12	0	0	0	0	0	0
Common Redpoll	32	0	0	15	*	0	0	0	18	0	0	0	0	0	6
Pine Siskin	0	12	0	2	4	15	0	8	16	8	266	43	*	12	2
American Goldfinch	79	102	56	92	103	69	48	389	566	851	440	506	67	30	230
Evening Grosbeak	6	60	7	0	0	0	0	36	17	215	183	155	9	22	2
House Sparrow	53	225	76	163	244	63	0	0	40	0	70	0	229	0	557
Total Species	30	32	19	28	35	25	20	24	36	21	26	24	29	19	40

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

Table 3. Number of each species in west-central—central Wisconsin found on 18 or more counts.

Species	16 New Richmond	17 Hudson	18 Holcombe	19 Chippewa Falls	20 Gilman	21 Medford	22 Owen	23 Willard	24 Spencer	25 Black River Falls	26 Wausau	27 Stevens Point	28 Wisconsin Rapids	29 Caroline	30 Amherst
Great Blue Heron	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada Goose	1875	125	0	0	0	1	0	0	0	0	*	1	5	3	15
American Black Duck	4	1	0	20	0	0	0	0	0	0	5	9	0	2	0
Mallard	204	150	0	300	0	5	0	0	0	0	147	662	83	342	18
Common Goldeneye	0	3	0	61	0	0	0	0	0	0	0	56	38	0	0
Common Merganser	0	2	0	0	0	0	0	0	0	0	0	0	4	9	0
Bald Eagle	4	4	7	4	6	0	1	4	1	4	3	2	*	2	0
Northern Harrier	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sharp-shinned Hawk	0	0	0	0	0	0	0	0	0	0	2	3	0	1	0
Cooper's Hawk	0	0	0	0	0	1	0	0	2	0	1	*	2	0	1
Northern Goshawk	0	0	2	1	3	0	2	4	3	1	3	0	0	0	1
Red-tailed Hawk	4	2	6	12	1	0	5	16	20	7	5	4	3	3	4
Rough-legged Hawk	0	0	4	1	3	1	3	5	9	3	0	*	1	3	0
American Kestrel	0	0	0	0	0	1	7	3	5	1	*	2	1	*	1
Ring-necked Pheasant	0	3	3	0	0	0	0	0	0	0	0	0	3	0	1
Ruffed Grouse	0	1	3	2	3	6	3	14	5	7	5	5	4	11	4
Wild Turkey	0	3	0	0	0	0	0	0	0	0	0	0	1	0	34
Ring-billed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rock Dove	451	102	164	377	94	37	234	443	813	40	329	102	178	126	187
Mourning Dove	0	0	16	27	16	97	53	58	104	4	255	136	54	118	74
Eastern Screech-Owl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Horned Owl	0	0	2	0	0	0	8	4	4	2	2	1	0	0	0
Barred Owl	0	0	0	0	1	0	1	0	3	1	1	0	*	0	0
Belted Kingfisher	1	0	1	1	0	0	0	0	1	0	1	3	1	1	0
Red-headed Woodpecker	0	0	0	1	0	0	3	20	0	3	0	0	1	1	3
Red-bellied Woodpecker	0	6	5	9	1	0	16	4	6	10	3	9	7	16	5
Downy Woodpecker	13	5	22	29	40	40	70	33	58	15	22	27	16	27	20
Hairy Woodpecker	10	2	22	10	51	28	44	7	38	8	19	13	7	30	15
Northern Flicker	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
Pileated Woodpecker	1	0	2	3	1	0	*	3	1	1	2	1	0	0	1
Horned Lark	27	0	0	0	2	0	11	10	10	0	4	2	0	0	27
Blue Jay	97	50	159	293	117	87	214	173	213	64	128	229	143	124	114
American Crow	157	51	161	257	94	272	289	361	241	158	271	236	83	274	480
Common Raven	0	0	5	0	41	7	3	14	0	2	2	0	2	0	0
Black-capped Chickadee	123	28	465	265	720	537	831	692	480	80	569	551	235	246	152
Red-breasted Nuthatch	0	0	6	5	5	14	27	37	15	1	35	42	14	22	19
White-breasted Nuthatch	31	10	56	42	41	35	111	90	48	35	47	45	28	47	36
Brown Creeper	0	0	2	4	4	1	0	0	2	2	5	6	2	0	1
Golden-crowned Kinglet	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0
American Robin	19	1	0	1	0	2	0	0	0	0	1	1	1	0	0
Cedar Waxwing	0	0	0	0	0	0	0	0	0	0	6	3	0	0	0
Northern Shrike	1	0	6	0	5	4	11	4	2	0	5	4	2	0	0
European Starling	125	72	517	186	102	18	325	428	1830	62	463	176	8	8	113
Northern Cardinal	32	17	32	38	6	21	46	44	35	45	36	63	23	50	22
American Tree Sparrow	28	21	69	224	8	9	60	152	75	8	6	11	4	22	0
Song Sparrow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White-throated Sparrow	0	0	0	0	0	0	0	0	0	0	1	0	0	*	0
Dark-eyed Junco	30	20	14	95	2	4	25	57	19	78	33	120	57	191	114
Snow Bunting	0	0	64	0	212	45	1025	1	1063	0	22	50	20	3	0
Red-winged Blackbird	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Common Grackle	0	0	1	0	1	0	0	0	12	0	2	0	0	0	0
Purple Finch	11	11	0	0	115	15	4	10	0	27	34	62	35	196	24
House Finch	1	0	1	43	0	33	7	0	32	1	24	7	2	39	0
Common Redpoll	0	0	0	0	0	0	0	0	0	0	10	1	10	0	0
Pine Siskin	0	0	12	13	21	70	0	0	0	0	60	0	3	241	4
American Goldfinch	24	13	90	233	309	469	451	171	121	246	577	444	178	458	356
Evening Grosbeak	0	0	0	0	70	49	0	0	0	0	1	2	3	16	0
House Sparrow	316	81	1025	454	415	280	1380	1411	2596	94	287	591	135	159	120
Total Species	27	28	33	35	35	31	34	32	37	31	43	40	39	33	30

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

Table 4. Number of each species in east-central Wisconsin found on 18 or more counts.

Species	31 Spruce	32 Persimmon	33 Shawano	34 Hofa Park	35 Green Bay	36 Shiocton	37 Fremont	38 Waunama	39 Appleton	40 Woodland Dunes NW	41 Oshkosh	42 Stoughton	43 Woodland Dunes SW	44 Green Lake	45 Fond du Lac
Great Blue Heron	0	0	0	0	0	0	0	0	1	0	0	*	1	0	0
Canada Goose	0	300	0	*	5094	0	11	25	470	0	26	0	0	8000	6
American Black Duck	0	0	2	0	736	0	14	0	82	0	38	0	0	4	7
Mallard	0	0	16	0	4798	0	407	334	1260	0	1192	0	27	66	129
Common Goldeneye	0	0	7	0	24	0	0	0	496	0	15	0	0	348	0
Common Merganser	0	30	4	0	865	3	2	0	310	0	40	0	0	129	0
Bald Eagle	1	2	3	0	3	1	1	0	8	0	4	0	0	6	0
Northern Harrier	0	0	1	0	0	0	1	2	3	0	2	0	0	2	0
Sharp-shinned Hawk	0	1	3	0	2	0	0	1	4	1	2	*	0	0	1
Cooper's Hawk	0	1	1	1	2	1	2	0	3	*	3	*	0	*	*
Northern Goshawk	*	1	0	0	1	1	0	0	3	0	1	1	0	1	0
Red-tailed Hawk	10	6	9	8	61	20	17	8	24	7	25	5	9	10	18
Rough-legged Hawk	20	16	13	2	1	1	32	6	1	1	0	0	6	1	1
American Kestrel	5	3	4	22	39	19	10	0	31	8	40	23	34	6	19
Rings-necked Pheasant	5	1	1	*	3	4	0	0	2	0	4	0	0	3	1
Ruffed Grouse	2	3	11	0	2	1	2	4	2	4	0	*	3	1	4
Wild Turkey	2	0	0	0	0	0	0	88	0	1	0	1	0	2	0
Ring-billed Gull	0	0	0	1	59	0	0	0	87	31	18	27	0	9	0
Herring Gull	0	6	3	0	1098	0	0	0	295	36	161	15	6	344	0
Rock Dove	356	127	322	291	772	684	460	212	382	44	1273	480	335	208	198
Mourning Dove	81	426	170	145	812	176	68	159	473	79	920	192	95	24	305
Eastern Screech-Owl	0	0	0	0	1	0	0	0	2	0	1	1	0	0	0
Great Horned Owl	4	2	5	1	10	2	1	1	4	4	3	3	1	7	4
Barred Owl	1	*	2	0	0	0	1	0	1	0	0	1	1	3	0
Belted Kingfisher	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0
Red-headed Woodpecker	0	0	8	0	1	0	1	7	4	1	0	0	0	1	0
Red-bellied Woodpecker	1	4	12	1	5	16	6	19	10	1	6	7	7	19	7
Downy Woodpecker	20	16	30	24	52	58	14	63	32	20	72	38	23	39	34
Hairy Woodpecker	20	12	21	2	19	28	12	30	13	12	16	13	12	22	9
Northern Flicker	*	0	2	1	0	3	2	*	1	0	1	0	0	3	0
Pileated Woodpecker	0	1	2	*	0	4	1	0	0	0	0	0	1	3	0
Horned Lark	0	0	0	0	40	0	1	0	22	1	0	0	0	12	0
Blue Jay	89	58	133	48	157	111	80	397	59	38	143	56	49	159	36
American Crow	209	106	502	95	281	93	104	235	305	104	127	30	69	112	82
Common Raven	4	2	3	11	0	1	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	118	165	155	34	210	172	124	373	200	108	187	75	100	170	176
Red-breasted Nuthatch	3	4	41	0	9	21	5	32	12	0	9	0	2	8	2
White-breasted Nuthatch	10	12	30	7	56	65	35	102	39	30	55	40	43	33	30
Brown Creeper	1	1	8	0	*	9	1	1	9	0	14	2	1	2	7
Golden-crowned Kinglet	0	1	3	0	2	4	0	0	2	6	24	1	0	5	1
American Robin	0	0	0	0	4	0	0	0	13	0	1	0	0	*	0
Cedar Waxwing	5	0	0	0	8	33	0	0	13	0	40	0	0	10	0
Northern Shrike	3	3	1	0	0	5	1	1	1	0	0	1	1	3	2
European Starling	313	137	405	404	1115	509	165	25	416	45	1257	904	94	376	396
Northern Cardinal	10	24	28	9	132	62	34	118	74	36	86	24	17	52	50
American Tree Sparrow	65	85	41	3	153	184	54	49	55	9	113	204	11	173	107
Song Sparrow	0	0	0	0	4	1	1	0	5	0	1	13	0	3	0
White-throated Sparrow	0	1	0	0	2	1	0	6	1	0	1	0	0	1	*
Dark-eyed Junco	35	16	114	1	290	223	139	695	123	44	130	76	42	101	191
Snow Bunting	200	20	79	470	140	0	0	26	22	0	*	175	0	25	24
Red-winged Blackbird	0	0	0	0	10	0	0	0	7	0	0	0	0	0	0
Common Grackle	0	*	1	20	14	1	0	0	10	0	3	0	0	1	0
Purple Finch	0	24	91	39	31	6	11	85	17	30	0	0	24	31	2
House Finch	0	59	47	7	178	50	21	56	153	23	92	0	8	3	60
Common Redpoll	0	0	5	0	4	0	7	3	0	3	0	0	5	0	0
Pine Siskin	0	2	20	0	12	31	2	10	11	79	0	0	0	0	0
American Goldfinch	177	155	278	63	201	148	184	637	81	55	107	76	85	208	79
Evening Grosbeak	0	0	4	0	0	0	0	2	7	0	0	0	0	0	0
House Sparrow	236	415	281	809	1035	1240	230	127	739	155	2203	1947	209	136	48
Total Species	30	40	51	29	63	43	42	38	78	31	50	28	33	64	32

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

Table 5. Number of each species in west and southwest Wisconsin found on 18 or more counts.

Species	46 Durand	47 Nelson	48 Trempealeau	49 LaCrosse	50 Adams	51 Kickapoo Valley	52 LaFarge	53 Bambo	54 Sauk City	55 Richland Center	56 Clyde	57 Mount Horeb	58 Blanchardville	59 Bridgeport	60 Platteville
Great Blue Heron	0	1	2	0	0	0	0	0	3	0	0	*	4	0	2
Canada Goose	0	0	0	110	41	0	0	501	0	5	0	0	0	6	0
American Black Duck	0	0	0	1	0	0	0	0	10	0	0	0	0	3	0
Mallard	6	54	56	593	53	0	0	102	263	45	0	6	4	236	0
Common Goldeneye	0	81	0	0	1	0	0	44	49	0	0	0	0	0	0
Common Merganser	38	51	0	52	2	0	0	0	167	0	0	0	0	17	0
Bald Eagle	33	43	7	54	6	*	0	*	70	19	3	0	0	104	5
Northern Harrier	1	0	0	0	0	0	0	0	2	3	1	7	0	0	0
Sharp-shinned Hawk	1	3	1	3	0	0	0	1	3	1	0	*	2	0	0
Cooper's Hawk	0	2	0	1	0	2	0	1	2	1	0	0	2	0	2
Northern Goshawk	1	1	0	1	0	0	0	0	1	0	0	0	1	0	1
Red-tailed Hawk	19	47	13	31	4	49	10	5	103	85	15	40	58	66	18
Rough-legged Hawk	9	8	3	0	4	1	2	2	29	12	2	0	1	12	4
American Kestrel	1	6	1	4	1	4	1	3	26	31	1	11	5	13	11
Ring-necked Pheasant	0	0	0	0	0	*	0	0	*	6	0	0	2	1	0
Ruffed Grouse	0	4	1	5	0	4	2	1	6	12	0	18	2	3	7
Wild Turkey	24	0	0	0	68	49	30	0	125	342	58	163	1	22	13
Ring-billed Gull	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0
Herring Gull	0	0	0	78	0	0	0	0	15	3	0	0	0	6	0
Rock Dove	140	347	272	310	17	246	45	197	540	865	46	245	114	539	55
Mourning Dove	10	12	10	91	29	4	1	17	283	60	0	103	25	84	13
Eastern Screech-Owl	0	0	0	2	0	0	1	0	10	0	0	1	3	8	0
Great Horned Owl	0	3	3	4	0	8	2	4	19	10	0	7	42	16	2
Barred Owl	0	0	2	4	1	2	0	0	8	2	0	3	0	1	2
Belted Kingfisher	0	1	2	2	0	1	2	0	7	3	1	1	3	4	2
Red-headed Woodpecker	0	0	7	1	5	4	1	2	0	5	1	6	1	47	12
Red-bellied Woodpecker	16	57	36	34	3	26	11	16	127	80	1	35	38	117	9
Downy Woodpecker	26	36	78	46	17	25	19	27	103	109	2	59	55	80	32
Hairy Woodpecker	9	28	16	24	14	9	7	9	32	37	4	39	8	36	8
Northern Flicker	1	0	4	1	0	1	0	2	21	11	0	1	11	23	10
Pileated Woodpecker	1	4	3	4	2	3	1	0	13	14	3	5	2	22	2
Horned Lark	65	0	0	0	0	*	7	*	35	27	0	25	27	41	3
Blue Jay	141	328	306	177	169	216	68	172	571	580	47	198	141	336	93
American Crow	327	247	626	434	60	909	82	352	1039	1472	65	301	137	327	172
Common Raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	163	293	180	354	182	91	56	136	493	390	16	242	144	341	127
Red-breasted Nuthatch	2	2	4	7	39	14	0	4	29	3	0	10	5	6	14
White-breasted Nuthatch	28	66	64	101	54	31	11	66	163	122	3	89	65	239	35
Brown Creeper	0	0	2	3	0	1	0	3	24	2	0	1	2	13	0
Golden-crowned Kinglet	0	0	*	5	0	3	0	7	38	1	0	0	1	14	0
American Robin	0	1	1	196	1	0	0	3	1007	1	0	5	3	14	0
Cedar Waxwing	0	0	2	89	7	0	0	52	212	17	0	20	0	166	0
Northern Shrike	3	4	1	2	1	3	1	1	4	0	0	*	1	4	0
European Starling	474	208	182	355	5	431	76	121	2569	912	23	371	373	1156	68
Northern Cardinal	83	317	152	223	18	36	40	35	286	208	9	104	102	166	51
American Tree Sparrow	188	150	647	46	8	35	42	278	516	172	42	215	230	289	63
Song Sparrow	0	0	2	0	0	0	0	1	9	51	0	10	24	9	2
White-throated Sparrow	0	0	1	1	0	0	0	0	0	0	0	0	3	0	4
Dark-eyed Junco	399	420	604	276	164	172	82	117	1083	522	80	247	251	433	171
Snow Bunting	0	0	0	0	60	0	0	0	4	0	0	200	0	1	3
Red-winged Blackbird	0	0	0	92	0	0	0	0	*	1	0	0	0	27	0
Common Grackle	1	0	0	0	0	0	0	0	4	48	0	15	0	2	4
Purple Finch	20	20	102	11	40	24	5	50	66	34	0	9	15	0	16
House Finch	23	26	19	117	5	1	0	11	255	16	0	26	3	23	36
Common Redpoll	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0
Pine Siskin	2	20	6	19	77	39	0	0	4	0	0	0	3	27	0
American Goldfinch	142	248	146	130	224	123	28	78	294	375	0	355	70	213	30
Evening Grosbeak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
House Sparrow	142	1660	614	662	10	607	190	349	1361	1947	45	495	763	1642	346
Total Species	37	37	44	51	35	36	29	39	63	53	22	42	46	59	43

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

Table 6. Number of each species in south-central Wisconsin found on 18 or more counts.

Species	61 Poyette	62 Randolph	63 Horicon Marsh	64 Plymouth	65 Kettle Moraine	66 Harford	67 Columbus	68 Madison	69 Cookville	70 Fort Atkinson	71 Oconomowoc	72 Waubesa	73 Burlington	74 Lake Geneva	75 Beloit
Great Blue Heron	2	0	1	0	1	1	0	5	1	2	1	2	2	0	2
Canada Goose	1	2815	2500	43	1	18	203	720	190	8	3255	1761	729	2567	995
American Black Duck	5	0	0	10	0	23	8	65	2	8	22	9	5	0	12
Mallard	224	0	2	142	0	71	79	2563	34	158	669	299	476	1281	972
Common Goldeneye	13	0	0	0	0	0	0	282	10	0	0	12	10	444	350
Common Merganser	103	0	0	30	0	0	0	1119	2	0	0	0	5	798	2
Bald Eagle	3	0	0	0	0	0	0	*	0	0	0	1	0	0	0
Northern Harrier	1	0	11	0	0	1	0	0	0	2	2	2	4	3	2
Sharp-shinned Hawk	0	0	0	1	0	1	0	10	0	0	0	0	2	0	0
Cooper's Hawk	3	0	2	1	1	2	0	15	4	0	1	3	1	0	4
Northern Goshawk	1	0	0	1	*	0	0	2	0	0	0	0	1	0	0
Red-tailed Hawk	55	4	20	13	4	26	5	80	22	12	24	33	34	11	31
Rough-legged Hawk	15	0	15	3	0	0	0	2	2	0	1	2	0	0	2
American Kestrel	21	8	26	10	2	13	12	20	7	6	15	17	8	10	15
Ring-necked Pheasant	20	1	7	3	1	1	0	14	*	10	2	2	1	3	11
Ruffed Grouse	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Wild Turkey	64	6	0	11	*	14	0	2	0	29	1	0	0	0	0
Ring-billed Gull	0	0	413	27	0	39	0	1958	0	0	4	63	0	697	16
Herring Gull	0	0	34	6	1	76	0	2345	0	0	3	9	0	58	1
Rock Dove	444	88	246	336	149	244	262	1182	269	91	391	269	151	372	542
Mourning Dove	193	65	359	117	68	190	53	1350	164	94	86	149	90	385	289
Eastern Screech-Owl	4	0	6	0	0	2	0	101	6	0	0	13	1	0	2
Great Horned Owl	12	0	13	0	1	6	0	34	2	2	2	25	1	0	3
Barred Owl	1	0	1	0	1	0	0	3	0	1	0	0	0	0	0
Belted Kingfisher	3	0	0	1	1	0	1	10	3	1	4	5	3	0	3
Red-headed Woodpecker	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Red-bellied Woodpecker	44	2	1	7	6	10	1	79	4	3	11	5	6	6	9
Downy Woodpecker	76	2	31	31	10	42	12	282	40	20	33	57	23	16	42
Hairy Woodpecker	36	0	6	13	11	16	4	96	8	5	8	12	5	3	8
Northern Flicker	19	0	2	2	1	1	0	17	1	0	2	3	6	2	3
Pileated Woodpecker	4	0	0	0	4	0	0	0	0	0	0	1	0	0	0
Horned Lark	106	14	*	0	0	37	5	5	17	0	3	0	7	0	7
Blue Jay	550	37	48	84	104	56	17	641	61	8	36	114	34	20	105
American Crow	1023	35	65	113	191	584	55	2695	71	250	255	857	105	138	377
Common Raven	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-capped Chickadee	401	15	95	70	251	281	6	1040	58	90	104	299	104	81	139
Red-breasted Nuthatch	4	0	0	3	25	1	2	32	1	3	4	23	1	2	0
White-breasted Nuthatch	108	3	14	18	42	43	8	265	17	14	35	61	43	35	69
Brown Creeper	8	0	0	1	3	1	0	63	*	1	0	5	2	0	4
Golden-crowned Kinglet	7	0	0	0	23	0	0	49	0	0	0	15	6	5	1
American Robin	52	0	0	0	1	0	0	390	0	3	6	42	1	0	1
Cedar Waxwing	408	0	44	*	48	9	0	123	0	*	11	88	46	20	171
Northern Shrike	2	0	1	1	*	0	0	2	0	1	0	1	0	0	0
European Starling	1700	322	803	185	469	1370	338	7216	299	506	579	870	747	2447	2741
Northern Cardinal	153	3	15	30	43	67	11	567	26	17	52	124	20	33	77
American Tree Sparrow	482	23	361	21	79	108	21	1700	390	242	163	386	432	23	776
Song Sparrow	10	0	2	1	0	2	0	79	1	1	1	5	4	0	10
White-throated Sparrow	3	0	0	0	0	0	0	46	0	1	3	0	0	0	0
Dark-eyed Junco	1417	86	97	45	89	244	35	1534	197	89	93	34	381	92	624
Snow Bunting	900	0	4	0	0	0	0	0	0	0	0	0	0	0	250
Red-winged Blackbird	1	1	630	0	0	0	0	7358	2	0	0	2	0	1	10
Common Grackle	1	0	34	1	0	0	0	41	0	0	0	2	0	0	0
Purple Finch	133	0	0	3	9	5	2	81	3	0	24	6	2	0	0
House Finch	263	0	52	23	80	37	58	752	20	18	7	45	20	2	458
Common Redpoll	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Pine Siskin	36	0	0	3	40	9	0	124	0	0	0	43	59	0	0
American Goldfinch	533	2	41	52	36	139	71	519	59	37	37	114	23	88	66
Evening Grosbeak	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
House Sparrow	1347	574	1850	455	399	703	400	2879	268	237	650	537	162	233	1557
Total Species	65	22	40	39	41	43	26	87	36	38	45	52	47	42	47

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

Table 7. Numbers of each species along Lake Michigan found on 18 or more counts and totals.

Species	76 Ephraim	77 Sturgeon Bay	78 Kewaunee	79 Woodland Dunes NE	80 Woodland Dunes SE	81 Riveredge	82 Milwaukee	83 Hales Corners	84 Racine	85 Kenosha	No. of Counts	Total Birds	Percent Change
Great Blue Heron	0	0	1	2	0	5	2	2	0	0	24	48	+227%
Canada Goose	1073	0	4	8	873	5227	2596	626	1859	108	47	44,904	-36%
American Black Duck	6	0	0	9	38	15	114	2	26	4	38	1,401	-9%
Mallard	89	0	22	358	185	414	966	102	518	330	58	22,007	-21%
Common Goldeneye	264	0	159	35	168	30	950	312	158	1006	35	5,563	+44%
Common Merganser	56	20	42	99	106	24	37	0	8	7	37	4,280	+3%
Bald Eagle	1	1	0	0	0	*	0	0	0	0	50	470	+31%
Northern Harrier	0	0	0	0	0	3	2	0	5	0	23	63	-8%
Sharp-shinned Hawk	1	0	0	0	2	4	1	1	0	1	29	60	+20%
Cooper's Hawk	0	0	0	1	*	3	7	*	0	0	37	84	+110%
Northern Goshawk	0	0	0	0	1	4	0	1	0	0	37	46	+31%
Red-tailed Hawk	0	0	1	1	6	66	24	14	13	1	72	1,402	+16%
Rough-legged Hawk	9	0	0	2	0	1	1	0	1	0	56	348	-18%
American Kestrel	0	0	7	5	4	69	31	9	28	5	61	752	+26%
Ring-necked Pheasant	1	0	0	0	0	7	0	2	2	3	36	138	-56%
Ruffed Grouse	8	0	0	2	2	5	0	0	0	0	57	254	-45%
Wild Turkey	0	0	3	26	0	23	0	0	0	0	29	1,206	+85%
Ring-billed Gull	0	0	36	14	6	709	1972	191	268	48	26	6,698	+59%
Herring Gull	2687	8	722	1414	60	285	3970	16	250	5	35	14,638	+25%
Rock Dove	127	0	258	436	41	1085	550	81	244	397	79	23,075	-5%
Mourning Dove	130	8	154	230	85	1130	560	125	356	13	78	12,923	+16%
Eastern Screech-Owl	0	0	0	0	0	13	6	1	1	0	22	186	+6%
Great Horned Owl	1	0	0	3	0	24	7	5	1	0	55	341	+6%
Barred Owl	1	0	0	0	2	20	2	0	0	0	31	75	-11%
Belted Kingfisher	0	0	0	1	2	8	3	*	0	0	38	91	+24%
Red-headed Woodpecker	0	0	0	0	2	2	1	0	0	0	34	157	-24%
Red-bellied Woodpecker	9	*	0	3	3	33	2	2	2	2	71	1,106	+14%
Downy Woodpecker	39	1	2	23	30	289	73	22	20	3	85	3,219	+1%
Hairy Woodpecker	35	0	0	13	7	66	22	1	7	2	82	1,461	-9%
Northern Flicker	0	0	0	0	0	9	1	0	0	0	35	173	+35%
Pileated Woodpecker	5	1	0	2	0	1	0	0	0	0	48	160	-12%
Horned Lark	0	0	0	0	3	3	0	0	16	0	35	624	-63%
Blue Jay	97	3	12	49	26	450	40	12	39	9	85	10,778	-4%
American Crow	146	*	123	69	133	824	1036	204	249	55	84	23,265	-2%
Common Raven	28	0	0	0	0	0	0	0	0	0	29	549	-20%
Black-capped Chickadee	272	14	16	227	188	1545	380	141	160	32	85	21,927	+8%
Red-breasted Nuthatch	41	0	0	5	3	32	13	6	1	0	71	1,030	+11%
White-breasted Nuthatch	25	4	2	20	43	272	48	13	14	1	85	3,983	-5%
Brown Creeper	3	0	0	1	1	15	7	3	0	0	55	272	+20%
Golden-crowned Kinglet	5	1	0	13	23	16	10	4	1	0	38	309	+36%
American Robin	0	0	0	0	0	16	60	16	1	0	33	1,872	+298%
Cedar Waxwing	6	0	0	0	0	437	213	78	107	3	34	2,499	+48%
Northern Shrike	1	0	0	1	1	1	0	0	0	0	50	121	-29%
European Starling	36	0	354	924	135	2176	1357	542	1517	223	81	47,960	-54%
Northern Cardinal	41	8	11	55	52	363	173	35	72	9	78	5,410	-3%
American Tree Sparrow	6	2	1	91	50	505	42	121	103	2	74	11,175	-31%
Song Sparrow	0	1	0	1	2	7	13	0	7	1	34	285	+27%
White-throated Sparrow	1	0	0	0	0	0	8	0	1	0	20	88	+12%
Dark-eyed Junco	8	8	5	80	150	826	325	155	165	37	77	15,057	-28%
Snow Bunting	68	0	46	0	21	0	0	0	48	0	39	6,135	-8%
Red-winged Blackbird	0	0	0	1	0	0	2	3	1	0	20	8,165	+157%
Common Grackle	0	0	0	3	0	0	0	0	3	0	25	241	-35%
Purple Finch	94	2	0	0	6	133	4	0	3	1	63	2,009	+30%
House Finch	54	0	0	29	170	535	291	85	253	0	61	4,778	+913%
Common Redpoll	0	0	13	1	0	8	0	0	0	0	18	192	-93%
Pine Siskin	221	0	0	37	0	16	0	12	0	0	47	1,776	-60%
American Goldfinch	145	3	3	106	87	481	275	43	42	4	84	15,764	+17%
Evening Grosbeak	0	0	0	0	0	1	0	0	0	0	21	867	-87%
House Sparrow	183	12	401	174	334	1953	775	142	477	19	80	49,163	-31%
Total Species	47	18	28	50	46	70	74	45	54	36			

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

Table 8. Species found on 17 or fewer counts.

Species	Number of Counts	Number of Birds	Count and Number
Common Loon	5	6	Appleton 1*, Green Lake 1, Madison 2, Lake Geneva 1*, Milwaukee 1
Pied-billed Grebe	1	2	Green Lake 2
Horned Grebe	3	5	Green Lake 2, Lake Geneva 1, Ephraim 2
White Pelican	1	2	Green Bay 2
Double-crested Cormorant	4	11	Bayfield 1, Green Bay 8*, Appleton 1*, Milwaukee 1
Tundra Swan	2	121	Bayfield 6, LaCrosse 115, (Madison)
Trumpeter Swan	3	13	Hudson 9, Madison 3, Beloit 1
Mute Swan	11	76	(Stevens Point), Shawano 1, Richland Center 1, Madison 2, Oconomowoc 7, Waukesha 46, Burlington 12, Beloit 1, Ephraim 2, Riveredge 2, Milwaukee 1, Hales Corners 1
Snow Goose	3	6	Green Bay 4, Appleton 1, Hales Corners 1
Wood Duck	9	15	Shiocton 1, Wautoma 3, Appleton 3, Oshkosh 2, Poynette 1, Madison 1, Oconomowoc 1, Riveredge 1, Racine 2
Green-winged Teal	2	2	Green Bay 1, Poynette 1
Northern Pintail	3	3	Ashland 1, Green Bay 1, Trempealeau 1
Blue-winged Teal	2	4	Hartford 3, Riveredge 1
Northern Shoveler	3	78	Green Bay 3, Appleton 1, Madison 74
Gadwall	5	270	Hartford 2, Madison 253, Waukesha 4, Milwaukee 5, Hales Corners 6
American Wigeon	4	20	Appleton 2, Green Lake 7, Madison 10, Milwaukee 1
Canvasback	6	22	Green Bay 1, Appleton 1, Green Lake 5, Lake Geneva 4, Milwaukee 1, Racine 10
Redhead	4	17	Green Lake 6, Waukesha 7, Milwaukee 1, Hales Corners 3
Ring-necked Duck	7	51	(Stevens Point), Fremont 2, Green Lake 2, LaCrosse 1, Madison 2, Lake Geneva 41, Riveredge 2, Milwaukee 1
Greater Scaup	12	1994	Green Bay 1, Fremont 1, Green Lake 8, Madison 1, Lake Geneva 3, Kewaunee 3, Woodland Dunes NE 9, Woodland Dunes SE 2, Riveredge 24, Milwaukee 915, Hales Corners 415, Racine 612
Lesser Scaup	10	158	Appleton 1, Oshkosh 3, Green Lake 9, Poynette 1, Madison 39, Lake Geneva 96, Woodland Dunes NE 1, Woodland Dunes SE 1, Milwaukee 4, Racine 3
Harlequin Duck	2	3	Appleton 2*, Milwaukee 1
Oldsquaw	7	467	Ephraim 78, Woodland Dunes NE 2, Woodland Dunes SE 78, Riveredge 1, Milwaukee 304, Racine 1, Kenosha 3
Black Scoter	1	3	Kenosha 3
Bufflehead	13	558	Appleton 2, (Oshkosh), Green Lake 26, Madison 27, Lake Geneva 17, Ephraim 46, Kewaunee 15, Woodland Dunes NE 1, Woodland Dunes SE 4, Riveredge 9, Milwaukee 178, Hales Corners 45, Racine 148, Kenosha 40
Hooded Merganser	11	42	Fifield 1, Green Bay 3, Appleton 4, Green Lake 4, LaCrosse 1, Madison 12, Fort Atkinson 1, Waukesha 1, Lake Geneva 3, Riveredge 6, Milwaukee 6
Red-breasted Merganser	17	226	Fifield 1, Green Bay 1, Appleton 5, Oshkosh 1, Green Lake 5, Sauk City 1, Madison 39, Oconomowoc 2, Ephraim 6, Kewaunee 7, Woodland Dunes NE 6, Woodland Dunes SE 4, Riveredge 2, Milwaukee 104, Hales Corners 3, Racine 30, Kenosha 9
Ruddy Duck	4	8	Appleton 2, Oshkosh 2, Madison 3, Milwaukee 1
Osprey	1	1	Peshigo 1
Red-shouldered Hawk	3	3	(Green Bay), Green Lake 1, Trempealeau 1, (Madison), Oconomowoc 1
Golden Eagle	4	10	Durand 3, Nelson 1*, Kickapoo Valley 3, Bridgeport 3
Gray Partridge	8	93	Luck 1, Shawano 9, Green Bay 9, Appleton 15, Sauk City 1, Bridgeport 21, Platteville 32, Riveredge 5
Greater Prairie-Chicken	2	41	Spencer 36, Stevens Point 5
Sharp-tailed Grouse	3	29	Holcombe 10, Gilman 11, Owen 8
Northern Bobwhite	3	39	Richland Center 23, Poynette 13, Madison 3
American Coot	13	1108	Chippewa Falls 1, Green Bay 1, Appleton 4, (Oshkosh), Green Lake 37, Hartford 7, Madison 327, Oconomowoc 1, Waukesha 17, Lake Geneva 667, Beloit 4, Riveredge 4, Milwaukee 30, Racine 8
Killdeer	2	2	Appleton 1, Fort Atkinson 1
Common Snipe	7	35	Richland Center 4, Mount Horeb 1, Bridgeport 24, Poynette 2, Madison 1, Fort Atkinson 1, Waukesha 2
American Woodcock	1	1	Bridgeport 1
Bonaparte's Gull	3	21	Milwaukee 3, Racine 15, Kenosha 3
Thayer's Gull	1	1	Milwaukee 1
Glaucous Gull	6	10	Bayfield 2, Appleton 1, Oshkosh 1, Green Lake 2, Woodland Dunes NE 2, Milwaukee 2
Snowy Owl	9	18	Ashland 2, (Luck), Spencer 1, Pensaukee 2, Hofa Park 5, (Green Bay), Appleton 1, (Oshkosh), Green Lake 1, (Mount Horeb), Poynette 1, Woodland Dunes NE 2, Woodland Dunes SE 3, (Milwaukee)
Long-eared Owl	7	8	Peshigo 1, Appleton 1, Oshkosh 1, Poynette 2, Madison 1, Riveredge 1, Milwaukee 1
Short-eared Owl	3	4	Madison 1, Burlington 2, Riveredge 1
Northern Saw-whet Owl	1	1	Bridgeport 1
Anna's Hummingbird	1	1	Racine 1
Yellow-bellied Sapsucker	7	12	Luck 3, Hudson 1, Trempealeau 1, Bridgeport 2, Platteville, 1, Madison 3, Milwaukee
Gray Jay	9	112	Luck 1, Clam Lake 8, Oxbow 9, Fifield 14, Phelps 20, Three Lakes 24, Rhinelander 21, Medford 4, Black River Falls 1
Boreal Chickadee	3	6	Clam Lake 2, Phelps 2, Three Lakes 2
Tufted Titmouse	16	144	Chippewa Falls 17, Willard 2, Wautoma 1, LaCrosse 3, Kickapoo Valley 14, LaFarge 2, Baraboo 2, Sauk City 9, Richland Center 8, Mount Horeb 13, Bridgeport 33, Platteville 10, Poynette 19, Madison 7, (Oconomowoc), Beloit 2, Sturgeon Bay 2
Carolina Wren	8	11	Appleton 1*, Sauk City 2, Madison 2, Burlington 1, Lake Geneva 1*, (Woodland Dunes NE), Riveredge 2, Milwaukee 1, Racine 1

continued

Table 8. (Continued)

Species	Number of Counts	Number of Birds	Count and Number
Winter Wren	7	13	Trempealeau 1, Sauk City 2, Blanchardville 1, Bridgeport 2, Columbus 1, Madison 4, Riveredge 2
Ruby-crowned Kinglet	4	4	Appleton 1*, Poynette 1*, Madison 1, Oconomowoc 1, (Beloit)*, (Woodland Dunes SE)*
Eastern Bluebird	7	34	Chippewa Falls 1, Sauk City 16, Richland Center 2, Bridgeport 9, Poynette 4, Kettle Moraine 1, Madison 1
Hermit Thrush	3	8	Kettle Moraine 1, Madison 4, Milwaukee 3
Northern Mockingbird	2	2	Appleton 1*, Racine 1
Brown Thrasher	6	6	Green Bay 1, LaCrosse 1, Richland Center 1, Mount Horeb 1, Poynette 1, Milwaukee 1
Bohemian Waxwing	4	44	Bayfield 19, Gilman 1, Baraboo 23, Milwaukee 1
Yellow-rumped Warbler	3	3	Oshkosh 1, Sauk City 1, Ephraim 1, (Milwaukee)
Rufous-sided Towhee	3	3	Sauk City 1, Madison 1, Woodland Dunes SE 1
Field Sparrow	4	6	Shiocton 1, Sauk City 1, Mount Horeb 1, Madison 3
Vesper Sparrow	1	2	Madison 2
Fox Sparrow	3	9	Luck 6, Appleton 1, Madison 2
Swamp Sparrow	15	60	Trempealeau 1, LaCrosse 3, Baraboo 1, Sauk City 6, Blanchardville 6, Poynette 2, Horicon Marsh 2, Kettle Moraine 1, Hartford 3, Madison 25, Fort Atkinson 1, Woodland Dunes NE 3, Riveredge 2, Milwaukee 3, Hales Corners 1
White-crowned Sparrow	6	14	Richland Center 1, Bridgeport 2, Madison 2, Burlington 1, Racine 4*, Kenosha 4
Golden-crowned Sparrow	1	1	Kettle Moraine 1
Lapland Longspur	4	20	Three Lakes 1, Owen 3, Durand 14, Madison 2
Eastern Meadowlark	2	9	(Spruce), Blanchardville 7, Madison 2
Yellow-headed Blackbird	1	1	Horicon Marsh 1
Rusty Blackbird	2	24	Madison 7, Cooksville 17
Brown-headed Cowbird	9	137	Gilman 1, Spencer 1, Green Bay 17, (Oshkosh), Sauk City 1, Bridgeport 1, Horicon Marsh 100, Madison 12, Riveredge 1, Milwaukee 3
Northern Oriole	1	1	Milwaukee 1
Pine Grosbeak	8	23	Gurney 5, Spooner 1, Clam Lake 7, Fifield 4, Wausau 2, Shawano 1, Woodland Dunes SW 2, Platteville 1
Red Crossbill	6	55	Phelps 2, Three Lakes 42, Shawano 1, Sauk City 6, Platteville 1, Kettle Moraine 3
White-winged Crossbill	12	314	Clam Lake 2, Phelps 36, Three Lakes 172, Lakewood 4, Spencer 12, Green Bay 6, Shiocton 2, Fremont 30, Appleton 8, Kettle Moraine 2, Ephraim 38, Kenosha 2
swan spp.	1	2	Oshkosh 2

*Documentation was not provided.

Also unusually common were Ring-necked Ducks, (highest total since 1975), Greater Scaup (highest total since 1987), and Hooded Mergansers (highest total since 1981). Numbers of Oldsquaws were higher than in the previous three years, but well below the counts of ten to twenty thousand found prior to 1973. Numbers of Common Loons (6 on 5 counts) and Horned Grebes (5 on 3 counts) were also high. Double-crested Cormorants (11 on 4 counts), which were not found prior to 1980, were seen for the eleventh time on Wisconsin Christmas Counts and have become a regular occurrence. Green-winged Teal were seen for the first time since 1989. Rarities included the 2 White Pelicans at Green Bay, Trumpeter Swans at Hudson, Madison and Beloit, Black Scoters

at Kenosha, and Harlequin Ducks at Appleton and Milwaukee.

Hawks and Eagles—It was a great year for hawks and eagles. Sharp-shinned Hawks, Cooper's Hawks, Red-tailed Hawks, American Kestrels, Bald Eagles, and Golden Eagles were all reported in record numbers; the number of Cooper's Hawks was more than twice the 10-year average. Northern Goshawks were also very numerous, especially in the north; the number seen (46) was exceeded only the 54 seen in 1983. Numbers of Rough-legged Hawks and Northern Harriers were below the 10-year average, and the 3 Red-shouldered Hawks is the lowest total since 1981. The Osprey at Peshigo was the only rare raptor on the counts, but during the count period a

Peregrine Falcon was seen at Madison and a Turkey Vulture was sighted in the Kettle Moraine count area.

Grouse, Pheasants, Quail, etc.—

Numbers of the Gray Partridge, Ring-necked Pheasant, Ruffed Grouse, and Bobwhite were all well below normal, the number of Ring-necked Pheasants being the lowest in at least 30 years. The count of Sharp-tailed Grouse (29 on 3 counts) was above average, and the Wild Turkey population seems to have stabilized after rapid growth from 1983 to 1990.

Gulls and Other Waterbirds—For the second year in a row Great Blue Herons occurred in record numbers. It was also a good year for gulls, with Ring-billed Gulls reported in record numbers. Numbers of Herring Gulls were 25% above the 10-year average and the 10 Glaucous Gulls is the second highest total ever recorded. Counts of Bonaparte's Gulls, however, were unusually low. A Thayer's Gull at Milwaukee was the only rare gull that was found. American Coot totals were well above average, and the Killdeer at Appleton and Fort Atkinson were the first reported since 1989. Belted Kingfishers also occurred in record numbers. No rails were found, but an American Woodcock at Bridgeport represents only the tenth Christmas Count record.

Doves—Mourning Dove numbers were somewhat above normal, while counts of Rock Doves were slightly lower.

Owls—Totals for Great Horned Owl, Screech Owl, and Barred Owls were near the 10-year average. It was an ex-

cellent year for Snowy Owls, with 18 being found for the second year in a row. Only 8 Long-eared Owls were found, which is below the 10-year average, and the 4 Short-eared Owls is an unusually low number. One Northern Saw-whet Owl was found at Bridgeport.

Woodpeckers—Except for Red-headed Woodpeckers, which were 24% below the 10-year average, it was a good year for woodpeckers. Red-bellied Woodpeckers continued to expand their range, with a record number being found. Northern Flickers were also unusually abundant, and occurred in record numbers. Yellow-bellied Sapsuckers were unusually prevalent. Counts of Pileated Woodpeckers and Hairy Woodpeckers were somewhat lower than normal.

Jays, Crows, Chickadees, Nuthatches, etc.—Populations of Blue Jays and American Crows remained about normal, but numbers of Common Ravens were 20% below the 10-year average. A record number of Gray Jays was found on northern counts, and the 6 Boreal Chickadees was above average. Large numbers of Black-capped Chickadees occurred on many counts in the northern half of the state, which led to a record number of that species. Counts of Tufted Titmice remained well above the 10-year average, with most being reported from the southwestern part of the state. Red-breasted Nuthatches were exceptionally numerous; the 1,030 reported was second only to the phenomenal total of 2,158 in 1989.

Creepers, Kinglets, Wrens, and Warblers—Totals for Brown Creepers,

Golden-crowned Kinglets, and Ruby-crowned Kinglets were all well above the 10-year average. The 13 Winter Wrens was the second highest total ever reported, and the 11 Carolina Wrens represents a record total for that species, which disappeared from Wisconsin in 1977 after a severe winter and did not reappear until 1985. Yellow-rumped Warblers were found on three counts.

Thrushes, Shrikes, and Waxwings—It was an excellent year for thrushes with the 34 Eastern Bluebirds and 8 Hermit Thrushes being the second highest totals ever recorded (65 and 14 were seen in 1989). The 1,872 American Robins eclipsed the record of 1,047, also established in 1989. After appearing on counts in the previous nine years, no Varied Thrushes were seen in 1992. Numbers of Northern Shrikes were well below average, especially in the southern part of the state. Northern Mockingbirds were found at Appleton and Racine, which represents only the fourteenth occurrence on Wisconsin Christmas Counts. The 6 Brown Thrashers was about average. Cedar Waxwings were found in near record numbers, but the 44 Bohemian Waxwings was the poorest invasion by this species since 1982.

Sparrows, etc.—Northern Cardinals and Rufous-sided Towhees were found in about average numbers; the towhee at Madison was the spotted western race. Counts of American Tree Sparrows and Dark-eyed Juncos were well below the 10-year average, but Song Sparrow, Swamp Sparrow, White-throated Sparrow, and White-crowned Sparrows were all more numerous than in most years. Only Fox and Field

Sparrows occurred in about normal numbers. The 2 Vesper Sparrows at Madison were a rare Christmas Count occurrence. The Golden-crowned Sparrow on the Kettle Moraine Count was an exceptional record.

Open Country Birds—Although Snow Buntings were found in about normal numbers, counts of Horned Larks and Lapland Longspurs were very low. The 20 Lapland Longspurs was the second lowest total since 1965. A lack of substantial snow cover in southern Wisconsin to force these species to roadsides and manure spreads probably had a detrimental impact on the counts. Numbers of meadowlarks were also low; all were identified as Eastern Meadowlarks.

Blackbirds—Counts of all species were below normal, except for the Red-winged Blackbird. The large total for that species was due mostly to the 7,358 that were seen at Madison. No Brewer's Blackbirds were seen for the first time in nine years; twenty that were reported on the Hofa Park count could not be documented. Rarities included a Yellow-headed Blackbird at Horicon Marsh and a Northern Oriole at Milwaukee. The latter was identified as the western Bullock's subspecies; the documentation is being reviewed by the WSO Records Committee.

Finches—Except for Purple Finches and American Goldfinches, which occurred in above average numbers, and the expanding House Finch population, it was a very poor year for finches. The 23 Pine Grosbeaks is the lowest total since 1982 and the 192 Common Redpolls is the lowest total since 1979. Pine Siskin numbers were 60% below

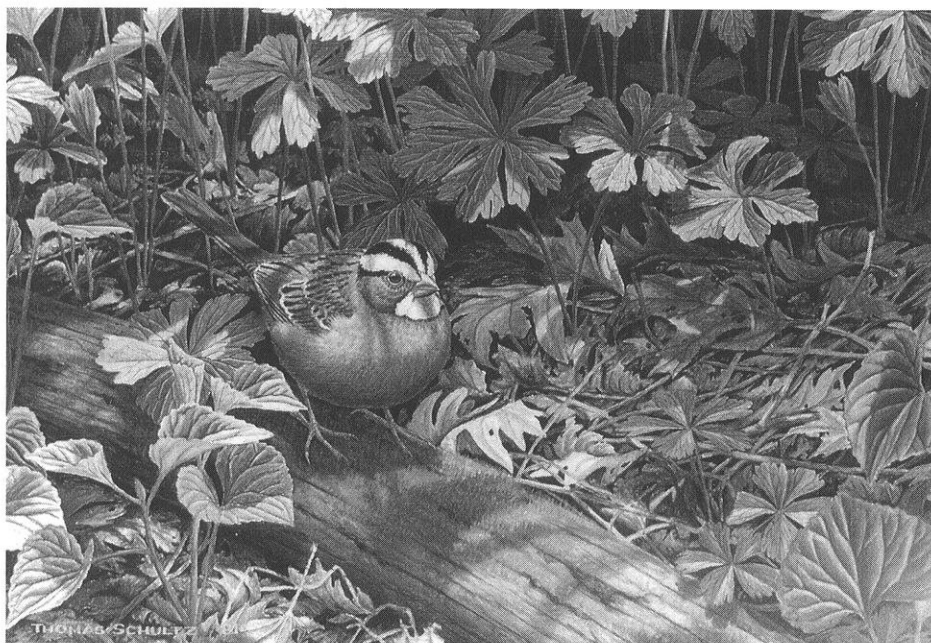
the 10-year average and numbers of Evening Grosbeaks were 87% below. Red Crossbills were also unusually scarce, but the 314 White-winged Crossbills represents a modest invasion.

In summary, the 1992 Wisconsin Christmas Bird Counts were somewhat above average with respect to the number of species and number of individuals that were reported. Some groups of birds were unusually abundant, with several species occurring in record numbers; other groups of birds were unusually scarce. However, the in-

creased number of counts and the 21% increase in participation (total party hours) represents a large advance in the quality and coverage of the counts. If you wish to participate in a count in 1993, please contact the compiler in your area. If you plan to initiate a new count in an area not presently covered (Figure 1), please write to me to avoid conflicts and to obtain a report form.

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White-throated Sparrow by *Thomas R. Schultz*.

1992 Breeding Bird Survey—Apostle Islands National Lakeshore

During June 8–24, 1992, Apostle Islands National Lakeshore's annual breeding bird survey was conducted. This contributes information on the status and trends of breeding birds, largely neo-tropical migrants, in some of the few remnant old-growth habitats and large blocks of unbroken forests in the Upper Great Lakes.

by Julie F. Van Stappen and Thomas C. J. Doolittle

During June 8–24, 1992, Apostle Islands National Lakeshore's annual breeding bird survey was conducted on the mainland unit and Devils, Long, Oak, Outer, Raspberry, Sand and Stockton islands. Apostle Islands NL's long-term monitoring program for breeding birds began in 1990 (Van Stappen and Doolittle 1990). The survey was repeated in 1991 and additional transects were added on the mainland unit, Outer and Raspberry islands (Van Stappen 1992). The Outer and Raspberry islands transects were added to increase the amount of old-growth forest surveyed. In addition, survey time at each point was increased from three to five minutes. These surveys represent the beginning of a long-term program to monitor breeding birds in the Apostle Islands National Lakeshore.

Apostle Islands National Lakeshore provides important habitat for breed-

ing birds, especially neo-tropical migrants. Islands within the lakeshore range in size from 3 to 10,000 a. (1 to 4,000 ha.), and contain a diverse mixture of habitats. The Apostle Islands are near the continental northwestern limits of the hemlock-white pine-hardwood forest and on the southern fringe of the boreal forest. Historically, most islands were disturbed by man (e.g., logging, farming, quarrying). At present, most of the lakeshore is covered with unbroken second-growth forests of varying ages and a few of the islands have pristine old-growth forests.

In the late 1970's, an intensive survey of nesting forest birds was conducted in the Apostle Islands (Temple 1985). The findings of Temple's survey provided the basis for the semi-popular publication, "Birds of the Apostle Islands." Beals (1958, 1960) and Manbeck (1978) also studied breeding birds in the lakeshore.

The objectives of the survey were to conduct long-term monitoring of breeding birds in the lakeshore through annual surveys to determine trends in species richness and relative abundance, describe important breeding bird habitats within the lakeshore and compare and share data with other established breeding bird surveys.

METHODS

Survey transects were located on the mainland unit, Devils, Long, Oak, Outer, Raspberry, Sand and Stockton islands and represent a range of island sizes, locations in the archipelago, disturbance histories and habitat types. Trails were chosen as transects to enhance repeatability and allow comparisons to be made between surveys. Trails are generally narrow, with an average width of 0.6–1 meter. Raspberry Island, Outer Island hemlock stand and the mainland unit did not lend themselves to the use of trails. Therefore, off-trail transects were used in these areas and their locations were documented. All the major habitat types in the lakeshore were represented in the survey.

Surveys were conducted during the second the third weeks of June, during the peak breeding season for most forest nesting birds in the Lakeshore. The surveys began 1/2 hour before sunrise and ended no later than 9:00 A.M. Weather conditions were recorded prior to and at the end of each survey. Surveys were not conducted under high wind (>10 knots) and heavy precipitation conditions. Two people participated in each survey, one listener and one data recorder. The listener was highly skilled in bird identification through songs/calls. The listening/ob-

servation period for each stop was 5 minutes and spacing between stops was 5 minutes of walking (approximately 1/4 mi./0.4 km). The number of birds heard or seen in the first 3 minutes was also recorded to allow for comparison with 1990 results (3 minute observation period) and the F&WS Breeding Bird Survey. The first stop for each survey was at the beginning of the trail. At each stop all birds heard or seen during the 5 minute observation period were recorded. Habitat type at each stop was also recorded. Birds that were heard or seen during the observation stop, but not at a stop were recorded as miscellaneous. Miscellaneous observations also included birds which were not adequately sampled by this method (e.g., colonial birds). (Figure 1).

Habitat types were modified from Temple (1985) and include: northern hardwood forest (NH); old-growth northern hemlock hardwood forest (OGNH); aspen birch forest (AB); oak forest (OF); pine forest (PF); upland conifer forest, cedar dominated (UC1); old-growth upland conifer forest, cedar dominated (OGUC1); old-growth upland conifer forest, spruce and fir dominated (OGUC2); beaver impoundments/bog (BP); open or disturbed area (OA); sand spit and dunal (S).

Northern hardwood forest habitat in the lakeshore is primarily second-growth mixed hardwood-conifer forest. This forest type is quite variable depending on the successional stage of the forest and the species which were selectively logged (e.g., white pine, hemlock, cedar, hardwoods). Dominants include: hemlock (*Tsuga canadensis*), white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), sugar maple

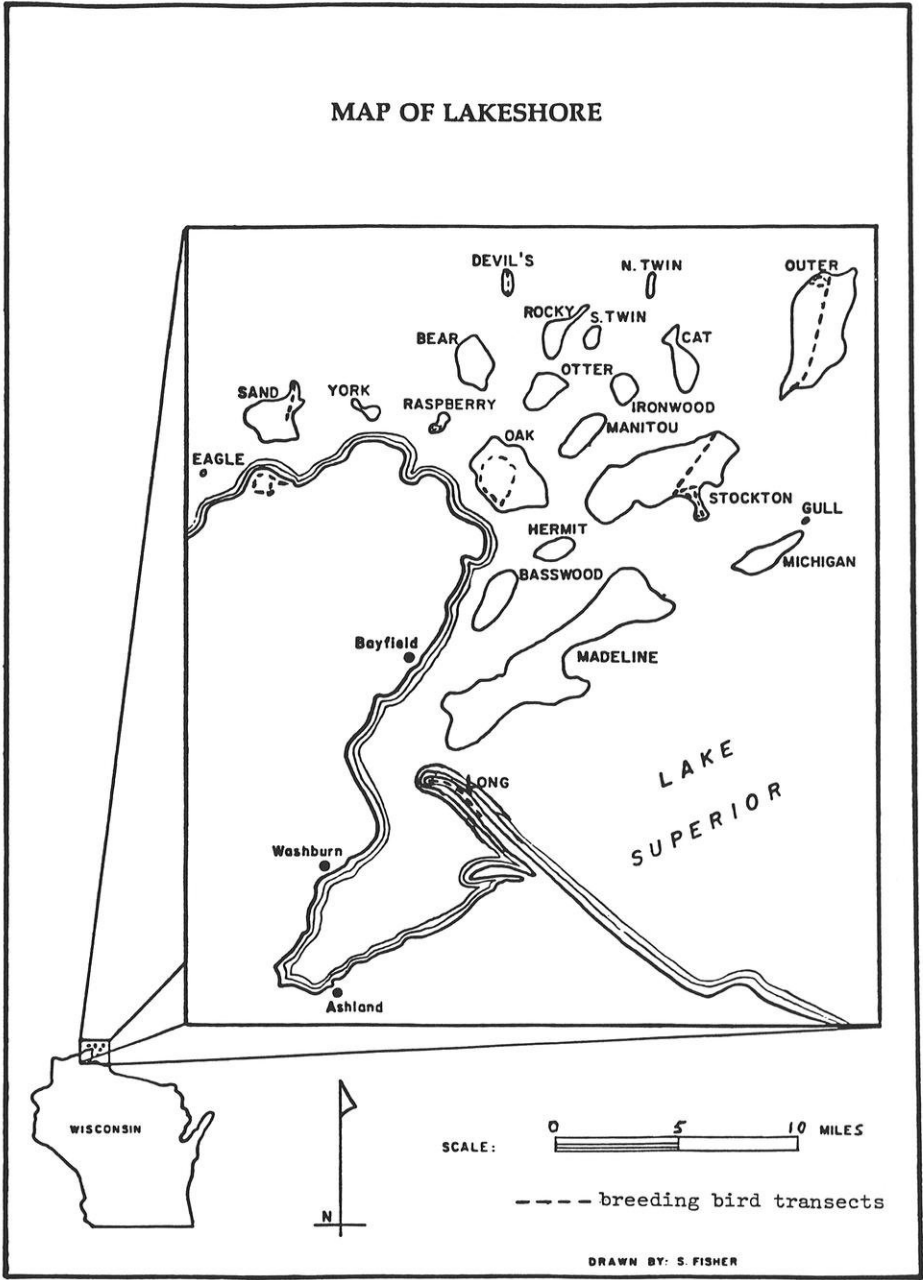


Figure 1. Transect locations.

(*Acer saccharum*), and yellow birch (*Betula lutea*). The shrub layer usually has many saplings of the dominant trees and ground cover of woody shrubs and ephemerals. On islands that have not had deer populations on them, there is often a well developed understory of yew (*Taxus canadensis*). Northern hardwood forest is the most abundant habitat type in the lakeshore.

Old-growth northern hemlock-hardwood forest is primarily limited to a 200 acre stand at the northern end of Outer Island. This forest is dominated by hemlock and yellow birch and has a super canopy component of white pine. The understory is well developed and yew is abundant.

Aspen birch forest is dominated by trembling aspen (*Populus tremuloides*) and white birch (*Betula papyrifera*). These forests occur in areas which had past human disturbances (logging and associated fires) and in some coastal areas which are subject to wind throw and lightning-caused fire.

Oak forest is dominated by red oak (*Quercus borealis*). This habitat type is not abundant in the lakeshore and primarily occurs on upland areas on Oak Island.

Pine forests are generally dominated by red pine (*Pinus resinosa*) and white pine (*Pinus strobus*). Pine forest is found on sandy soils and is abundant on the Stockton Island tombolo (white and red pine dominant) and Long Island (jack pine dominant). The shrub layer in these forests is generally sparse and the ground cover is scant and patchy.

Upland conifer forests (cedar dominated) are located on the western islands and mainland unit. The understory is well developed.

Old-growth upland conifer forest

(cedar dominated) is limited to Raspberry Island. This forest is dominated by white cedar and yellow birch, has a well developed understory and thick stands of yew.

Old-growth upland conifer forest (spruce and fir dominated) is limited to Devil's Island. The dominant trees are black spruce (*Picea mariana*) and balsam fir. It is the most boreal island/habitat in the lakeshore. The understory is well developed.

Beaver impoundments are found on Stockton and Outer Islands. Bog wetlands are on many of the islands and are often associated with sand spits. There are large inland bogs on Stockton, Otter and Devils Islands.

Open areas are primarily the result of historic logging, farming and quarrying. Navigational light stations are on six of the islands. Many clearings are being reclaimed by the surrounding forest. Other areas are kept open for their cultural significance or are the locations of park facilities (e.g., buildings, campsites).

The lakeshore has a rich assemblage of dunal features, including sand spits, cusped forelands, tombolos, beaches and a barrier spit. These areas are dominated by dunal vegetation, including beach grass (*Ammophila breviligulata*) and beach pea (*Lathyrus japonicus*). Most of these dunal features also include a forested zone.

RESULTS

1992 Survey—Thirty-eight miles (60 km.) of trails were surveyed on seven islands and the mainland unit (Table 1). Total transect length ranged from 1 mile (1.6 km.) on Devils to 9 miles (14 km.) on Stockton Island. The long-

est single transect was on Outer Island (7 mi./11 km.).

A total of 87 bird species were recorded during the survey. Miscellaneous species which were heard during the survey period, but *not* at sampling points, and species that were not representatively sampled (Barn Swallow, Cliff Swallow, Caspian Tern, Common Loon, Common Merganser, Red-breasted Merganser, Herring Gull and Ring-billed Gull), were not included in the analyses.

The most abundant birds recorded in 1992, in order of abundance, were: Ovenbird (13%); Red-eyed Vireo (12%); Black-throated Green Warbler (7%); American Redstart (4%); Veery (4%); Red-winged Blackbird (4%); American Crow (3%); Song Sparrow (3%); Blue Jay (3%); and Nashville Warbler (3%). The 10 most abundant birds comprised more than 50% of all birds recorded during the survey.

To allow comparisons to be made between islands and habitat types, the number of birds *per stop* were calculated (Table 2). Sand and Devils islands had the greatest number of birds *per stop*, followed by Stockton Island and

the mainland unit. Oak Island had the lowest number of birds *per stop*.

Stockton and Outer islands, the largest islands in the lakeshore, had the highest *total numbers* of both birds and species. Long, Oak and Sand islands had similar numbers of total birds (121–156), even though Long Island (a peninsula) is approximately $1/10$ the size of Oak Island. Raspberry Island, the smallest island surveyed, had the lowest *total number* of birds and species.

By *habitat type* (Table 3), the highest number of birds *per stop* was found in open areas, old-growth upland conifer (balsam/spruce) forest, beaver ponds/bogs and cedar dominated upland conifer forest. Most open areas are remnants of historical clearings and some continue to be maintained for their cultural significance (e.g., light station grounds, farm sites, logging camps). These areas are difficult to survey because of their small size; there is usually an overlap of birds heard from surrounding forest areas. Old-growth upland conifer forest (balsam/spruce dominated) is found on Devils Island, the most boreal of the islands in the archipelago. Beaver ponds occur on Outer and Stockton Island, primarily

Table 1. Descriptions of islands included in survey.

Island	Total acreage	Habitat types*	Total transect length (miles)
Raspberry	295	AB, OA, OGUC1, S	2.0
Long	297	PF, S	6.0
Devils	318	BP, OA, OGUC2	1.0
Mainland Unit	2,592	AB, NH, PF, S, UC1	4.0
Sand	2,949	NH, OA, UC1	1.5
Oak	5,078	AB, NH	6.5
Outer	8,000	AB, BP, NH, OA, OGNH	7.5
Stockton	10,054	AB, NH, OA, PF, S	9.0

*AB = aspen/bird forest; BP = beaver ponds/bogs; NH = northern hardwood forest; PF = pine forest; OGUC1 = old-growth upland conifer forest (cedar dominated); UC1 = upland conifer forest (cedar dominated); OGUC2 = old-growth upland conifer forest (balsam fir/spruce dominated); OA = open areas; S = sand spits/dunal

Table 2. 1992 Results by island.

Island	Acreage	Total birds (5 min)	No. of stops	No. of species	Birds/stop (3 min/5 min)
Raspberry	295	63	9	21	7
Long	297	121	15	23	8
Devils	318	78	6	28	14
Mainland	2,592	176	16	36	11
Sand	2,949	154	9	32	17
Oak	5,078	156	27	25	6
Outer	8,000	363	38	49	10
Stockton	10,054	439	37	51	12
Total		1550			

in second growth mature northern hardwood forest. Second growth upland conifer forest (cedar dominated) can be found on the mainland unit and Sand Island. The lowest number of birds *per stop* was found in old-growth upland conifer (cedar) forest, aspen/birch forest and northern hardwood forests.

Total number of birds and species were highest in northern hardwood forest; the most prevalent habitat type in the lakeshore with the highest number of stops. Pine forest, abundant on Stockton Island tombolo and Long Island, and aspen/birch forest also had

high number of *total species*. There was a direct relationship between the number of stops (effort) and total birds.

Comparison of 1991 and 1992 Surveys—A total of 88 species were recorded in 1992, compared with 94 species in 1991. The total number of birds recorded during both surveys combined was 107.

In Table 4, three comparisons were made: 1) total species in 1991 versus 1992; 2) percent change between total species recorded in 1992 compared with total species recorded in 1991 and 1992; and 2) total number of birds in

Table 3. 1992 results by habitat type.

Habitat	Total birds (5 min)	No. of stops	No. of species (5 min)	Birds per stop (5 min)
Northern Hardwood (NH)	491	57	45	9
Aspen/Birch (AB)	265	29	39	9
Pine Forest (PF)	186	19	40	10
Sand (dunal) (S)	132	12	26	11
Open Area (OA)	122	6	30	20
Old-Growth NHH* (OGNH)	100	10	30	10
Upland Conifer 1 (UC1)	97	9	26	11
Beaver Ponds/Bogs (BP)	63	6	24	11
OG Upland Conifer 1* (OGUC1)	48	6	18	8
OG Upland Conifer 2* (OGUC2)	46	4	20	12
Total	1550			

*OG = old-growth; 1 = cedar dominated; 2 = balsam fir/spruce dominated; NHH = northern hemlock hardwoods

Table 4. Comparison of 1991 and 1992 results by island.

Island	Acreage	Total Species			% Change no. species '91 & '92 vs '92	Total Birds	
		1991	1992	1991 & 1992		1991	1992
Raspberry	295	37	21	45	53%	138	63
Long	297	37	23	45	49%	187	121
Devils	318	22	28	38	24%	83	78
Mainland	2,592	45	36	56	34%	211	176
Sand	2,949	33	32	46	30%	119	154
Oak	5,078	28	25	35	29%	192	152
Outer	8,000	51	49	64	23%	353	363
Stockton	10,054	52	51	66	23%	349	439
Total						1632	1550

1992 versus 1991. The most interesting observation is the inverse relationship between acreage and percent change in number of species in 1991 and 1992 versus 1992. This suggests that species turnover may be greater on smaller islands than on larger islands and that the total number of species which can potentially breed on an island may be influenced by its size. It will be interesting to see if this relationship holds over a period of years. The islands with the most change in both number of species and total birds was Raspberry and Long islands.

Different observers conducted the Raspberry Island surveys, which may account for some of this difference. On Long Island, however, the observers were the same during both years. The total number of birds for all transects combined were similar. There was little change in number of species on Sand, Outer and Stockton islands.

The Shannon-Wiener and Simpson's Diversity Indices were applied, by island, to the total number of species recorded in 1991 and 1992 (Table 5). Stockton Island, the largest island surveyed, was the most diverse. Raspberry Island, an old-growth island and the

smallest island surveyed, was the second most diverse island.

Table 6 compares: 1) total number of species and birds recorded in 1991 versus 1992, and 2) total number of species for 1991 and 1992 combined with number of stops. The total number of species was very similar in 1991 and 1992 in old-growth spruce/fir upland conifer forest and northern hardwood forest habitats. The largest change in number of species between the two years was found in old-growth northern hemlock hardwood (30 vs. 18) and dunal (26 vs. 37) habitats. The large increase in species numbers in the hemlock stand is probably due to an increase in the number of sampling sites. In the future, the number of sites will remain consistent. It is interesting, however, that the total number of birds recorded for old-growth northern hemlock hardwood forest showed almost no change between 1991 and 1992. The decrease in number of species (and total numbers) in dunal habitat is also reflected in Long Island data; most of the dunal sampling sites are on Long Island. The largest change in total numbers of birds from 1991 to 1992 were in old-growth upland (ce-

Table 5. Diversity indices by island.

Island	No. of species '91 & '92	Shannon-Wiener Index (H)	Simpson's Index
Stockton	66	1.6	0.96
Raspberry	45	1.5	0.96
Mainland	56	1.5	0.95
Devils	38	1.4	0.95
Sand	46	1.4	0.95
Outer	62	1.4	0.92
Oak	35	1.1	0.88
Long	45	0.9	0.71

dar) conifer forest and open areas. The decrease seen in old-growth upland (cedar) conifer forest habitat is also reflected in Raspberry Island data and may be due, in part, to observer bias. The large increase in numbers of birds in open areas may be influenced by their small size, which results in birds also being heard from surrounding forest habitat. In general, there is an inverse relationship between the number of stops (effort) and total number of species recorded in 1991 and 1992.

The Shannon-Wiener and Simpson's Diversity Indices were applied, by habitat, to the total number of species recorded in 1991 and 1992 (Table 7).

According to these indices, pine forest is the most diverse habitat, followed by beaver ponds/bogs and cedar dominated upland conifer forest.

Table 8 shows the most abundant birds recorded during Temple's survey, the 1990 and the 1991 surveys. The three most abundant birds have remained consistent—Red-eyed Vireo, Ovenbird and Black-throated Green Warbler. The ten most abundant birds comprised approximately 50% of the total number of birds recorded during all three surveys. The most abundant birds in the Apostle Islands that have shown a possible decline in numbers according to the F&WS Breeding Bird

Table 6. Comparison of 1991 and 1992 results by habitat.

Habitat	No. stops	Total no. species			Total birds	
	1991+1992	1991 & 1992	1991	1992	1991	1992
Pine Forest	41	60	52	40	248	186
Northern Hardwood	110	58	47	45	426	491
Aspen/Birch	55	56	44	39	250	265
Sand (dunal)	24	45	37	26	186	132
Beaver Ponds/Bogs	10	41	33	24	62	63
Upland Conifer 1*	18	40	33	40	138	97
Open Area	12	37	25	30	78	122
Old-Growth NHH*	16	33	18	30	101	100
OG Upland Conifer 1*	12	30	24	18	88	48
OG Upland Conifer 2*	8	29	20	20	55	46
Total					1632	1550

*OG = old-growth; 1 = cedar dominated; 2 = balsam fir/spruce dominated; NHH = northern hemlock hardwoods

Table 7. Diversity indices by habitat type.

Habitat	No. of species '91 & '92	Shannon-Wiener Index (H)	Simpson's Index
Pine Forest	66	1.51	0.95
Beaver Ponds/Bogs	41	1.44	0.95
Upland Conifer 1	26	1.41	0.95
Aspen/Birch	39	1.39	0.93
OG Upland Conifer 1	30	1.36	0.95
Sand (dunal)	45	1.34	0.92
OG Upland Conifer 2	29	1.33	0.95
Northern Hardwood	58	1.30	0.90
OG Northern Hardwood	33	1.29	0.93

Survey (Butcher, et al. 1992) include: Black-throated Green Warbler, American Redstart, Veery and Red-winged Blackbird. Song Sparrows have shown a significant decline nationwide (Butcher, et al. 1992). Abundance data for these species will be tracked through time to determine how trends in Apostle Islands NL data compare with national trends.

DISCUSSION

Pine forest, beaver ponds/bogs, and upland conifer habitat appear to be especially important for breeding birds in the Apostle Islands. Old-growth forest habitats found on Raspberry, Dev-

ils and Outer islands are also important as they provide unique habitat in the lakeshore and region-wide.

It will be interesting to see if the inverse relationship noted between island size and change in species numbers will hold over a period of years. However, this survey is designed to look at long-term trends and not island biogeography; more intensive research would be needed to prove or disprove this potential relationship.

One-half of the ten most abundant birds in the lakeshore have shown a possible decline nationwide (Butcher, et al. 1992). The abundance of these birds will be tracked through time in the lakeshore and compared with regional and national trends.

Table 8. Ranked abundance of the ten most common birds.

Temple's Survey (late 1970's)	1991	1992
Red-eyed Vireo	Red-eyed Vireo	Ovenbird
Ovenbird	Ovenbird	Red-eyed Vireo
Black-throated Green Warbler*	Black-throated Green Warbler*	Black-throated Green Warbler*
Black-capped Chickadee	American Redstart*	American Redstart*
Veery*	Nashville Warbler	Veery*
Least Flycatcher	Red-winged Blackbird*	Red-winged Blackbird*
Blue Jay	Veery*	Common Crow
Rose-breasted Grosbeak	Blue Jay	Song Sparrow**
American Robin	Winter Wren	Blue Jay
American Redstart*	Black-and-white Warbler	Nashville Warbler

*possible decline (Butcher et al. 1992)

**significant decline (Butcher et al. 1992)

This survey, similar to other bird surveys, has certain inherent biases. Among those are observer bias and bias in the distance that birds can be heard based on species and habitat type (open vs. deep woods). An additional bias which effects habitat type data can be called habitat overlap. This is when the sampling point is in one habitat and birds are heard from nearby habitats. This problem is most pronounced in open areas and beaver ponds/bogs which are very small and often only have one sampling point.

Apostles Islands National Lakeshore contains some of the few remaining fragments of old-growth forest in the Upper Great Lakes and some relatively large tracts of unbroken second-growth forest. The lakeshore will be protected in the future and will therefore be important for comparisons with mainland areas which are subject to increasing development pressure and forest fragmentation.

This survey will be conducted on an annual basis. Future surveys will be very important to document changes in breeding birds in the Apostle Islands. In addition, results of this survey can be used as a "piece in the puzzle" to provide a better understanding of the status of breeding birds on a regional and continental scale.

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Albino Red-tailed Hawks of the Wisconsin-Minnesota Border Region

Between June 1989 and February 1993, the presence of 10 albino and/or partial albino Red-tailed Hawks was confirmed in an area extending from Gays Mills to Sawyer County in Wisconsin, as far east as Black River Falls and as far west as Rollingsstone, Winona County, Minnesota. Five others were reported by knowledgeable, reliable witnesses but have not been confirmed by personal sightings.

by Philip C. Whitford

Albinism has been reported for 304 species within 54 families of North American birds (Gross 1965). It has been reported to occur in Red-tailed Hawks with some regularity (Clark and Wheeler 1987) and has been reported sporadically across much of the North American range of the species. I have one report from as far west as Montana (Dennis Flath, Montana Fish and Game Department, pers. comm. 1992). Other reports of a more local nature include several Minnesota reports gleaned from *The Loon*; One in Aitkin County 1987 and one in Yellow Medicine County 1974. These examples were cited with Bruce Fall's report of an albino hawk in Winona County in 1990 (Fall 1992). That same article contained a mention from an unidentified Associate Editor of *The Loon*, that one or more partial albino Red-tailed Hawks are seen at Hawk Ridge,

Duluth MN, every fall during migration. Other reports from *The Passenger Pigeon* list albinos sighted in western Wisconsin (Whitford 1991a, 1991b; Lauten 1991). These were combined with more recent personal observations of albino Red-tails from western Wisconsin (Whitford 1992) and reports from new sources. What began to show as these reports from Wisconsin and Minnesota were collected and scrutinized was a pattern that piqued the curiosity. These local area reports were not sporadic sightings of single albino Red-tails from far distant areas of the country. Instead, many albino hawks were being sighted in a limited area and within a relatively short period of time, 1989–1993. It did not appear that these observations were of a single transient bird sighted in many locations. Most of the sightings by others and by Sam Nettleman and myself

were repeated at the same sites enough times to indicate the birds were likely to be territorial residents rather than migrants or transients. I began to look for explanations how and why this might occur and what factors might contribute to that pattern, beginning by learning more about albinism and coloration in birds in general.

Total albinism results in a complete lack of pigmentation over the entire body, including the eyes. Partial albinism affects only parts of the body. Either form is stated to be mainly due to the genetic absence of the enzyme tyrosinase (Welty and Baptista 1988). They state that the incidence of albinism is highest in species which are social or sedentary—situations conducive to inbreeding. The condition of absence of pigment with normal eye color is also referred to as leucism, but is reported to normally produce symmetrical areas of pigment on opposite sides of the body when incomplete (Buckley 1987). These areas of pigment can be normal color for the species or represent only one of the several colors which are part of the pigment blend which causes normal coloration of feathers.

The pigments for normal feather color in hawks (other than white) are a blend of rod-shaped eumelanin particles which produce black or dark grey color, and oval granules of pheomelanin which produce browns, dull yellows and dull reds (Welty and Baptista 1988). All melanin forms require oxidation of tyrosine by the enzyme tyrosinase to form. The amount and kind of melanin formed depends in part on the amount of various amino acids, especially tyrosine, available from the diet. Genes coding for the production of tyrosinase and of all forms of mel-

anin are inherited from the parents, as are faulty genes which fail to produce these products in albino hawks.

The pigments for each feather are produced by cells called melanocytes arranged in a ring shape in the inner malpighian layer of cells of the feather germ at the base of the feather follicle. These cells produce the barbs and barbules which then migrate up to a dorsal position on the ring and join the shaft of the feather as it grows outward, pushed by new cells added from below. The pigments produced are distributed to the developing barbs and barbules by long cellular processes of the melanocytes. Each melanocyte makes only one type (color) of pigment (Welty and Baptista 1988) but several may contribute to a single barb or barbule of a feather to produce its final color. When the melanocytes fail to make the pigments and/or deposit them the feathers are white, the bird an albino or partial albino.

LOCATIONS AND DESCRIPTIONS

My first introduction to albino Red-tailed Hawks was on 14 June 1989, reported in detail elsewhere (Whitford 1990). The hawk (#1 on accompanying map, Fig. 1) was near the Winona State University campus and I was able to spend many hours attempting to photograph it. As I pursued this bird I came to know Sam Nottelman, the man who became my compatriot in the chronicling of all the other white hawks eventually found. Sam, a local musician and decoy carver of some renown, had first heard of this hawk from the same source that I had, a young man named Jim Tikal. Jim first saw the hawk on June 14th and came to my office to get me to confirm that

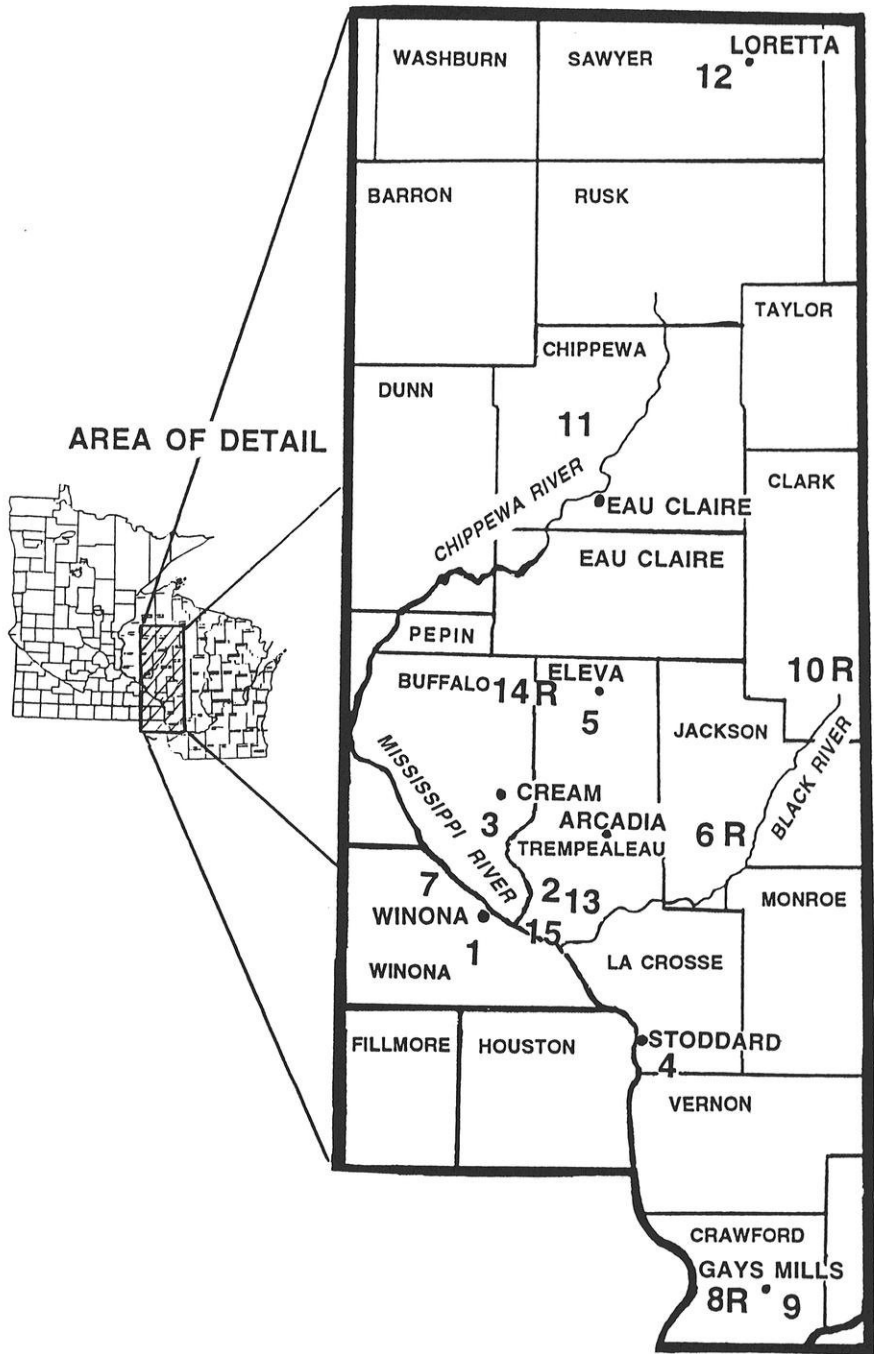


Figure 1. Locations of known albino and partial albino Red-tailed Hawks of the Wisconsin/ Minnesota border.

the bird was indeed an albino hawk. He had seen it in a tree near the local landfill site for Winona. I went to the site, about 1.5 miles south of Sugar Loaf Bluff on Highway 43 and confirmed the bird to be an albino Red-tailed Hawk, using a 30× Bausch and Lomb spotting scope. Species confirmation was easy since it had several rufous tail feathers. Otherwise, it was almost completely white with the exception of 8 to 9 dark grey primaries on the wings. Colored areas were more or less symmetrical on this bird so leucism was a possible diagnosis for it.

I returned to the site regularly to record the hunting pattern of the bird and to get further details of coloration. It was highly territorial and was seldom seen more than a half mile from the original site. The main territory used by this hawk, as best we could judge from over 60 ground and airplane observations, was roughly a mile long east to west and three fourths of a mile wide. It was confined predominantly to a single narrow coulee and the adjacent valley. The territory was shared by a smaller, normal colored, Red-tailed Hawk, presumed to be the male of the pair based on its size. The male often spiraled on rising air currents for periods of 20–30 minutes at a time. In contrast, the white hawk seldom soared and spent most of its time hunting from perches in trees either on the edges of small alfalfa fields in the coulee bottom or near the tops of the valley walls where white birches were abundant. On at least four separate occasions I watched as it dropped straight down from these perches onto prey below.

In the two years since we first saw it, we have noted an increase in the number of dark pigmented primaries

with successive molts. There are now at least 14 dark primaries on this bird, but the body has remained white and the tail is similar to the first observations. Local residents we questioned said they had seen this same bird in the area for 5–6 years before we began watching it. Our last sighting of it was 8 January 1993.

A picture of that first hawk was published in the local paper, *The Winona Daily News*, 26 September, 1990. The article was followed by several calls from local residents who claimed they had seen white hawks elsewhere in the area. The first call led to another albino from a farmer, Marcel Litscher, who lived across the river in Beuhler Valley, Wisconsin, roughly ten air-miles from the hawk we had been watching. That led to the second published report (Whitford 1991A). This bird (#2) was completely white with white bill, tarsus and talons. The eyes were finally determined to be a pale, pearl white, not the dark eyes of the first hawk found. The pink eye usually associated with albino animals result from blood within the eye being visible in the absence of pigment in the iris. Hawks have a heavy sclerotic ring- a ring of bone under the iris- that would prevent the blood from showing through and produce the eye appearance we observed. Thus, this hawk would best be considered a complete albino.

Again, this bird had a very fixed territory, just under one square mile, encompassing forested coulee walls and adjacent farm lands. We were told that this bird had been present for at least 7–8 years. We regularly observed this hawk from the fall of 1990 through summer and fall of 1992. During that time it was frequently seen with a

small, normal-colored, Red-tail assumed to be a male and its mate. It has also been seen with another white Red-tail (#13), of roughly equal size- presumed to be another female-first seen 16 June 1992. We believe that hawk to have been a partially-fledged young of the year, since both known adults freely tolerated it and hunted with it within their territory. Sam observed and photographed another partially white offspring in summer of 1991, again evidencing the pearly white eyes of the older female. This young bird had a white head, a slightly streaked breast and a mottled back; the least white on any of the partial albinos we had seen. Thus, we did not count it among those listed here.

The next albino Red-tail (#3) we saw resulted from an accidental injury from a car or truck on 5 September 1990 (Whitford 1991b). The bird was found on Highway 88 just south of the town of Cream in western Wisconsin by Susan Engstrand of Fountain City, Wisconsin. It was brought to our attention by Dr. Laura Johnson, a veterinarian at the Hillview Animal Clinic in La Crosse, Wisconsin. She knew of our interest in the white hawks and was good enough to call, thinking that this may have been the one of the birds we were studying. I was able to see and photograph the injured hawk before it was transported to the Raptor Rehabilitation Center of the University of Minnesota. Photos and personal observations show the hawk to have been almost completely white with only faint traces of normal rufous color in 2 to 3 short vertical segments along bar-bules on otherwise white tail feathers. There was no symmetry or pattern to their placement. The tarsals were a rich cream color, the bill light with a

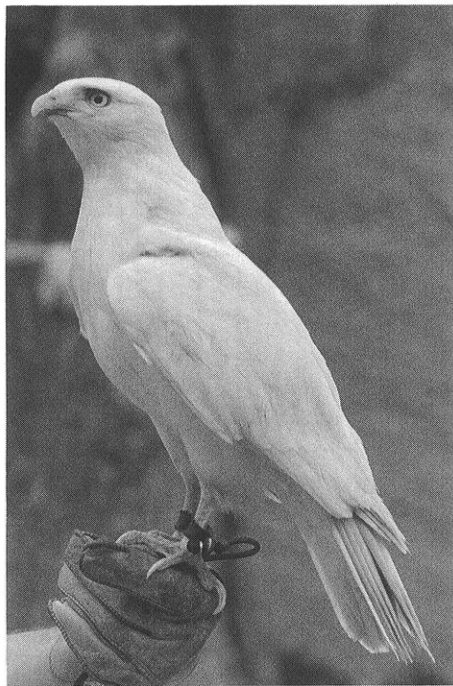
black tip. The eyes, observed at close range, were fully pigmented, a deep brown, haughty and without fear. Despite its almost complete white coloration this hawk must be considered a partial albino due to the presence of pigments on feathers. It was an un-re-countable thrill to see and touch such a spectacular bird at close range.

Ultimately, this hawk was euthanized since spinal injuries precluded its ever being able to stand or fly. I was fortunate enough to get federal and state permits to regain the carcass from the Raptor Center for the collection at Winona State University. It can be seen there by the public in a display case on the second floor of Pasteur Hall. A full museum taxidermy mount was prepared by Mr. Don Buck, of Homer, Minnesota, who was kind enough to donate his time, materials and talents for the project.

The next hawk we observed (#4) and confirmed resulted indirectly from the third. Dr. Johnson told a friend about the albino hawk in her care and the friend responded that she saw one each day as she drove to work. With a few phone calls we got a specific location, description of how to find it and times when it was seen. Sam and I saw it on our first foray to the site, and numerous times since. The location is roughly three miles southeast of the town of Stoddard, Wisconsin, about two miles from the Mississippi River valley itself. The hawk frequents the area near an old one-room school-house atop the bluffs on County Highway O. This bird disappears into coulees on both sides of the 1/2 mile wide strip of bluff-top fields where we've seen it. We have never seen it more than 3/4 mile from the old school-house on the bend. This hawk is easily



#3



#12



#4

Photos of albino hawks from Cream (#3), Stoddard (#4) and Winter (#12) to illustrate variation in eye color and relative amount and distribution of feather pigmentation.

recognizable by its varied colors, a mottled and haphazard mixture of deep blacks, rufous brown and white. Its size indicates it is a female. We dubbed it "The Calico Hawk", a good example of a partial albino. It lacks the symmetry of feather color reported for typical leucism and has a misaligned red-brown "beret" of contour feathers at a jaunty angle on the right posterior of the head. There are numerous black and/or rufous tail feathers as well as scattered examples of both colors among the wing's secondaries and primaries. Single feathers of one color or another are thinly scattered through the major areas of white on the back, wing coverts, breast and head. Our most recent sighting of it was 12 October 1992.

The fifth albino Red-tail was reported to me by several people following a story about the hawks in the LaCrosse Tribune, 10 November 1991. The first report was a phone call from Dennis Maule of Independence, Wisconsin, 11 November, 1991. On 18 January I received a letter from Ray Reinholtzen of Blair, Wisconsin. Both gave details of sightings of a white hawk, apparently a Red-tail, just along Highway 93 north of Elk Creek and South of Eleva in Trempealeau County. Mr. Reinholtzen was good enough to send records of sporadic observations of this bird extending from October 1990 to 25 May 1992, including one where it had a smaller, normal-color Redtail with it. This, once again, made it very probable that the albino was a female. He reported the location to be between County VV entering Highway 93 from the west and County H entering from the east. He was able to determine that the bird had "a rusty tinge to a few of the tail

feathers", which helped confirm it as a Red-tailed Hawk, and a partial albino. Eye color is still unknown. Sam and I went to find it but never succeeded from the ground. Numerous people at the site said they saw it often, but it eluded us. I finally was able to confirm the sightings myself via airplane on 22 June 1992. The most recent report of this bird was again from Dennis Maule who saw it at the same site 9 August, 1992.

The sixth bird was reported to me by Carol Gainer of Ettrick, Wisconsin, in a letter dated 16 November 1991. She reported seeing a large white hawk "with a few rust-colored feathers" along Highway 53 between Galesville and Ettrick. It was hunting in the marshy area where Beaver Creek joins French Creek. This bird has not been reported again and may have been a transient, since hawk migrations continue through this date.

The next albino to turn up (#7) was just north of Winona, Minnesota. The precise location is two miles west of the town of Rollingsstone on County Road 248. While we had heard rumors of such a bird in the area, we did not locate it until after specific details of sightings on 10 and 17 November 1990 and the location were published (Fall 1992). This bird was still present at the site 14 October 1992.

The eighth and ninth white hawks came in rapid succession. Both were reports from Crawford County near the town of Gays Mills, Wisconsin. Number eight was first reported to me by Mr. Jack Rath of Gays Mills in a letter dated 16 December, 1991. He included descriptions of multiple sightings over several years time. An accompanying plat map showed the location to be only 3-4 miles east of the

Mississippi River on Highway 171. The hawk was last seen in January 1992 and is suspected to have moved due to extensive habitat disturbance in the area via logging and highline construction. While marked with an "R" on the map, the repeat sightings and descriptions of this bird I received when I went to see Mr. Rath leave little doubt that this bird was a female Red-tail and was resident in the area. Whether it was a complete or partial albino remains unknown. The second hawk in the area was reported to me by Mr. Mark Hobbins of Bell Center, a small community just south of Gays Mills, via a letter dated 4 January 1992. This hawk has been a long term resident of the area north and west of Sand Creek Road just northeast of Bell Center. Mr Hobbins reported it was present for several years. It is nearly completely white with 2-3 black secondaries in the left wing. The eye color has not been determined. Size indicates it to be a female. The most recent report of sightings by Mr Hobbins was 22 October 1992. I wish to thank both Mr. Rath and Mr. Hobbins for their kindness and assistance when I came to see these hawks and for making me aware of their existence.

The tenth white hawk was reported to Sam and has not been observed by either of us. It was said to reside just north of Merrillan, but precise details of location and description are lacking. As such, it is indicated with an "R" to indicate we did not see it and cannot confirm it.

The eleventh and twelfth white hawks were seen north of Eau Claire and reported previously in these pages (Lauten 1991). He reported two sightings of an albino Red-tail with a dark patch on the nape of the neck just

north of Eau Claire on Highway 53, near exit 99, March and April 1991, the eleventh hawk. His description and witnesses leave little doubt of the species and that the hawk resided in the area. He reported a second hawk much farther to the north and east. This hawk was first reported to him by Lowell Tesky, DNR Assistant Wildlife Manager, Hayward, Wisconsin. Mr. Tesky had photographed the white hawk 4 May 1991 just west of the town of Winter in Sawyer County, Wisconsin and was kind enough to send me a copy of the photo. Shortly thereafter this small male albino Red-tail was captured in a weakened, emaciated state and sent to a rehabilitation center (Project H.A.W.K.). While it was there Mr. Lauten was able to see it and described it thoroughly (Lauten 1991). The hawk was treated for a lung worm infection and fed well. I was told by Mr. Steve Martin (bird specialist at the Apple Valley Zoo, Minnesota) that the hawk was released in the area where it was originally found and recaptured a month later in emaciated condition once again. It is uncertain whether his failure to fend for himself successfully in the wild indicates that he was a poor hunter, or whether it was the result of being unable to claim and defend a feeding territory given his color and the small size of males of the species. After this second rehabilitation treatment the bird was sent to the Minnesota Zoo where it is now seen in daily bird shows under the direction of Mr. Steve Martin. Sam and I went to view it there 2 July 1992, at Mr. Martin's kind invitation. Since I had a photo of the pure white bird sent me by Lowell Tesky, I was surprised to find that the male was now a very light brown, with streaks of light buff color over much

of the body, and with rufous color on the tail about half as dark as a normal Red-tailed Hawk. We were told it was mostly white when it arrived, but that the color deepened when the bird molted from first to second year plumage. This may indicate that some of the color it gained is related to the improved diet and better availability of protein for pigment production that accompanied captive existence. The talons, beak and legs remained a translucent white. The eyes were the pearl-like white with no sign of pigment in the iris, like those of birds 2 and 13. From its first pictures I would have judged it to be a complete albino, its current color indicates it to be a partial albino. The fact that it is the only known albino male hawk among all those seen may reflect either poor survival of albino males or a strongly skewed sex ratio for expression of the trait.

White hawk number thirteen was seen in Beuhler Valley, in company with bird #2 and her mate, as mentioned earlier. Both of these white hawks lacked any discernable markings that would help identify them. We thought it likely that this second was an offspring of the resident white hawk, hatched in 1992 and nearly fully fledged when seen hunting on 10 August 1992. If our assumption is correct, this would indicate that white females can produce white offspring when mated with normal colored males. The first report of two white hawks in the valley was 16 June 1992, when two motorized hang-gliders and their pilots were brought from Tomah, Wisconsin, to attempt to photograph the original white hawk from the air. We were surprised hear over the walkie-talkies that both pilots simultane-

ously saw white hawks on opposite sides of the same ridge—the ridge where the original hawk had nested that spring. This second white hawk was present in the valley for at least 8–10 weeks, making it more probable that it was an offspring of the original. The second hawk was not seen there after 10 August 1992 and is thought to have dispersed to find a territory of its own.

The fourteenth white hawk was reported to Sam in August of 1992 by John Ebersole of Trempealeau, Wisconsin. This bird was seen along Highway 88 between Mondovi and Gilmonton, Wisconsin, about ten air miles from the Elk Creek/Eleva Hawk. A precise date was not given though the sighting was summer 1992. Mr. Ebersole had transported the cream hawk to La Crosse after its injury and thus was familiar with the appearance of an albino Red-tail. I think it probable for this reason that this was a valid sighting, though neither Sam or I have seen it.

The last hawk (#15) was reported to us 3 February 1993 by Dr. Carol Jefferson of Winona State University. She saw it several times during January and February 1993 in the Mississippi River Valley near Bluff Siding, Wisconsin. It is full white without visible markings. She reported it to be using a portion of the Trempealeau National Wildlife Refuge island and backwater areas in its hunting. She speculated that it was taking advantage of easy hunting for voles in the area. Shallow snow depths and water on the ice forced voles to travel on the snow surface rather than tunnel under the snow, making them easy prey for hawks. This hawk has been seen over an area of several square miles and may not have a de-

fined territory in the valley. It is possible that this same bird was using the bluff tops near Bluff Siding in fall (we had a single Fall 1992 report of one sighted there). A white hawk reappeared 20 February 1993 at Bluff Siding. The hawk in the refuge failed to be seen there again after this date. If this is the same bird, its first appearance at Bluff Siding nearly coincides with the dispersal of #13 from Beuhler Valley, ten miles to the northeast. It could easily be the same bird.

DISCUSSION

With all the known birds listed, the pattern appears to center around the area of Arcadia, Wisconsin. It is here that multiple white hawks have been found within the shortest distances of each other, often as little as 10 to 15 air miles between individuals. Farther to the south and north the distance between reported white Red-tails increases but is still well below that observed for sporadic continental sightings as a whole. It would appear that the incidence of albinism and partial albinism is much higher in this local area of the coulee region than elsewhere in the country. The most logical explanation for these observed phenomenon would be that there is a high level of inbreeding within this population. Evidence that supports that is indirect, such as the reports that these hawks don't migrate but are seen on their territories all winter. Red-tails from farther north migrate through the area and mingle on the wintering areas, thus having the opportunity to mix genes from distant populations. The extensive, rugged, forested, coulee terrain apparently provides adequate food resources to carry the birds

through the somewhat milder winters of this region. These non-migrating Red-tails are likely to choose mates from the local area, ones with a higher probability of carrying the genes contributing to albinism. It is quite possible that the mutation leading to this condition arose spontaneously at least once in the area among the non-migratory population. Depending how long ago it first arose, and for how many generations it has been present, it is likely to be present in the recessive form in many of the normal colored local birds.

No one knows the exact mechanism of transmission of the genes for albinism in hawks. The fact that we have confirmed only one male with the condition and many (a minimum of 7, maximum 14) females indicates that it is more likely to be expressed in females than males (or that males expressing the trait have much lower survival rates than females). Male hawks are male due to their having 2 "Z" chromosomes in all their cells. Females have one "Z" chromosome and one "W" chromosome—more or less the reverse of mammals where males are XY and females XX. In mammals, sex-linked traits such as hemophilia and colorblindness occur much more frequently in males than females because the faulty genes causing these traits are carried on the X chromosome (Starr and Taggart 1992). These genes exist in at least two forms, termed alleles. The original gene (allele) produced the materials that prevented hemophilia or colorblindness. The alternate, mutated, form of the allele fails to produce the proper materials specified by the original gene. If males inherit one of these faulty allele they show the trait because they

have no other correct copy of that genetic information. Female mammals, because they have two X chromosomes, rarely express the trait because the second X chromosome they have carries a second complete set of genetic information. For the female to show these traits requires that she have faulty allele on both X chromosomes. Since male hawks have two copies of the Z chromosome and females only one, it is probable that sex-linked traits carried on the Z chromosome would be observed more often in the females than in males—just the opposite of the mammal pattern. This also would make it possible for males with a single correct pigment allele or tyrosinase allele on one Z chromosome to have normal coloring and yet carry the defective, albino gene on the second Z chromosome without expressing it. If these assumptions are true, the normal colored males we have observed as mates to the females would have to be heterozygous for the albinism trait (have one good allele on one Z chromosome and one faulty one on the other) to permit the production of a full albino female offspring such as the one we observed. The logic behind this is that the females must contribute their “W” chromosome to produce female offspring and, as such, the “Z” chromosome with the faulty allele would have to be contributed by the male during reproduction. It is entirely possible that genes on several chromosomes contribute to the albino or leucism conditions. There is no reason to believe that tyrosinase genes (known to play a major part in avian albinism) and pigment genes are both on a single chromosome. But, both do contribute to feather coloration.

The fact that many of the hawks we

reported have some color present on the body requires some alternate explanations of possible mechanisms. The range of expression of color was substantial. The hawk from Cream, Wisconsin, had dark eyes and just tiny amounts of color on tail feathers. The one inch long vertical strips of color, $\frac{1}{6}$ inch wide and midway from shaft to edge on a single tail feather, indicated that pigment production could suddenly start after feather production had begun and stop again before completion. This would require that the melanocytes associated with pigment production within the germinal layers of the feather follicles be turned on and off again during production of that feather. On other hawks observed whole feathers, and/or groups of feathers, of brown, red-brown, or black would appear among large areas of white feathers. This latter form is reminiscent of variable expression patterns that produce spotted coats in dogs and cats. These result from expression of one allele of a gene by some cells of the body while other cells use alternate information from a second allele of that same gene found on the other half of the pair of homologous chromosomes. When cells express only one allele they often inactivate the other half of the pair (Starr and Taggart 1992). During early embryo development some portions of the skin develop from cells expressing one of the alleles, for example the one producing eumelanin and thus black coloration. Other portions of the skin would develop from the alternate cell lines which used information from the other chromosome, making either white feathers or brown pigments. All three colors could be produced on one bird (as we observed on bird #4) if

more than one pigment gene is involved, as is likely. The same would be true if the tyrosinase gene fails to be expressed in white regions and triggers sporadic normal or abnormal pigment production in others.

The single male specimen (#12), with his dramatic change of plumage raises one more question about the causes of albinism in hawks. His white eyes indicated proper albinism, especially with his original white coloring. However, after being cured of lung worms and being given an abundant, protein rich diet, his color became a very light, washed out, buff color arising from streaks of reddish brown among the white feathers. The tail feathers which Lauten described as pure white originally became the a pale uniform rufous color, about half as dark as the normal for a Red-Tailed Hawk, following the next molt. This could indicate that the tyrosinase enzyme was always present, albeit in limited quantities, but that needed amino acids were absent from his diet at the time of the white feather formation. This would conform to current understanding of dietary influences on normal coloring of birds (Welty and Baptista 1988).

CONCLUSIONS

No positive conclusions can be made from the evidence to date, but it may help to point us in the right direction towards better understanding to albinism in this species. It does seem likely

that sex-linked genes may be involved, based on sex ratios. I do believe, however, that it is safe to say this area has a higher density of albino Red-Tailed Hawks than has ever been described before. I also believe that we have only begun to know the true number of them present in this area of rugged-walled, deep valleys extending out from along the Mississippi, Wisconsin and Chippewa Rivers.

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1991 Migratory Bird Survey—Apostle Islands National Lakeshore

A long-term program to monitor migratory birds in Apostle Islands National Lakeshore was begun in 1990. During the spring and fall of 1990, migratory surveys were conducted on both Long and Outer Islands. Unexpectedly high numbers of birds were recorded during the 1990 fall survey on Outer Island, therefore, this portion of the survey was repeated in 1991. The numbers of birds and migratory flow recorded in 1991 were much lower than 1990. During both the 1990 and 1991 surveys, bird composition was heavily dominated by passerines and the falcon migration was strong. Outer Island provides important habitat and is a concentration point for migratory birds in the Upper Midwest.

by Julie F. Van Stappen and Thomas C. J. Doolittle

On August 28 and September 13 through October 6, 1991, a fall migratory bird survey was conducted on the Outer Island sand spit (Figure 1). A long-term program to monitor migratory birds in the lakeshore by park staff and volunteers was begun in 1990. During 1990, both spring and fall migrations on Long and Outer Island were surveyed (Van Stappen and Doolittle 1991). Very high numbers of birds were recorded on Outer Island during the 1990 fall survey, therefore this portion of the monitoring project was repeated in 1991 to see if 1990 was an exceptional or average migration year.

Previous studies of migratory birds on the Apostle Islands have been conducted at Outer, Devils, Stockton, and Michigan Islands by Harris in the spring of 1976 and 1977 and at Outer Island during the fall of 1978 and 1980 (Harris 1977, 1978, 1980). The greatest concentrations of migrants were seen at the sand spit on Outer Island.

STUDY AREA

Outer Island is the farthest island north and east in the Apostle Island archipelago and the second largest island in the national lakeshore (8,000

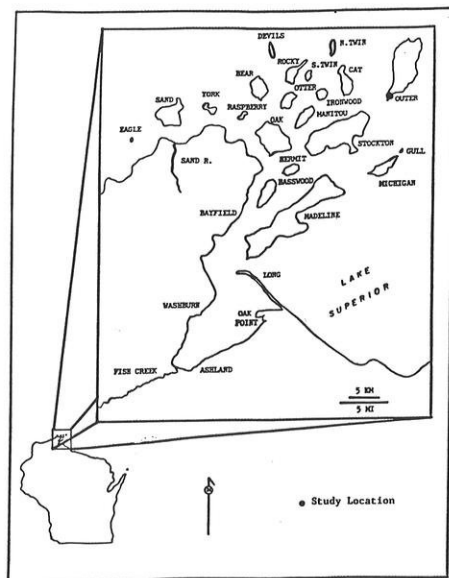


Figure 1. Apostle Islands area.

acres) (Figure 1). On its south end is a large sand spit (approximately 20 acres). The sand spit has areas of dunal vegetation, pine forest, and a large lagoon.

METHODS

We followed methods used by Harris (1977, 1978, 1980). Observation sites were established where migrants tend to concentrate and an excellent view of migrating birds was available. On Outer Island sand spit, the observation site was to the west of the campsite in the dune vegetation near the remains of an old boat. At this site, all birds seen or heard (primarily visual) were recorded during $\frac{1}{2}$ hour observation periods. The surveys began $\frac{1}{2}$ hour before sunrise and generally ended by noon. Migratory bird flow determined the length of observation time. At times during the survey, migratory vol-

ume was so high that absolute numbers of birds could not be counted for an entire survey period ($\frac{1}{2}$ hour). On those peak days, one minute counts as close together as possible were done. Fortunately, the nature of the sand spit facilitated counting the number of birds leaving the island. The departure of Merlins and peregrines which staged at the sand spit was more difficult to determine; however, only birds seen leaving the island were counted.

Prior to each survey, temperature, wind direction, wind speed, sky condition, and precipitation were recorded. These measurements were estimated. Changes in weather and relevant phenology were also documented during the survey periods.

Miscellaneous observations were recorded between sampling points and after the formal surveys were completed. This was done to document additional species in the study areas and to test the effectiveness of methods used in documenting species abundance.

RESULTS

The fall migration on Outer Island during 1991 was high, but fell short of the 1990 migration. During 22 survey days (45 hours of observation), a total of 39,435 birds were recorded (Appendix A). This compares with 141,442 birds recorded during 23 survey days (55.4 hours of observation) in 1990. Both fall migrations (1990 and 1991) on Outer Island were much higher than the 1990 spring migration (14,000 birds). The total number of species recorded in 1991 was 133, compared with 107 in 1990. Migratory flow rate in 1991 ranged from 77

birds/hour to 5,156 birds/hour with an average of 851 birds/hour. This compares with a high of 28,118 birds/hour recorded in 1990 and an average volume of 2,541.

Fall migratory bird composition on Outer Island for both 1991 and 1990 was almost completely dominated by passerines (96% and 98%). Large numbers of passerines were observed flying across Lake Superior from the north-east. Both 1990 and 1991 fall surveys had a strong migration of falcons. In 1991, 93 Merlins and 41 Peregrine Falcons were recorded; 105 Merlins and 66 Peregrine Falcons were recorded in 1990. The high number of passerines and falcons provided an outstanding opportunity to observe predator/prey interactions. Falcons could be seen chasing passerines, peregrines chasing Merlins, and Merlins chasing kestrels. "Squawks" by Northern Flickers were commonly heard. As early as 1919, observations of Merlins staging on the sand spit of Outer Island during the fall were recorded; six Merlins, numerous passerines, and frequent flicker "squawks" were noted by Poole (Jackson 1941).

With the exception of passerines, the number of species by bird group was very similar between 1991 and 1990 (Table 1). The higher number of passerine species recorded in 1991 is probably due more to slower migratory flow, which allowed for more accurate identification, than a real change in the number of species. When comparing total numbers of birds recorded by group, passerines and waterfowl showed the largest decrease. Without additional surveys, it is not possible to determine whether the decrease in numbers of birds from 1990 and 1991 is "normal" fluctua-

tion, if many birds were missed because of low cloud cover, if weather conditions caused a shift in migratory route, or if there is a "real" decrease.

The most abundant bird species recorded during the fall migrations are shown in Table 2. Six of the ten most abundant birds were common to both surveys, although relative abundance changed for some of the species. A higher percentage of passerines were identified to species during the 1991 survey; miscellaneous passerines made up 54% of birds recorded in 1991 and 80% in 1990.

Discussion of Weather Conditions—

During the fall surveys, northwesterly to westerly winds were predominant. Winds during the survey period were often strong, with wind speeds as high as 30–50 knots. Temperatures were generally in the 40s and 50s (°F) during the survey period. Cloud cover was often low during 1991 and there was precipitation during 32% of the survey time. By comparison, precipitation occurred 11% of the time in 1990.

CONCLUSION

The number of birds recorded during the 1990 fall survey on Outer Island was 3.5 times the number recorded in 1991. However, migratory flow was still twice as high in 1991 as the flow recorded by Harris (1978, 1980). Passerine counts were conducted near Duluth from the early 1980's through 1990. Unfortunately, passerine counts were not done in 1991, preventing comparisons with our 1990 and 1991 data.

In addition to weather conditions, survey period can influence migratory bird survey results. The time period

Table 1. Relative abundance by bird group.

	1990			1991		
	No. of species	Total number	Percent by group	No. of species	Total number	Percent by group
Passerines	68	138,584	98.0%	92	37,804	95.9%
Waterfowl	14	1,305	0.9%	15	418	1.0%
Seabirds	3	1,027	0.7%	4	876	2.2%
Raptors	12	352	0.3%	13	272	0.7%
Shorebirds	7	164	0.1%	9	65	0.2%
Misc.	3	10	0.0%	0	0	0.0%
Total	107	141,442	100.0%	133	39,435	100.0%

covered during the 1990 and 1991 fall surveys on Outer Island was very similar, with a couple minor differences; the 1990 survey started a couple of days earlier and lasted a couple of days longer and the 1991 survey was more continuous. Also, the 1991 survey included one day in late August, which was one of the highest migration days during the survey. Harris' surveys (1978, 1980) missed mid-September, our peak migration time. Ideally, the migratory bird survey would begin in August and continue into November. Unfortunately, this is not feasible. We therefore try to cover the peak migration time for most bird groups and keep the survey period consistent. Also, logistics during this time of year cannot be ignored. During the fall,

Lake Superior sea conditions become unpredictable and winds tend to be strong, making boat travel to the outermost island (18 miles) difficult, time consuming and sometimes impossible.

The south end of Outer Island is an important migratory concentration point. In addition to a stop over for many thousands of passerines, Outer Island is also important staging and feeding area for migrating falcons. The number of Peregrine Falcons recorded on Outer Island was greater than Hawk Ridge during both 1990 and 1991; 66 in 1990 and 41 in 1991 on Outer Island compared to 18 in 1990 and 28 in 1991 at Hawk Ridge. If time and funding allow, falcons and migrating hawks will be banded on Outer Island in the fall to provide directly

Table 2. Most abundant bird species.

1990		1991	
Species	Percent	Species	Percent
American Robin	7.7%	American Robin	9.3%
Dark-eyed Junco	2.6%	Yellow-rumped Warbler	6.2%
Cedar Waxwing	1.2%	Swainson's Thrush	3.8%
Yellow-rumped Warbler	0.9%	Dark-eyed Junco	2.3%
Common Flicker	0.9%	Cedar Waxwing	2.3%
Palm Warbler	0.8%	Palm Warbler	2.2%
Golden-crowned Kinglet	0.8%	Pine Siskin	1.9%
Pine Siskin	0.6%	Red-breasted Nuthatch	1.7%
Canada Goose	0.6%	Red-winged Blackbird	1.7%
Herring Gull	0.4%	Rose-breasted Grosbeak	1.3%

comparable data with fall banding stations such as Hawk Ridge (Duluth) and Cedar Grove (north of Milwaukee). It would be interesting to know whether birds shift between Hawk Ridge and the islands, depending on weather conditions. Banding raptors on Outer Island would provide an answer to that question (for raptors) and information on their migratory routes to the south. The next fall migration survey on Outer Island is scheduled for 1993 and the entire survey should be repeated in 1995. Future surveys will be very important to document changes in migratory flow through the Apostle Islands and to determine the normal variance in migratory numbers. In addition, results of this survey can be used as a "piece in the puzzle" for monitoring migratory birds on a regional and nationwide scale.

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Appendix A. List of birds by relative abundance.

Species	Number	Percentage
Bald Eagle	33	0.08%
Common Loon	33	0.08%
American Goldfinch	32	0.08%
Water Pipit	27	0.07%
American Kestrel	23	0.06%
Black-capped Chickadee	23	0.06%
Clay-colored Sparrow	22	0.06%
Northern Raven	22	0.06%
Unidentified Shorebird	17	0.04%
Common Merganser	16	0.04%

continued

Appendix A. (Continued)

Species	Number	Percentage
Downy Woodpecker	16	0.04%
Solitary Vireo	16	0.04%
Fox Sparrow	15	0.04%
Mallard	15	0.04%
Eastern Bluebird	12	0.03%
Common Goldeneye	11	0.03%
Greater Scaup	11	0.03%
American Redstart	10	0.03%
Barn Swallow	10	0.03%
Nashville Warbler	10	0.03%
Osprey	10	0.03%
Red-tailed Hawk	10	0.03%
Cooper's Hawk	9	0.02%
Harris' Sparrow	9	0.02%
Red Crossbill	9	0.02%
Veery	9	0.02%
Belted Kingfisher	8	0.02%
Blackpoll Warbler	8	0.02%
Unidentified Raptor	8	0.02%
Unidentified Sparrow	8	0.02%
Evening Grosbeak	7	0.02%
Cliff Swallow	6	0.02%
Least Flycatcher	6	0.02%
Magnolia Warbler	6	0.02%
Ovenbird	6	0.02%
Red-eyed Vireo	6	0.02%
Redhead	6	0.02%
Tennessee Warbler	6	0.02%
Black-throated Green Warbler	5	0.01%
Lincoln's Sparrow	5	0.01%
Orange-crowned Warbler	5	0.01%
Snow Bunting	5	0.01%
Unidentified Warbler	5	0.01%
Alder Flycatcher	4	0.01%
Chestnut-sided Warbler	4	0.01%
Gray-cheeked Thrush	4	0.01%
Green-winged Teal	4	0.01%
Horned Grebe	4	0.01%
Northern Harrier	4	0.01%
Ring-necked Duck	4	0.01%
Bay-breasted Warbler	3	0.01%
Blackburnian Warbler	3	0.01%
Broad-winged Hawk	3	0.01%
Gray Catbird	3	0.01%
Hairy Woodpecker	3	0.01%
Lesser Golden Plover	3	0.01%
Pectoral Sandpiper	3	0.01%
Ruby-throated Hummingbird	3	0.01%
Black-and-white Warbler	2	0.01%
Bonaparte's Gull	2	0.01%
Brown-headed Cowbird	2	0.01%
Eastern Phoebe	2	0.01%
Eastern Wood Pewee	2	0.01%

continued

Appendix A. (Continued)

Species	Number	Percentage
Pileated Woodpecker	2	0.01%
Pine Warbler	2	0.01%
Scarlet Tanager	2	0.01%
Three-toed Woodpecker	2	0.01%
Unidentified Flycatcher	2	0.01%
Canada Warbler	1	0.00%
Cape May Warbler	1	0.00%
Common Yellowthroat	1	0.00%
Connecticut Warbler	1	0.00%
Northern Oriole	1	0.00%
Northern Waterthrush	1	0.00%
Philadelphia Vireo	1	0.00%
Short-billed Dowitcher	1	0.00%
Snow Goose	1	0.00%
Spotted Sandpiper	1	0.00%
Turkey Vulture	1	0.00%
Winter Wren	1	0.00%
Yellow Warbler	1	0.00%
Yellow-bellied Flycatcher	1	0.00%
American Woodcock	MI	MI
Common Snipe	MI	MI
Great Blue Heron	MI	MI
Great Horned Owl	MI	MI
Lesser Scaup	MI	MI
Mourning Dove	MI	MI
Northern Goshawk	MI	MI
Olive-sided Flycatcher	MI	MI
Pine Grosbeak	MI	MI
Semipalmated Sandpiper	MI	MI
Swamp Sparrow	MI	MI
White-rumped Sandpiper	MI	MI
Wilson's Warbler	MI	MI
Yellow-headed Blackbird	MI	MI
	39434	



H.R. Schoolcraft *photo courtesy of Wisconsin State Historical Society.*

H.R. Schoolcraft and Natural History on the Western Frontier, Part 3: The 1820 Expedition Continued

by Michael Mossman

Our story continues, at the American Fur Company post on the Fond du Lac (St. Louis) River, upriver from present-day Duluth. The date is 7 July 1820.

The expedition exchanged its 3 largest lake canoes for more manageable ones, and spent the next 3 days hauling across the 9-mile-long Grand Portage of the Fond du Lac, often in the rain. The legendary strength and stamina of the voyageurs in portaging was here manifested. "The usual load of a French voyageur is about 180 pounds, or two packs, which weight they carry without great fatigue, through the mud, sometimes (as on this portage) up to their knees. But we found an astonishing difference between these men and our soldiers and indians, who seriously felt the consequences of their exertion, altho' they carried only about half the weight of the others" (Trowbridge 1942:246).

Douglass (1969:69–71) was more impressed by the local Chippewa and French-Chippewa who had been hired to help portage:

"There is one, a half Frenchman, a tall

elegantly made man to whom I have given the name Lord Byron . . . This man would shoulder at a load two kegs of bacon weighing not less than 125 pounds each and a bag of flour or corn nearly a hundred pounds more, and with this he would walk or rather trot off in style which would have fatigued me had I been perfectly unloaded . . . But if I was astonished by the loads borne by the men, I was even more so by the scarcely less burdens carried by the women, for all joined in the labour of the portage. Lord Byron's mother carried at one load her birch canoe of sufficient size to carry a whole Indian family with all their baggage, at another the mats and birch bark for a wigwam, two or three Indian bags of skins, fishing tackle, etc, a large camp kettle with all the cooking apparatus and eating utensils, and, in short, an entire Indian lodge with all its furniture and appurtenances."

On 10 July the expedition was well into present-day Minnesota. Here a group of 16, including Schoolcraft, Trowbridge, Doty, soldiers, an interpreter, and guides, departed to walk overland while the others stayed with the canoes to navigate the series of difficult rapids and portages of the Fond

du Lac and then the Savannah River. They were to meet beyond the Savannah Portage at Sandy Lake, which empties into the Mississippi. Douglass' journal describes the latter route, including forest cover, the voyageurs' dexterity in ascending rapids, the difficulties of portaging through tamarack swamps, and the vexations of mosquitoes, and black, sand, and horse flies. He noted "large forests of pine trees . . . killed by the fire". The expedition's physician, Dr. Wolcott, also wrote good descriptions of the vegetation, which he provided to Schoolcraft when they rejoined at Sandy Lake (HRS:219-21).

Schoolcraft described his group's trek through a mosaic of uplands and lowlands:

"We left . . . each carrying a pack containing five days' provisions [salt pork, jerked beef, and hard biscuits], a knife, a musquitoe bar, and a cloak or blanket . . . Our guides taking their course by the sun, immediately struck into a close matted forest of pine and hemlock¹, through which we urged our way with some difficulty. On travelling two miles we fell into an Indian path leading in the required direction, which we followed until it became lost in swamps. After pursuing it two miles, we passed through a succession of ponds and marshes, where the mud and water were in some places half leg deep. These marshes continued four miles, and were succeeded by a strip of three miles of open dry sandy barren covered with shrubbery, and occasionally clumps of pitch pines. This terminated in a thick forest of hemlock and spruce of a young growth, which continued two miles and brought us to the banks of a small lake, with clear

water and a pebbly shore . . . [then two more small lakes] filled with pond flowers, rushes, and folle avoine . . . Here they found a large green tortoise [probably snapping turtle], which they killed in a very ingenious and effectual way, by a blow with a hatchet upon the neck, at the point where the under part of the shell serves as a sheath to it . . . it was carried along to be eaten at night . . . The principal forest trees are tamarack (*pinus pendula*), yellow pine, cedar, spruce, and birch. The winter green has been common on the pine barrens, the sarsaparilla (*aralia nudicaulis*) in the forests." (HRS:210-11)

They also killed a "prairie hen" [Greater Prairie Chicken or possibly Sharp-tailed Grouse]. They then became lost for 2 days in a series of cedar swamps and tamarack bogs, "which one would think impenetrable were he not led on by an Indian" (Doty 1895:208). As Trowbridge (1942:248-49) described,

"we found ourselves at the edge of a horrible swamp, covered with water or mud, in which we sunk to our knees at almost every step. The travelling was more difficult on account of the trees that had been blown down in great numbers by a violent wind. Over these we were obliged to climb, sometimes to a great height and not infrequently at the risk of our necks.

"We succeeded after a painful struggle, in getting through this swamp about the middle of the afternoon, but it was succeeded by another much worse.

"This was a kind called Tamarack Swamp, from the timber that grows in it, tho' we found very few trees of this kind here. These swamps are covered with water as the others, on which lays a thick [sphagnum] moss, so tender that it will not bear the weight of a man. Consequently at every step we took we were entangled in the moss, and often prostrated headlong in the water.

¹For current species nomenclature, see Appendix 1 in *Passenger Pigeon* 54(1):79-84.

"We saw no wild animals on our route, tho' the tracks of the Moose and Bear were visible in many places . . ."

According to Schoolcraft,

"While toiling our way through this dreary and inhospitable region, the remark of the Baron La Hontan² respecting the northwestern region of Canada, that it is 'the fag end of the world', came forcibly to mind . . . [The present area] is subject to the influence of a winter atmosphere for nine months of the year, and . . . can never be rendered subservient to the purposes of agriculture, or traversed by roads. Even the Indians never visit it except during the winter season upon the ice, for the purpose of taking the marten, beaver, and muskrat. The dreadful storms which prevail here at certain seasons are indicated by the prostration of entire forests, and the uprooting of the firmest trees. These lie invariably pointed towards the south-east, indicating the strongest winds to prevail from the opposite point. It is one of the most fatiguing labours of the route, to cross these immense wind-falls—the trees are chiefly tamarack, spruce, cedar, ash, white birch, and hemlock.

"In crossing the swamp we found the cranberry (*oxycoccus macrocarpus*) in great abundance . . . The agreeable taste of this berry was a grateful treat, at a time when we were much fatigued by travelling for many miles over an elastic bog where no drink-water could be procured." (HRS:213–14)

Finally they emerged from the swamps and followed a trail "across a succession of sandy ridges covered with white and yellow pine, with some poplar and thickets of underbrush in the valleys, and altogether of a barren

appearance. In crossing these I noticed among the shrubbery the witch hazel, sarsaparilla, wild cherry, kinnikinick, and the Labrador tea plant . . . The blue jay and brown thrasher, the pigeon and turtle dove occasionally appeared in the forest to enliven this part of the journey." (HRS:215–16)

By the 14th, the entire party was rejoined at the American Fur Company post on Sandy Lake, in present-day Aitkin County, Minnesota. Here they were fed boiled duck and dried buffalo meat. Cass held council with resident Chippewas. Schoolcraft, Trowbridge, and Doty collected information on the various Chippewa bands, including their uses of wild animals and plants:

"This [Sandy Lake] band subsists by hunting the beaver, otter, muskrat, moose, marten, wolverine, and black and silver fox. They have neither the deer, buffalo, or elk. In the fall they gather large quantities of the wild rice, which is the only bread stuff of the region." (HRS:223–24)

According to Doty (1876:195–96) the Leech Lake Chippewa band, which inhabited the area westward from the Sandy Lake territory to the Red River, hunted

"deer, bear, beaver, otter, muskrats, marten, fisher, raccoon, and a few red and gray foxes. The only buffalo they kill is on the border of the Sioux country . . . None of the Western waters are as abundant in white fish as Leech Lake . . . There are various other fish in these and other lakes and rivers, as pike, carp, black bass, cat-fish, etc. A fish called by the savages too-nee-bee, and by the French "telibeas" not equal to, but greatly resembling the white fish, is found in the large lakes . . . and particularly in Leech Lake. The fish and the wild rice are the chief sustenance of the

²Louis-Armand de Lahontan (1666–1716) was a French military officer who explored the upper Great Lakes during 1668–69.

traders, and without them the trade could scarcely be carried on.

"The water fowls throughout this Northwestern country are nearly all the same. They are the bustard, wild goose, several kinds of ducks, as the black, French (nearly resembling the tame), wood duck, etc., swan, pelican, loon, and the gull. A fowl called the cormorant is found here. It lives on fish, is nearly the size of the raven, and of the same color: it has a leg like a loon, a bill about 4 inches long shaped like a snipe's, except at the peak, which is rather crooked and sharp like an eagle's: it alights in the water and on trees, and, it is said, *roosts* by suspending itself by the bill from the limb of a tree. The birds are nearly the same as those commonly found in the Eastern States.

"The moose, elk, rein and common deer, wolf (not north of Sandy Lake), red and white ermine, wolverine, lynx, skunk, porcupine, wood-chuck, and red striped squirrels are found in different parts of the country.

"There are many turtles of various sizes: some very large and delicious are found in the lakes. No rattle, or other snakes, except the small striped or garter snake."

Trowbridge (1942:330) added, "The pheasant, partridge & pigeon are found here, the latter numerous", and that the "bustard" and "wild goose" were similar. Roberts (*in* Trowbridge 1942) interpreted "pheasant" as Ruffed Grouse, "partridge" as Spruce Grouse, and "bustard" as Canada Goose.

The Fond du Lac band occurred from the Sandy Lake area, eastward as far as the Brule River in present-day Douglas County, Wisconsin. According to Doty (1876:201), "Their principal game is moose, bear, marten, mink, muskrat, case cat (lynx), hedgehog [porcupine], of which they have

great numbers, otter, and a few beaver. They have neither the buffalo, deer, wolf, raccoon, fox, or wolverine."

Apparently in reference to all 3 bands, Schoolcraft stated:

"When their wild rice is gone, they rely chiefly upon the fish which are abundant in all the northern lakes. Hunting is less an object to procure meat than to procure furs, the animals being mostly of the small and well-furred kind. In times of great scarcity they resort to several roots of an alimentary character . . . The principal of these is the Indian potatoe [*Sagittaria* spp.], a production that remains unnoticed in American Botany . . . In desperate cases, they also collect the river and lake muscles [mussels], which are eaten after having been previously boiled. These are considered by the Indians the most insipid food which they are of necessity to make use of. There is a species of lichen in some parts of the country, which is also sometimes eaten. It is called *waac* by the Indians, and *Tripe de Roche* by the French and is eaten, after being boiled down to the consistence of a mucilage." (HRS:229-30)

Doty's and Trowbridge's information on trade indicated that the following pelts and other articles were of equal value: 1 beaver, otter, or bear; 4 white-tailed deer, lynx, or fisher; 6 marten, mink, or raccoon; 20 muskrat; 2 hatchets, 4 large knives, a pint of gunpowder, 60 rifle balls, 20 pounds of sugar, 6 plugs of tobacco, and a pair of leggins with ribbons and beads. A rifle was worth 5 beaver skins.

On 17 July, 25 of the men left in 3 canoes to reach the headwaters of the Mississippi River, while the others remained at Sandy Lake. The 25 included Cass, Schoolcraft, Douglass, 3 other gentlemen, and 19 voyageurs

and Indians. They paddled down the short outlet of Sandy Lake, then up the Mississippi past upland hardwood forest—some of which had recently burned. On the 18th they camped near the inlet of the Prairie River, and Schoolcraft noted:

"The common fresh water muscle is very abundant along the shore, and some of an extraordinary size. Ducks and plover have been continually in sight. The robin (*turdus migratorius*), brown thrush, blackbird, crow, and water loon have all been noticed. It is not a region favourable to serpents, and the Indians say that the common garter (*coluber aestivus*) and water snake are the only species known." (HRS:241)

The next day they passed the falls of Pakagama and entered the extensive area of "Great Morasses, or bog meadows" (Schoolcraft 1855:141). In this "broad marshy prairie" bounded by red pine barrens, they camped "on a spot somewhat more solid than the rest" (Douglass 1969:83).

"While sitting in our canoes in the centre of this prairie, the rank growth of grass, rushes, etc completely hid the adjoining forests from view, and it appeared as if we were lost in a boundless field of waving grass. Nothing was to be seen but the sky above, and the lofty fields of nodding grass, oats, and reeds upon each side of the stream. The monotony of the view can only be conceived by those who have been at sea—and we turned away with the same kind of interest to admire the birds, and water fowl, who have chosen this region for their abode . . . Ducks have been abundant throughout the day. We saw no plover in the prairies, although they were common below. The blackbird has been constantly in sight, and the small white gull, such as is common upon the lakes, has been so abundant as to annoy

our progress, particularly by its scream, which is harsh and unpleasant. These birds had their nests all along the banks, and were constantly alarmed for their young. The loon, the wild goose, and the heron have also been observed. The weather has been cloudy, with occasional gleams of sunshine, and chilly towards evening. At the place of our encampment we found a very delicious species of red raspberry growing upon a small bush of the size of a strawberry vine. Here also, as night approached, we first noticed the fire-fly, which has not before been seen upon the Mississippi." (HRS:242–44)

In his *Summary Narrative* Schoolcraft (1855:128) described the birds of this marshy prairie thus:

"The banks of the river were but just elevated above these illimitable fields of grass and aquatic plants. In these banks the gulls had their nests, and as they were disturbed they uttered deafening screams. Water fowl were intruded upon at every turn, the blackbird and rail chattered over their clusters of reeds and cattails; the falcon screamed on high as he quietly sailed over our heads, and the whole feathered creation appeared to be decidedly intruded on by our unwonted advance into the great watery plateau, to say nothing of the small and unimportant class of reptiles who inhabit the region."

Schoolcraft used the term "gull" for any species in the "gull family" (Appendix 1), and the "small white gull" noted here was evidently Forster's or Common Tern, or both. His blackbird was probably the red-wing, the small raspberry was probably dwarf raspberry, and according to the standard of his time he used the general term "reptile" to include amphibians as well. What did he mean by "falcon", here and elsewhere in his narratives?

He used the genus *Falco* for 4 diurnal raptors in his *Summary Narrative* appendix (1855:414) (Appendix 1), including Bald Eagle, American Swallow-tailed Kite, and Merlin. The appendix's latin name for the fourth species, *Falco communis*, fit the Peregrine Falcon then as it does today, but it had formerly been used for Rough-legged Hawk as well (Coues 1874). Schoolcraft's common name for *F. communis* was "chicken hawk", which corresponds to a buteo such as Red-tailed Hawk, as do his portrayals of "falcons" in the above passage and at the Grand Sable Dunes (20 June). Although Schoolcraft occasionally used the undefined term "hawk" in his narratives, he never specifically described or named any buteos. The identities of "falcon" in his text and of *F. communis* in the appendix thus remain dubious, but are probably Red-tailed Hawk.

Late the next day,

"On passing Lake Winnipeg, we met a couple of Indian women in a canoe, being the first natives seen on the river . . . They had come down the river for the purpose of observing the state of the wild rice, and at what places it could be most advantageously gathered. None, however, was yet sufficiently ripe to admit harvesting . . . In the course of this day we have observed, either upon the river or its banks, the wild goose, duck, turkey-buzzard, raven, eagle, kingfisher (*alceda alcyon*), and blackbird." (HRS:246-47)

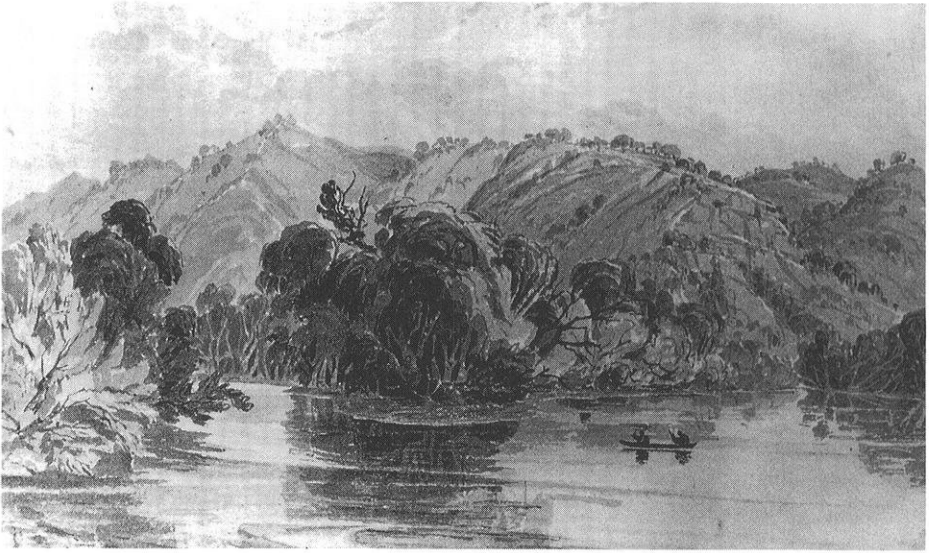
They camped on Great Lake Winnipeg (Winnibigoshish):

"The stars presently shown out with increased lustre, and the sweet moon shot her mild rays through the foliage of the old oaks which overshadow our camp, while her image came reflected from the surface of the still smooth lake.

No sound disturbed the silence of the scene except the deep solemn, yet melodious night cry of the loon which came from the lake with a peculiar and indescribable effect. What a season in this remote region for indulging the imagination. Then, images of my home and of dear friends, how strongly did they recur to my mind . . ." (Douglass 1969:84)

The next day, 21 July:

"Passing along the northern shore of Lake Winnipeg, we observed at a distance a rocky island of such snowy whiteness, as to give it an appearance of singular novelty, and to baffle every conjecture as to the substance of which it was composed. On reaching its shores, we found it to be a confused pile of water-worn fragments of granite, hornblende, quartz, etc. covered with a thick limey incrustation produced from the excrescence of the myriads of water-fowl who resort to it. These birds were driven away in flocks by our approach, and we particularly noticed the wild goose, black duck, pelican, cormorant, brant, and plover. On landing a dead pelican (*pelicanus onocratolus*) was found upon the rocks, having apparently been killed that morning either in a strife among its own species or through disease. No marks of violence or external disease could however be observed. This is one of the largest of web-footed waterfowl, often exceeding in size the swan. It has been known to weigh twenty-five pounds and to measure eleven feet between the tips of the wings. Its most remarkable character, and one which distinguishes it from all other birds, is a large membranaceous pouch extending from the mandible nine or ten inches down the front of the neck. This serves as a repository for its food, and when empty the bird has the power of wrinkling it up. It has the color and consistence of a wetted bladder and is naked to appearance, but on examination is found to be partially covered with a very fine



Presettlement landscape 60 miles above Prairie du Chien, looking north. Note bluffs dominated by prairie and savanna (from McDermott, 1973).

downy substance. These pouches are fashioned by the Indians into caps for summer wear, being very light and airy. Notwithstanding the great bulk of this bird, it is said to be very expert on the wing, and soars to a great height, which is some measure attributable to the extreme lightness of its bones, which do not altogether exceed a pound and a half in weight.

“Disregarding artificial arrangements, all water fowl may be considered under these great natural divisions, namely, those of the penguin kind, with short blunt wings, round bills, and legs hid in the abdomen, which dive in quest for food; those of the gull kind, with long slender legs, sharp pointed wings, and round bills, which fly along the water to seize their prey; and those of the goose kind, with broad flat bills, and heavy-quilled wings, which generally lead harmless lives and subsist mostly upon vegetables and insects. The pelican, from its singular conformation, will not, strictly speaking, fall under any of these

denominations, although it seems more nearly allied to the family of the goose. Its feathers are white all over the body, and its wings, which are strong and heavy, clothed with a thick plumage of quills and downy feathers. Its legs are red, and its bill of a greenish tinge at the base, but changing to a reddish blue towards its extremity, which is slightly hooked downward. The eyes are small compared with the magnitude of the head, and altogether the bird has a heavy and demure look. Like the heron and the cormorant, the pelican is an inordinate eater, and is represented to be indolent and stupid to the last degree . . . The popular fable that this bird feeds its young with blood from its own breast, owes its origin to the circumstance of its permitting them to eat from its pouch the food which it collects for that purpose.” (HRS:247–250)

One of the birds Schoolcraft noted on this island was “brant”. His repeated use of this term in his various

narratives is never defined, and remains enigmatic. His delineation of it as the true, strictly coastal Brant ("*Anas bernicla*", now *Branta bernicula*) in the appendix of his *Summary Narrative* (Appendix 1), is certainly erroneous. In the narrative of his earlier journey to Missouri in autumn and winter 1818, this name may have referred to species for which "Brant" was sometimes used colloquially, such as White-fronted or Snow Geese. But in the Great Lakes area during mid-summer, when he was apparently not describing rare stragglers, the term would seem most applicable to Canada Goose, were this latter not also identified by Schoolcraft as "wild goose" and "goose", the common names for Canada Goose at the time. Yet the appendix casts doubt on what he even meant by "goose", for he ascribes to it the scientific name *Anser anser*, which is the dissimilar, Eurasian Greylag Goose. Furthermore, in a later publication Schoolcraft (1840:213) stated that during an excursion on the east end of Lake Superior on 14 August, "We . . . were only disturbed by a flock of brant, which lighted on the pines near us; a scene that put our boatmen, who had guns, to their mettle; but although a number of shots were fired, the result added nothing to our travelling larder". Assuming this description was not concocted to suggest the mythical "brant tree"³, only the cor-

morant seems a likely interpretation. Yet he specifically mentioned cormorants in his 1820 narrative. It is possible that the "brant" Schoolcraft saw on the rocky Lake Winnibigoshish island were Common or Red-breasted Mergansers—pecies likely to be present, but not referred to as "brant" by any contemporary or subsequent authors of which I am aware. Apparently, he was careless in his use of the term, and his assignment of Latin names to species in his 1855 *Summary Narrative* was evidently done with little regard for standard contemporary North American ornithologies such as those by Wilson, Audubon, and Nuttall.

On 21 July the expedition reached Red Cedar Lake, which Schoolcraft renamed Cassina Lake after his leader. It has since become known simply as Cass Lake. Here, local Chippewas gave them "an abundance of the most delicious red raspberries, and a quantity of pemmican, or pounded moose meat" (HRS:252). The party knew they were well short of the true source of the Mississippi, but upon learning of low water farther upstream, they returned downriver. Schoolcraft figured this was close enough to make the following inflated claim:

"To have visited both the source and the mouth of this celebrated stream, falls to the lot of few, and I believe there is no person living, beside myself, of whom the remark can now be made. On the 10th of July, 1819, I passed out of the mouth of the Mississippi in a brig bound for New-York, after descending it in a steam-boat from St. Louis, and little thinking I

³"The Brant, or, as it is usually written, *Brent*, is a bird well known on both continents, and celebrated in former times throughout Europe for the singularity of its origin, and the strange transformation it was supposed to undergo previous to its complete organization. Its first appearance was said to be in the form of a barnacle shell adhering to old water-soaked logs, trees, or other pieces of wood taken from the sea. Of this

Goose-bearing tree, Gerard, in his *Herbal*, published in 1597, has given a formal account; and seems to have reserved it for the conclusion of his work, as being the most wonderful of all he had to describe . . ." (Wilson 1840:641)

should soon revisit its waters; yet, on the 21st of July of the following year, I found myself seated in an Indian canoe, upon its source." (HRS:254)

They camped a few miles downstream, and the next morning, "started at a very early hour, although the weather was rainy, and proceeded down the river. Nothing could retard our progress now, feeling as we do that we have turned our faces homeward." (Douglass 1969:85)

That evening they encountered a lynx crossing the river, "which the French call a loup-cervier. I should suppose it was the wolverine from the description the men gave of its ferocity but Mr. Fairbanks [from the American Fur Company] says it was what they call a case cat." (Douglass 1969:86)

The wolverine was also sometimes called the "glutton", but according to Schoolcraft (1855:141), "The Indians said there was no animal in their country deserving of this name and the only animal they knew deserving of it was the horse, which was eating all the time."

That night,

"we encamped so late, and were so jaded by a long day's travel, that the musquitoe-nets were neglected. To get up and stand before a camp-fire at midnight and switch off the musquitos requires as much philosophy as to write a book; and at any rate, ours completely failed." (Schoolcraft 1855:141)

They rejoined the rest of the party at Sandy Lake on 24 July. By the next afternoon they were resupplied, and they left the trading post in 3 canoes and (for the soldiers) a "barge", to begin their return circuit down the Mississippi. Douglass questioned voyageurs for geographical and faunal

information. His journal for that day includes a dissappointingly meager sentence—apparently an unsuccessful reminder to fill in details later: "[Mr.] Dufour's information about the brown bear and the good swan and brant". Probably, "brown bear" refers to brown-pelaged black bear. His information on the "good swan" probably regarded Trumpeters, which then nested in the region, but for which few historical data remain today. Perhaps most frustrating is that Douglass could have helped elucidate the term "brant".

In fact, except for Schoolcraft's narrative, which was elaborated upon for publication, the journals of the gentleman writers became less colorful and detailed after leaving Sandy Lake: they now travelled better-known routes for which information was considered less valuable, the novelty of travel had dissipated, and their thoughts turned homeward. Young Trowbridge (1942:334), for example, noted, "We left Sandy Lake . . . and we were soon on the Mississippi, pulling away with light hearts and anxious hopes. I do not know when I have felt more happy than this afternoon, in the prospect of seeing again my much loved friends; and although we are still 1700 miles distant from them, yet we feel comparatively near to them."

They descended the Mississippi about 28 miles that first day.

"It commenced raining during the night, and as we had neglected to have our tents pitched, we were first awoken by the falling rain, and during the intervals of the showers, the mosquitoes assailed us in such numbers as to forbid the hope of rest. In this situation we passed the remainder of the night around our fires, endeavouring to divert

our reflections by the interchange of anecdote, and absolutely prevented from falling asleep by the labour of brushing away the voracious hordes of mosquitoes, which unceasingly beset us with their stings and poured forth their hateful and incessant buzzing upon our ears. It certainly requires a different species of philosophy to withstand, undisturbed, the attacks of this ravenous insect, from that which we are called upon to exercise upon the sudden occurrence of any of the great calamities and misfortunes of life. He who is afflicted, without complaining, by an unexpected change of fortune or the death of a friend may be thrown into a fit of restless impatience by the stings of the mosquito; and the traveller who is prepared to withstand the savage scalping knife and the enraged bear has nothing to oppose to the attacks of the enemy, which is too minute to be dreaded and too numerous to be destroyed." (HRS:270–71)

On the 26th,

"Ducks, the teal, and the plover have been observed; also the bald eagle, kingfisher, mock bird, robin, and pigeon. As night approached we heard, for the first time in the region, the whipporwill, which is called by the Indians *Muck-a-wiss*, being the sounds, according to their notions, which it utters . . . We also, during this day's journey, first noticed the common red barking squirrel, which, invited from its nest by the beauty of the weather during the afternoon, has been frequently observed playing among the branches of the black walnut and other favorite trees. This sprightly little animal is equally entitled to our admiration from the beauty of its form and the agility of its movements; and there is no person who has visited an American forest during the summer season, either as a sportsman or an admirer of nature, who is not ready to acknowledge how much this pretty and playful little quadruped

contributes to enliven and beautify the scene." (HRS:272–73)

Although this seems an unusually far north record for the Northern Mockingbird, Schoolcraft's identification was probably correct. He distinguished the Brown Thrasher a few days previous, and he must certainly have known the Gray Catbird from his upbringing in New York, where it was common around dwellings, although he never mentioned catbirds from his 1818–19 or 1820 journeys. Schorger (1946) believed Schoolcraft because his (1851) *Personal Memoirs* noted the mockingbird's rarity in northern Michigan. Roberts (1932) and Janssen (1987) did not acknowledge Schoolcraft's Minnesota record, but Janssen noted recent nesting in the region of Schoolcraft's observation, and summer records much farther north. The species may have been more common in the upper Great Lakes area prior to the mid-1800's (Kumlien et al. 1951). Schoolcraft (1855:255) was probably mistaken, however, in his assertion that black walnut and sycamore occurred this far north on the Mississippi.

Trowbridge (1942:335) noted, "During the day we shot at a Deer, some Ducks, & a Heron, but only succeeded in getting two Ducks".

On the 27th they passed the present location of Brainerd, and the Crow Wing River, which Schoolcraft claimed should be translated from the Chipewewa as the Raven-wing. Here red pine barrens and woods gave way to the Buffalo Plains—"far-stretching plains covered with grass and wild flowers, interspersed with groves of oak, maple, and other species" (Schoolcraft 1855:146) The plains would continue for another 150 miles along the river to present-day Minneapolis. This "no-

man's land" between the territories of warring Chippewa and Sioux tribes was relatively unhunted and the expedition party had a relatively easy time finding, approaching, and shooting several elk, deer, and buffalo. Schoolcraft wrote several pages about buffalo and buffalo hunting for the benefit of his eastern readers, for example:

"... on ascending the bank, we observed upon a boundless prairie two droves of them feeding upon the grass. All who had guns adapted for the purpose sallied forth in separate parties upon the prairie... The grass was so tall as to allow an unobserved approach towards the spot where they remained feeding, but the first fire proved unsuccessful at the same time that it scattered the herd, which were now seen running in all directions across the prairie, and an incessant fire of random shots was kept up for about two hours; during which three buffaloes were killed and a great number wounded, which made their escape. While thus harassed, they often passed within a few yards of us, and we enjoyed a fine opportunity of witnessing their form, size, colour, and speed. The buffalo has a clumsy gait, like the domestic ox, which it also resembles in size and general appearance. Unlike the ox, however, this animal exhibits no diversity of colour, being a uniform dark brown inclining to dun. It is never spotted with black, red, or white. It has short black horns growing nearly straight from the head and set at a considerable distance apart. The male has a hunch upon its shoulders, covered with long flocks of shaggy hair, extending to the top of the head from which it falls over the eyes and horns, giving the animal a very formidable appearance... The skin of a buffalo-bull, when first taken off, is three-fourths of an inch in thickness and cannot be lifted by the strongest man." (HRS:277-78)

On the 28th, "Ducks, geese, pelican, swan, and snipe have been frequently seen; also the eagle, hawk, buzzard, heron, pigeon, and red squirrel" (HRS:283).

That evening Schoolcraft climbed a granite bluff:

"I found the most charming prospects in every direction. It commands a view of the prairies on both banks of the Mississippi, with the windings of the stream, and its islands and rapids for many miles above and below, and the interest of the scene was greatly enhanced at the moment by the herds of buffalo and deer which were seen in various groupes upon the prairies, and the delightful influence of a mild and transparent summer atmosphere." (HRS:283-84)

They were now in Sioux country, and the Chippewa of their party, until now usually maintaining a distance from the rest, began travelling and camping among their white companions. That night,

"... a pack of wolves were heard on the opposite side of the river... There is something doleful as well as terrific in the howling of this animal, particularly when we start from a sound sleep during the stillness of the night. It is, however, little to be dreaded... There are two species of the wolf upon the banks of the Mississippi—the common grey wolf (*Canis Lupus*) and the prairie wolf [coyote], which is unknown in Europe. The latter consists of two varieties, the *yellow* and *black* wolf. Both are much smaller than the *canis lupus*, and hunt together in larger packs. They possess in a superior degree the cunning, ferocity, and activity of the species, and are characterized by a fierce, sparkling yellow eye and very sharp pointed ears." (HRS:285)

Here Schoolcraft confused the Snowy Owl, which he had probably never seen, with the Barred Owl:

"There is another sound that will frequently disturb the nightly rest of the traveller in the region of the Mississippi. It is the half-human cry of the *Strix Nyctea*, or great white owl, which inhabits the coldest regions of our continent and is seldom found south of the falls of St. Anthony [Minneapolis]. This animal utters its most hideous cry a few moments before the first glimpse of day light, and is thus the unerring herald of day. At this time it betakes itself to those recesses where it spends the day in seclusion. With this warning cry we were called to embark, and quit our encampment at half past four." (HRS:285)

On 29 July,

"We encamped five miles below Crow river on the east bank of the Mississippi, having been thirteen hours in our canoes, and descended ninety miles . . . Prairies continue on both banks, with occasional clumps of trees, and forests of two or three miles in extent. The growth of wood upon the islands is elm, black and white walnut, maple, oak, and ash—upon the prairies, dwarf black oak . . . The quality of the soil of the prairies improves as we descend, and during the last twenty miles may be considered of the richest kind. The prairies are in fact covered with a stratum of the most recently deposited, black, marly alluvion, which appears to be composed, in a great degree, of vegetable mould." (HRS:287–88)

The next day they reached the Falls of St. Anthony, on the present-day boundary between Minneapolis and St. Paul:

"The Falls of St. Anthony . . . have a simplicity of character which is very pleasing. We see nothing in the view which may not be considered either rude or picturesque, and perhaps there are few scenes in the natural topography of our country where these features are

blended with more harmony and effect. It is in fact the precise point of transition where the beautiful prairies of the upper Mississippi are merged in the rugged lime stone bluffs which skirt the banks of the river from that point downward. With this change of geological character we perceive a corresponding one in the vegetable productions, and the eye embraces at one view the copses of oak upon the prairies and the cedars and pines which characterize the calcareous bluffs. Nothing can exceed the beauty of the prairies which skirt both banks of the river above the falls. They do not, however, consist of an unbroken plain, but are diversified with gentle ascents and small ravines covered with the most luxuriant growth of grass and heath-flowers, interspersed with groves of oak, which throw an air of the most picturesque beauty over the scene." (HRS:290)

Soon they were near the entrance of the St. Peter's (Minnesota) River. Here was Camp Leavenworth, with its vegetable gardens and fields of wheat, Indian corn, and potatoes. This post would soon be succeeded by Fort Snelling. The expedition remained here for 3 days, during which Cass managed a minor peace treaty between the Sioux and Chippewa. The peace pipes were "ornamented with braids of richly dyed porcupine quills, or the *holcus fragrans* [sweet grass], and the tuft feathers of the male duck or red-headed woodpecker" (Schoolcraft 1855:155). Schoolcraft, Douglass, and others explored and collected information from Indians and Army officers, on topics such as geography, the sources of Indian dyes, and the medicinal properties of native plants:

"During the last winter the troops were taken with the scurvy, with which 40 out of 100 men died, before the least

relief was found. It was at length arrested and cured by making strong decoctions of hemlock⁴ boughs" (Doty 1895:214)

"Among the forest trees upon [the St. Peter's River] banks we noticed the box-elder (*acer negundo*) or ash-leaved maple. The inner bark of this tree, boiled down with the common nettle into a strong decoction, is said to be used by the Indians as a remedy for lues venerea [syphilis], and to be a sovereign cure for that disorder." (HRS:302)

Schoolcraft also discussed sweet grass:

"Among the luxuriant herbage which characterizes the prairies of the St. Peter's is found a species of aromatic grass upon which a high value is set by the aborigines. It throws off the most fragrant odour and retains its sweetness, in a considerable degree, in the dried state. It is cut in a particular stage of its growth in the month of June when it throws off its aroma most profusely, and continues to be gathered until it has run into seed and is too dry to be plaited. The Indian women braid it up in a very ingenious manner and lay it aside in their cabins as a kind of nostrum, and I have once seen it in the form of a wreath braided with certain leaves and flowers, decorating the temples of a warrior who had just returned in triumph from battle." (HRS:302-03)

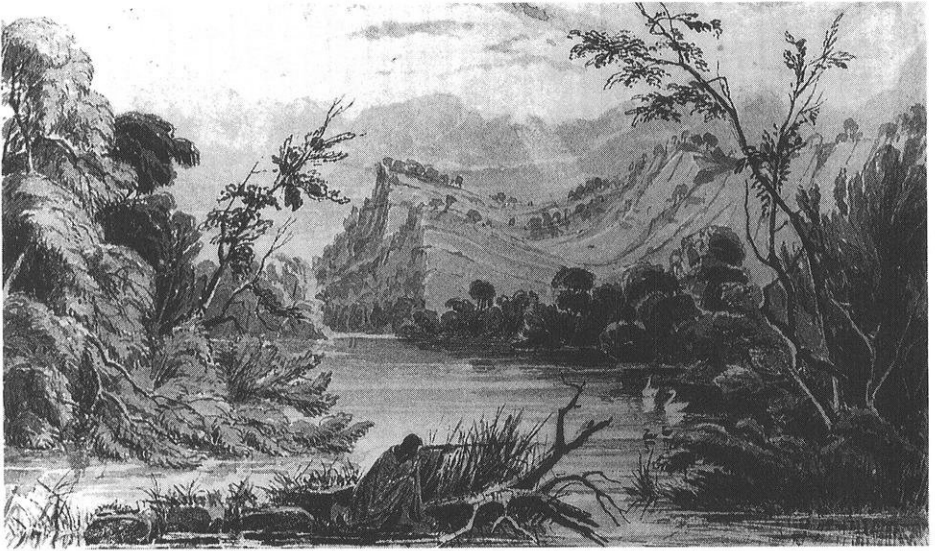
Schoolcraft and Douglass became interested in 2 small mammals here, and took study skins of both with them on the return trip. One was the 13-lined ground squirrel, which was destructive to the Camp's gardens, and was at that time unknown to science.

⁴It is uncertain what Doty is referring to, since hemlock does not occur naturally in the St. Paul area.

In those times prior to settlement it was restricted to prairie regions, apparently including parts of southern Wisconsin, for John Muir's (1913:47) cat brought in "spermophiles" to his family's Green Lake County farm in 1846, and other writers reported them soon thereafter. With the subsequent clearing of forest for agriculture, it has become familiar throughout the Midwest, having spread northward to Lake Superior and eastward as far as Pennsylvania.

"Among the animal productions of nature which serve to enliven and diversify the scene, there is a new species of burrowing squirrel, something larger than the common striped ground squirrel [eastern chipmunk], with an elongated body and short legs, approaching in shape the *mustela nivalis*, or brown [least] weasel. But the most striking difference is found in its color, which is a reddish brown with four longitudinal black stripes upon the back, spotted with yellow, and resembling in this respect the skin of the African leopard. It is a beautiful little animal—burrows in the ground, and feeds upon ground nuts and esculent roots." (HRS:313)

After returning from the expedition, Douglass submitted a specimen to zoologist Samuel Mitchill, who then provided the first scientific description of this "mammiferous animal", in the journal *Medical Repository* in 1821. Mitchill, like most natural scientists at that time, was also an M.D., and major scientific journals such as this and the *American Journal of Science* included what today seems an odd mixture of medicine, natural and physical sciences, mathematics, and philosophy. Mitchell (1821:248-49) named the species the Federation Squirrel (*Sciurus tridecemlineatus*), and his descrip-



Indian hunting swans 10 miles above Prairie du Chien (from McDermott, 1973).

tion serves as a reminder of how we often take common wildlife for granted:

"The thirteen stripes along the back of this superb little quadruped, place him in a remarkable association with the thirteen states of the American confederacy, and with the thirteen stars and stripes of their flag . . . The most striking and remarkable character of this animal, is his variegated back . . . This creature is by far the most beautiful of the whole squirrel family; surpassing by many degrees the elegant *Sciurus Striatus*, or ground squirrel [eastern chipmunk]."

The other species was the plains pocket gopher, the mounds of which Schoolcraft had seen in the Missouri Territory. Now he found that, "In the luxurious gardens of Camp Leavenworth, great depredations have been made by a small quadruped of a burrowing character, called gopher. By patient watching, gun in hand, one of these was killed, and its skin preserved

and prepared" (Schoolcraft 1855:156).

It, too, was eventually conveyed to Mitchill. Although this species had been described in previous publications, some scientists questioned its existence, apparently owing to the exaggerated drawings and descriptions of its external, fur-lined cheek pouches. Thus, Mitchill (1821:249) elaborated on "The Gopher, or Pouched Rat of North America (*Mus bursarius*)":

"Doubts having been entertained . . . whether this animal, announced to zoologists by Shaw [in 1800], was sufficiently and credibly established, I have the pleasure to assure naturalists, that a complete dried preparation, brought by Captain Douglas, Professor, etc. is now in my possession. It is undoubtedly the real *mus bursarius* of our continent. As it has been already introduced to the learned world, I shall content myself with noting some of its most remarkable characters . . ."

Later, Mitchell (1822b) published a correction, for upon consultation with Cass and Schoolcraft, he learned that he too had described the pouches wrongly—inside-out—which was the way the specimen had been prepared and sent “for the sake of preserving them from the knife when the skin was taken off, and of drying them more effectually in the stuffed preparation.”

He concluded this article with a description of the creature’s habits, apparently based on information provided by Schoolcraft, et al.:

“The chief use of his bags or pouches is to carry earth and sand. He is a great digger and travels much underground. To enable him to make his excavations more completely, he fills his bags with earth, and brings it up. He empties them by pressing out their contents with his fore paws. It does not appear that they are the receptacles of food; for they have no connexion whatever with the mouth. Let me entreat you to explain this matter as soon as you can, to your correspondents, that this travestied rat may no more appear in the books of zoology ...”

It is now known that the pouches are indeed used for carrying food rather than soil (Merriam 1895:18), which makes one wonder how Mitchell could be wrong about this yet accurate in his description of the cheek-emptying process.

According to Trowbridge (1942:340), “A singular bird has also been found here, of which no account has been seen in history. It is much the size of a robin and has a long bill and webbed feet, and is of a beautiful white color.”

Minnesota ornithologist T.S. Roberts (*in* Trowbridge 1942) was probably correct in his conclusion that this was a young Black Tern.

The expedition continued on 2 August, and on the following morning reached the mouth of the St. Croix River, along the present border of Wisconsin and Minnesota. They continued downriver toward their next destination, Prairie du Chien. Prior to modern dredging, barge traffic, agricultural erosion, and dams, this section of the river was clear and shallow. The bluffs were less forested than today, due to prairie fires.

“At this place the river bluffs assume an increased height and more imposing aspect, and in the course of the succeeding fifty miles, we are presented with some of the most majestic and pleasing scenery which adorns the banks of the upper Mississippi. In many places the calcareous bluffs terminate in pyramids of naked rocks, which resemble the crumbling ruins of antique towers, and aspire to such a giddy height above the level of the water, that the scattered oaks which cling around their rugged summits seem dwindled to the most diminutive size—at others, the river is contracted between two perpendicular walls of opposing rock, which appear to have been sundered to allow it an undisturbed passage to the ocean, and not infrequently these walls are half buried in their own ruins, and present a striking example of the wasting effects of time upon the calcareous strata of our planet. Sometimes there is a rock bluff on one bank and an extensive plain of alluvion on the other, contrasting with the finest effect the barrenness of the mineral with the luxuriant herbage and the rural beauty of the vegetable kingdom. Again, the hills recede from either shore and are veiled in the azure tint of the distant landscape, while the river assumes an amazing width, and is beautiful with innumerable islands, and we find ourselves at once bewildered between the infinity of its channels and the attractive imagery

of its banks. Nor is the presence of animated nature wanting, to enrich and beautify the scene. The deer is frequently seen standing in the cool current of the stream, gathering the moss from the hidden rocks below, or surveying our approach from the grassy summit of the impending cliff, with an unconcern which tells us how little it is acquainted with the sight of man. The whole tribe of waterfowl are found upon the river, and by the variety of their plumage, and their shapes—the wildness of their notes—and the flapping of their wings, serve to diversify the scene, while the well known notes of the robin and other singing birds upon the shores, which are the same that we have listened to in childhood, recall a train of the most pleasing reflections. Nor is the red man, the lord of the forest, wanting. His cottage is disclosed by the curling smoke upon the distant hills, where he surveys with a satisfied eye the varied creation upon the plains below—the deer—the elk—the water fowl—the river which floats his canoe—the trees which overshadow the grassy hills upon which he reposes during the heats of noon—the thickets, where he rouses the sleeping bear—the prairie, which gives vigor to his constitution . . .” (HRS:321–23)

They stopped briefly at the Sioux village of Chief Red Wing, 6 miles above Lake Pepin, where the city of the same name now occurs:

“We observed several fine corn fields near the village, but they subsist chiefly by taking sturgeon in the neighboring lake, and by hunting the deer. The buffalo is also occasionally killed, but they are obliged to go two days journey west of the Mississippi before this animal is found in plenty. We observed several buffalo skins which were undergoing the Indian process of tanning—the hair having been taken off in the manner of dressing deer skins, the hides were stretched out

upon the ground and covered with a decoction of oak and other bark, prepared by boiling the bits of bark in water . . .

“Half a mile east of Red Wing’s village there is an isolated mountain standing on the brink of the river, called the Grange, from the summit of which you enjoy the most charming prospect. The immense valley of the Mississippi, with the numerous channels and islands of the river—the prairies and forests—with the windings of a number of small rivers which flow into the Mississippi, spread like a map below the eye. The calcareous bluffs which bound this valley, and terminate the prospect towards the west in a line of lofty grey cliffs, throw an air of grandeur upon the scene, which affords a pleasing contrast with the deep green of the level prairies and the silvery brightness of the winding river. Turning the towards the east, Lake Pepin spreads its ample sheet across the entire valley of the river, from bluff to bluff, and the indentures of its shores recede one behind another until they become too faint to be distinguished, and are terminated on the line of the horizon . . . This mountain . . . presents an abrupt mural precipice towards the Mississippi, but slopes off gradually towards the south, and is covered with grass and a few scattering oaks . . .

“In ascending this mountain we first noticed the rattlesnake (*crotalus horridus*), which is found, however, as far north as the Falls of St. Anthony . . . It is well known that the virus of this animal is secreted in a small cavity at the root of the fangs, which are shaped like the claws of a cat, and are hollow, and that it is ejected through these tubes at the instant it inflicts the wound . . .

“At one o’clock in the afternoon we entered Lake Pepin . . . On the east shore there is a lofty range of limestone bluffs, which are much broken and crumbled—sometimes run into pyramidal peaks—and often present a character

of utmost sublimity. On the west there is high level prairie covered with the most luxuriant growth of grass, and nearly destitute of forest trees . . . This lake is beautifully circumscribed by a broad beach of clean-washed gravel, which often extends from the foot of the surrounding highlands, three or four hundred yards into the lake, forming gravelly points upon which there is a delightful walk, and scalloping out the margin of the lake with the most pleasing irregularity. In walking along these, the eye is attracted by the various colors of the mineral gems . . . The water partakes so little of the turbid character of the lower Mississippi, that objects can be distinctly seen through it at the depth of eight or ten feet. It is plentifully stored with a variety of fish, the most remarkable of which is the *shovel-nosed sturgeon* [paddlefish], which is so called from a protuberance which extends from the end of the nose about fourteen inches . . . This extension of the nose appears designed to enable the animal to agitate the mud along the shores and on the bottom of the Mississippi, in quest of certain animalcula, which are supposed to be its favourite food. The shores of this lake also appear favourable to the growth of crustaceous fish, and an examination of the different varieties which are presented would probably result in the discovery of one or two new species. In no place have I ever noticed the fresh water muscle attain so large a size. One of these which I procured measures seven inches in length, by five and a half in width, the thickness . . . is a little less than four inches." (HRS:323-29)

Trowbridge (1942:342) also noted the paddlefish, stating, "Here dwells a remarkable fish, vulgarly called the shovel mouthed sturgeon . . . we saw many, but having no good spears, were unable to take one."

They did, however, find part of a

skeleton. They collected it and ultimately sent it to Mitchill, who identified it and later wrote (*in* Schoolcraft 1855:416), "the skeleton, though incomplete, is better than any other person here possesses. It is carefully preserved in my collection."

Passing Maiden Rock, an interpreter related the legend, some version of which is described in nearly every early narrative from this stretch of the Mississippi, regarding a Sioux maiden who, from this cliff, "precipitated herself in a fit of dissappointed love" (HRS:329).

"Having descended the river sixty-seven miles, we encamped on a gravelly beach on the east shore of Lake Pepin at six o'clock in the evening, the weather threatening a storm. In the vicinity of our encampment we observed the asparagus growing along the shore. The seeds had probably been dropped by some former traveller." (HRS:330)

They continued early the next morning:

"The precipices on the east are high, and shoot up into spiral points, yet are covered partially with grass and shrubbery. On the west we observe nothing but an elevated level prairie. The contrast produces the finest effect. At the precise point of exit of the Mississippi river from Lake Pepin, the Chippeway, or Sauteaux river, comes in from the east . . . Below the junction of this stream the Mississippi has an increased width, and contains a great number of small willow and cottonwood islands, and the navigation is rendered more difficult on account of the innumerable sand bars which here first make their appearance. They are attributable, in a great measure, to the immense quantity of sand brought down by the Chippeway river." (HRS:331)

That night they camped on the Minnesota side, across from the Black River. In the evening, Schoolcraft climbed a bluff to look around:

"I . . . had a commanding view of the extensive tract of bottom land on the opposite side of the river, which consists in part of a heavy wooded forest interspersed with patches of prairie, and bounded at the distance of four or five miles by a range of calcareous bluffs, corresponding in general appearance to that upon which I stood. The scene is checkered by the devious course of the Black River, which joins the Mississippi in front,—by the mountain [Trempealeau Mountain] that sinks in the water above, and the broad Mississippi with its numerous islands and channels, at a depression of four or five hundred feet below. Turning the eye towards the west, the country has the general elevation of the river bluffs. It is wooded with oak—with tracts of prairie—and lies in ridges, some of which are entirely covered with grass, and destitute of forest trees. At the rapids of the Black River, one day's journey in a canoe from its mouth, there is a sawmill recently erected by a gentleman at Prairie du Chien, where boards and scantling are already sawed for the purposes of building at the latter place. Thus is the empire of the arts, and the march of European population, gradually extending into regions which have heretofore only resounded to the savage war whoop . . ."

"A short time previous to our encampment, we observed a large grey wolf in the river before us, making its way for the opposite bank. In a moment every canoe was pointed towards it—every muscle was strained to intercept its landing; and we shot down the stream with the rapidity of an eagle who pounces upon its prey. The whooping of the Indians, the shots that were fired, and the tumult of so many paddles dashing in the water, gave great spirit to the scene, but

it was only of momentary duration, as the wolf soon gained the sandy shore of the river, and shaking the water from his meagre flanks, sprang into the adjacent thicket and in a moment disappeared." (HRS:335–37)

"At the spot of our encampment, as soon as the shades of night closed in, we were visited by hordes of ephemera [mayflies]. The candles lighted in our tents became the points of attraction for these evanescent creations. They soon, however, began to feel the influence of the sinking of the thermometer, and the air was imperceptibly cleared of them in an hour or two. By the hour of three o'clock the next morning [5 August] the expedition was again in motion descending the river. It halted for breakfast at Painted Rock, on the west shore. While this matter was being accomplished, I found an abundant locality of unios in a curve of the shore which produced an eddy. Fine specimens of *U. purpureus*, *elongatus*, and *orbiculatus* were obtained. With the increased spirit and animation which the whole party felt on the prospect of our arrival at Prairie du Chien, we proceeded unremittingly on our descent, and reached that place at six o'clock in the evening." (Schoolcraft 1855:167)

The outpost of Prairie du Chien had been established by the French nearly a century before, and it now had about 400 people, mostly of French and Indian descent, and another 100 U.S. troops associated with Fort Crawford. The village had "no schools—no church—& no ministers" (Trowbridge 1942:344), and according to Schoolcraft:

"The village . . . is pleasantly situated on the east bank of the river, on the verge of one of those beautiful and extensive natural meadows which characterize the valley of the Mississippi.

"The Ousconsing [Wisconsin River]

joins the Mississippi one league below. There is a bayou, or marsh, at the point of confluence, which extends into the prairie to within a mile of the village, and is thought to render it unhealthy at particular seasons." (HRS:337-39)

Doty's journal ended on this day and Trowbridge's became terse and sporadic, with entire days and weeks missing. While the expedition was delayed here for 4 days Schoolcraft descended the Mississippi to inspect the Dubuque lead mines, which had been operated by Fox Indians since the death of Dubuque in 1810.

"The valley of the Mississippi between Prairie du Chien and the lead mines of Dubuque is about two miles in width, and consists of a rich deposit of alluvial soil, a part of which is prairie; and the remainder covered with a heavy forest of elm, sugar tree, black walnut, ash, and cotton wood. It is bounded on each side by corresponding bluffs of calcareous rocks, which obtain a general elevation of four hundred feet and throw an interest over the scene—which prairies and forests, woody islands, and winding channels, beautiful and picturesque as they certainly are, must fail to create . . . it is to these bluffs that the valley of the upper Mississippi owes all its grandeur and magnificence. Its broad and glittering channel—its woodless prairies and aspiring forests—its flowering shrubs and animated productions—only serve to fill up, and give effect to the imposing outline so boldly sketched by the pencil of nature in these sublime and pleasing bluffs. Yet there is much in the detail of the scene to admire—in the beauty of its tints—the fancy of the grouping—and the mellowness of the shades.

"Among the humbler growth which adorns the borders of the forest, the *cornus florida*, the *sarsaparilla*, and the *sumach* are frequently to be seen, still beautiful in the unbleached verdure of

spring, and bathing their impending branches in the rushing stream, while the splendid foliage of the autumnal forest is already visible in the rich hues of the fading maple, the heart-leaved aspen, and *populus angulata*.

"The tall grass of the prairies, although it has also assumed the yellow hue of autumn and rustles in the northern breeze, is yet occasionally checkered with green copses of shrubby oaks, and beautiful with the peculiar tribe of heath-flowers, which linger unblown through the sultry heats of July to scatter their fragrance over the fading fields of August. The channel of the river is often expanded to an amazing width and spotted with innumerable islands, some of which are nothing more than a bank of yellow sands just looming above the water, and crowned with a brushy growth of young willows and slender cotton woods; others present copses of the tallest trees, which are not infrequently precipitated bodily into the stream by the undermining currents of the river, or hang from the new fallen alluvial banks with their branches dipping into the stream. Perched upon these we invariably find the heron and king-fisher, who with motionless anxiety watch for their finny prey. The eagle and the hawk choose a more elevated seat to watch for their food, while the buzzard, with an easy wing, is continually sailing through the air, eagerly scanning the lower plains for its favourite carrion. The white pelican is also very frequent along this part of the river but is always found upon the point of some naked sand bar, which I conclude to be the most favourable spot for taking its food. The duck and the goose appear to be the only species of water-fowl, which are always in motion, and it is rare to see them seated upon the shore, but this may be less the result of their superior activity and natural sprightliness than the strong necessity of continually searching for those aquatic plants which constitute their favourite

food. The pigeon, the snipe, the wild turkey, the raven, and the jay are also common along this part of the Mississippi, and contribute by their appearance to enliven and diversify the scene. Nor is it uncommon during the heats of noon to behold the savage reclining beneath the grateful shade of the oak, upon some breezy knoll of the contiguous bluff." (HRS:354-56)

Today we consider the Common Raven a northern bird but it is likely that Schoolcraft found it commonly that summer along the southwestern border of Wisconsin. Kumlien et al. (1951:73) said that it "formerly occurred throughout the state". Kennicott (1855:585) considered it common throughout Illinois, and several summer records were reported in the early 19th century in Iowa (Anderson 1907:296). It was then apparently widespread in the Midwest, but retreated westward and northward with the advent of human disturbance. As Coues (1874:205) suggested, "the restrictions of its range in the United States is probably reducible to a fortuitous matter, since this bird, like some others, sooner or later finds the advance of civilization unsupportable, and retires to regions more congenial to its wild and wary nature".

Also noteworthy were Schoolcraft's frequent sightings of White Pelicans, which occur very uncommonly today along the western edge of Wisconsin. His observations do not suggest local breeding, which has never been documented for Wisconsin. His Bald Eagles, Canada Geese, and "common" Wild Turkeys are species that subsequently disappeared from that region, but have more recently returned as a result of management and protection. Schoolcraft's "*cornus florida*" was

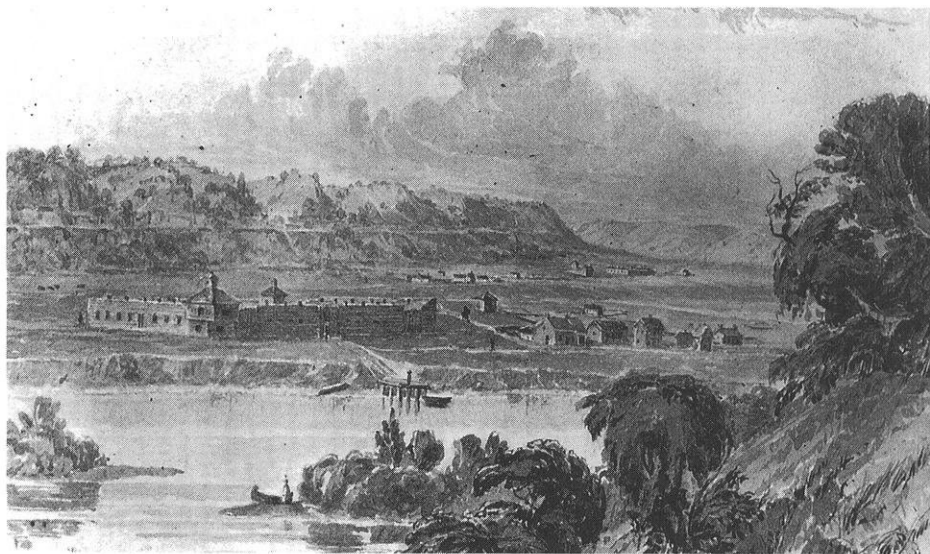
probably actually one of our common shrubby dogwoods. *C. florida*, the flowering dogwood, does not reach so far westward, and had not been recorded by botanists such as Thomas Nuttall, who also travelled this section of the Mississippi in the early 1800's.

During Schoolcraft's absence from Prairie du Chien, Douglass gathered more geographic data from locals, took celestial measurements, and collected mussel shells and agates. Cass sent Trowbridge (1942:344) to check out a purported mineral deposit. He traveled by horseback to the Kickapoo River, camped, then proceeded 5 miles to a cave where, "instead of silver ore, which we were told we should find in abundance, we saw nothing but the petrifications usually found in Limestone Caves, called Stalactites. The result was, that I returned, much disappointed, and the guide lost his conditionally promised compensation." Trowbridge's only comment on the landscape was that "in this country there is no difficulty in travelling through the woods [on horseback]."

On 9 August,

"We left Prairie du Chien at half past ten in the morning, and entering the Ousconsing three miles below, ascended that river eighteen miles. It is a wide and shallow stream, running over a bed of sand—with transparent waters—and chequered with numerous small islands and sand bars. It has an alluvial valley of a mile in width, bounded on each side by calcareous hills—which frequently present naked precipices towards the river. The predominating trees are oak, elm, and maple." (HRS:359)

Notes were sparse during the 5-day ascent to the Fox-Wisconsin portage, probably because the route was so well known and because much time was



Fort Crawford, Prairie du Chien, in 1829 (from McDermott, 1973).

spent maneuvering and wading over shallow sandbars. Schoolcraft (1855:180–81) stated,

“The water being shallow and warm, we often waded from bar to bar, and found the scene a fruitful one for its freshwater conchology . . . In passing up this valley, an almost never-failing object of interest was furnished by the univalve shells found along its banks, and by the variety of size, shape, and color which they exhibited. Of these . . . Mr. Barnes has described from my duplicates the *U. plicatus*, *U. verrucosus*, *U. ventricosus*, *U. planus*, *U. obliqua*, and *U. gracilis*.”

Douglass (1969:94) stated for the 9th:

“Character of this part of the river—straight or nearly so, wide and shallow—rapid—many islands—growth elm, ash, white, red and black oak, lind, Nass River birch, and on the low islands, two or three kinds of willow.”

On the 10th they travelled to just

beyond Blue River. Douglass’ journal (1969:94–95) reads:

“Started before sunrise. Passed the Prairie DuBey [present-day Boscobel] about 2 P.M. and at 7 landed and encamped a little below English Prairie [Muscoda]. Character of the river much as yesterday except that the highlands retire and approach with an appearance somewhat more picturesque than yesterday leaving occasionally a prairie of uncommon beauty between them and the river—of which kind is Prairie DuBey. Broke our canoe a few miles below our camp.”

This was evidently where, as Douglass later apologized to the botanist John Torrey, “. . . a part of the collection was injured by an accident on the Ouisconsin, in which my canoe was very nearly filled with water before it could be got ashore. The consequence of which was that nearly all the plants in one case were completely spoiled be-

fore I was able to dry them.” (Douglass and Torrey 1822:57)

The next day they stopped at a Winnebago village at the mouth of the Pine River:

“The Indians appeared friendly, and presented us some dried venison—we engaged two of them to pilot us up the river, to the portage, and make some mineral discoveries. The navigation of the river above is considerably impeded by sand bars and small islands, and some time is lost in searching for the proper channel. The water is shallow—clear—and very warm. The current is very strong, although without any falls or rapids. Numerous muscle and other shells are strewn along the sandy shores, some of which are very large, others exceedingly small, with transparent shells and colours beautifully variegated. The plover, wild goose, king-fisher, and small yellow bird are seen along this part of the river. The river bluffs continue, sometimes receding a mile or two from the river, and giving place to bottom lands and patches of prairie, then shutting in close upon the water’s edge . . . We encamped at twilight at the head of the *Spruce Channel* [near Lone Rock].” (HRS:359–360)

In his *Summary Narrative*, Schoolcraft (1855:181) reiterated these species and added others, apparently referring to the entire stretch of the Wisconsin as far as the portage: “We frequently observed the scolipax minor [American Woodcock], the plover, the *A. alcyon* [Belted Kingfisher], a small yellow bird, and *C. vociferus* [Whip-poor-will], along its sandy shores; and in other positions the brant, the grouse, the *A. sponsa* [Wood Duck], and the summer duck [Wood Duck], and *F. melodia* [Song Sparrow].”

The “small yellow bird” was prob-

ably Yellow Warbler, Common Yellowthroat, or Prothonotary Warbler. His “grouse” was probably Ruffed Grouse, but perhaps Greater Prairie Chicken or Sharp-tailed Grouse. That Schoolcraft gave 2 names for Wood Duck casts doubt on his knowledge of waterfowl.

Douglas (1969:95) noted eagle and fox tracks in the sand at this campsite. On the 12th they camped on a sandbar near the “Little Rock [Avoca] Prairie”. Douglass (1969:95) noted that a “considerable party of Winnebagoes camped with us—danced”, and on the next day, “Winnebagoes fishing as they ascend the Ouisconsin, chasing the fish among the shoals and bars and spearing them.”

They camped the night of the 13th just below the “Catfish” (Baraboo) River, near today’s I-90 bridge, and reached the portage to the Fox River the next afternoon. Here they paid a “Frenchman” to transport their gear by oxcart “through a low prairie much infested by rattlesnakes” (Trowbridge 1942:345).

Schoolcraft, speaking of the entire Wisconsin River, stated:

“The Ousconsing is ascended in canoes ninety miles above the portage, and is connected by short portages with the Ontonagon and the Montreal Rivers of Lake Superior. The largest wild animals now found along its banks are the deer, the bear, and the fox. The elk and buffalo have been driven off many years ago. Neither is it a favourite resort of water fowl, which is probably owing to the fact that it does not afford the wild rice, at least in any considerable quantity. Geese and ducks occasionally alight in it on their migratory journies, but do not tarry long. We observed the snipe, plover, grouse, king-fisher, wild turkey, and some smaller birds. Two kinds of

rattlesnake are also found along its banks. The first, which inhabits the hills, is the *crotalus horridus* [timber rattlesnake], and attains a large size. I killed one, in coming up the river, measuring four feet in length, and furnished with nine rattles. The Indians, on opening it, took out eleven young. The other variety is small, seldom exceeding eighteen inches in length, and is confined to the lowlands and prairies. This is called the prairie rattlesnake [massasauga], and is common about the portage . . . The length of the portage from the Ousconsing to the Fox river is a mile and a half, across a level prairie . . . Such is the little difference in the level of the two streams that during high water canoes frequently pass, loaded, across the lowest parts of the prairie, from one river to the other. The portage is very muddy in the spring and fall, being over a rich alluvial soil, but we found it dry and pleasant.” (HRS:362–64)

Several rattlers were killed at the portage. The next day,

“We embarked at the head of Fox river, at half past three in the afternoon, and descended fifteen miles to the *Forks* [the junction with Neenah Creek]. The river in this distance is about twenty yards wide, but often expands into little lakes or ponds, and is extremely devious in its course. It is filled with wild rice, which so chokes up the channel that it is difficult to find a passage through it. The shores slope up gently from the water’s edge, and are covered with scattering oaks and prairie grass.

“*August 16th*—Thirty miles below its forks, the Fox river expands into a lake called Lac du Boeuf [Buffalo Lake], which is nine miles in length by one and a half in width, and abounds in wild rice. Twelve miles lower the river expands into another lake, called Puckaway, which is twelve miles long by two in width. This is also filled with wild rice and rushes, and with an abundance of

water fowl in the season. There is a village of Puants, or Winnebagoes, of seven or eight lodges, on the west shore. We encamped at the foot of this lake . . . The course of the river is less serpentine than about its source, but the channel continues to be filled with wild rice, reeds, and bulrushes. The adjoining country lies in gentle slopes and is finely diversified with woods and prairies. It appears to be well adapted to the raising of stock, and any quantity of grass might be cut on the prairies. The soil is of the richest kind, and is capable of supporting a dense agricultural population.” (HRS:362–65)

When this area was opened to white settlement in the 1840’s, one of the first families to arrive was that of young John Muir (1913).

Below Puckaway, “The forest . . . becomes heavier, and approaches nearer the margin of the river, and among its trees we here first noticed the poplar and the birch” (HRS:365).

Douglass (1969:96) remarked, “Began here again to meet with handsome bark canoes, all those hitherto since leaving the Chippewa country being logs. Obtained a small supply of bark and gum here of which we stood much in need.”

They camped near present-day Berlin, and the next day Schoolcraft noted,

“The night was remarkably cold, with a dense fog in the morning, and we now first enjoyed an exemption from the attacks of the mosquitoes. We embarked at half past five A.M.—wild rice continues along both shores—the stream increases in width . . . also an abundance of muscle and cockel shells. Trees, oak, maple, and hickory. Soil, a rich alluvion.

“On descending fifteen miles we passed the mouth of the . . . Wolf river, which is nearly of equal size with the Fox

and is noted for its abundant production of wild rice and the myriads of wild fowl that resort to it at certain seasons. Five miles below the junction of these streams we entered Winnebago lake . . . This is a handsome sheet of clear water twenty-four miles long by ten in width. It receives a considerable tributary on the south, called Crocodile or Rice [Fond du Lac] river, which is connected by means of a short portage with the Rock river of the Mississippi." (HRS:365-66)

Regarding this entire section of the Fox, he said,

"This is the favourite region of wild rice and water fowl, and during all this distance the river has neither a fall or a rapid, but runs with so still a current that it has scarcely a perceptible motion. Neither are the rock strata upon which the soil is based at any spot visible; but as far as the eye can reach, the country presents a beautiful variety of woods and prairies—long sloping hills, which are covered with copses of oak, and extensive vallies covered with a luxuriant growth of the wild rice, the *scirpus lucustris*, and other aquatic plants. Through such a valley the Fox river pursues its broad, still, devious course, and is so prolific in the various species of water plants, that often, where it is a mile in width, there is scarce open space enough in its centre to allow the passage of a canoe; but it has everywhere a fine depth of water and is free from stagnation. Here as the rice begins to ripen, the various tribes of water fowl instinctively repair to dispute with the savages their claims to the harvest, and are killed in such numbers that the Indians, while the season lasts, are not put to the trouble of hunting for any other description of animal food. The region is also highly favourable to the innumerable tribes of fresh water crustaceae, reptiles, and amphibious quadrupeds. Among the latter, the otter, mink, and muskrat are still common; but the beaver and martin,

once so numerous, are becoming very rare." (HRS:371-72)

They descended the lower Fox River, their passage interrupted by portages around its many rapids and falls:

"In descending this part of the river we cannot avoid remarking the immense quantity of muscle shells scattered along the shore, and sometimes piled up in the bed of the stream. On enquiring of the Indians the cause of this singular appearance, they observed that the muscle is the common food of the muskrat, which fishes for these crustacea in the bed of the stream, and carrying them to the mouth of its habitation upon the banks of the river, there opens them upon one spot . . . The soil is a red loam, supporting a heavy forest of oak, pine, hickory, and maple, and interspersed with occasional patches of highland prairie. This part of the river has very little wild rice, but is abundantly stored with white and black bass, carp, pike, suckers, and other fish; and is resorted to by the Indians with a certain prospect of sustenance during a part of the year." (HRS:367)

Two days later (20 August) they portaged the Rock Rapid 5 miles above Fort Howard, which stood near where the Fox enters Green Bay. Schoolcraft was, predictably, glad to arrive:

"Here we are first presented with a view of the fort; and nothing can exceed the beauty of the intermediate country—chequered as it is with farm houses, fences, cultivated fields, the broad expanse of the river—the bannered masts of the vessels in the distant bay, and the warlike array of military barracks, camps, and parades. This scene burst suddenly into view, and no combination of objects in the physiognomy of a country could be more happily arranged, after so long a sojournment in the wilderness, to re-

call at once to the imagination the most pleasing recollections of civilized life; and indeed the circumstances of our return would have produced a high degree of exhilaration without the additional excitements of military music which now saluted our ears, and the peals of artillery which bid us welcome to the fort." (HRS:368)

The settlement of Green Bay was established in the late 1600s, and still consisted mainly of French and French-Indian inhabitants. In 1820 its population, including troops, was about 600. Schoolcraft anticipated the development of the lower Fox, but failed to conceive of its extent. Today this is one of the most industrialized sections of river in the Great Lakes, with a population of over 200,000.

"There is perhaps no stream of secondary magnitude in the northwestern parts of America which affords so many facilities to savage life, or which actually supports so great a savage population, as Fox river; and taking into consideration the great fertility and extent of its tillable soil—the rural beauty of the country—its advantageous position for commerce, either with the north or south, and its salubrious and delightful climate, it will probably hereafter, when the Indian tribes yield before an industrious emigration, support one of the most compact, extensive, and valuable agricultural settlements in the Michigan Territory." (HRS:373)

At Green Bay, Schoolcraft and Douglass shipped their scientific specimens to Detroit by schooner, along with some other baggage. The soldiers and Indians were discharged, and on the 22nd the remaining men split into 2 parties. One, including Trowbridge, Doty, and some of the Indians, canoed along the west shore of Green Bay and

the north shore of Lake Michigan, and arrived at Mackinac a week later. En route, Trowbridge collected some rocks for Schoolcraft, but unfortunately his notes included little more than this: "Soon after we parted, the wind rose, and we were compelled to labor excessively hard, as the Indians of whom our crew was composed, were determined to work very little, having no *Great father* to control them . . . The Country on the north shore of Lake Michigan is very barren, & little susceptible of cultivation. Nothing important occurred to us in the voyage" (Trowbridge 1942:347).

Schoolcraft eventually gleaned from Trowbridge and Doty that the north shore "is generally barren, consisting mainly of sandy pine ridges or naked calcareous rocks. The western shores of Green Bay afford some fine lands, mixed, however, with a portion that is either low and swampy, or rocky and sterile." (HRS:404)

Meanwhile, Cass, Schoolcraft, Douglass, and the voyageurs travelled in 2 canoes to Chicago. Proceeding up the east side of Green Bay, they portaged across the Door peninsula at Sturgeon Bay, and on the 24th headed south along the Lake Michigan shore about as far as the Kewaunee River. "Among the forest trees, the beech (*fagus ferruginea*) has been conspicuous; oak, pine, poplar, birch, hemlock, and maple have also been abundant" (HRS:380).

Douglass (1969:101) said, "Saw great flocks of pigeons, all going south—rough-leaved maple and very large sumac among the growth".

The next day they travelled as far as the Sheboygan River. Schoolcraft stated,

"The country consists of a succession

of sand hills covered with pine. The banks of the lake are elevated from twenty to sixty feet, with a broad sand beach strewn with granitic and calcareous pebbles, etc. In walking along some parts of the shore, I observed a great number of the skeletons and half consumed bodies of the pigeon, which in crossing the lake is often overtaken by severe tempests and compelled to alight upon the water, and thus drowned, in entire flocks, which are soon thrown up along the shores. This causes the shores of Lake Michigan to be visited by vast numbers of buzzards, eagles, and other birds of prey. The Indians also make use of these pigeons as food, when they are first driven ashore, preserving such in smoke as they have not immediate occasion for. Vast broods of young gulls are also destroyed during the violent storms which frequently agitate this lake." (HRS:381)

According to Schorger (1948), fog was a far greater threat to passenger pigeons than were storms.

On the 26th they proceeded to the mouth of the Milwaukee River, where 2 white trader families lived in a Potawatomi village. Douglass (1969:101) noted, "Passed some Indians spearing fish—wonderful dexterity with a spear 20 feet long—and standing on the gunwales of a birch canoe . . . Found the woods for some distance back and to this place very extensively on fire and the air thick with the smoke."

On the 27th they camped somewhere between present-day Kenosha and Racine. Douglass collected a spiderwort and 2 species of blazing star, probably *Liatrix aspera* and *L. cylindracea* (Appendix 1). The next day they reached the Chicago area and Schoolcraft stated, "The shore during this distance is principally prairie upon which the oak tree predominates. In

some instances there are hillocks of sand, either wholly destitute of vegetation or capped with scattering pines" (HRS:383).

The canoe carrying Cass and Schoolcraft fell 10 miles short of the settlement at the Chicago River. Douglass' canoe was farther ahead. He "reached Grosse Point [now near Evanston] about 4 P.M., and soon after came in sight of the sand hillocks which characterize the shores in the neighborhood of Chicago. Saw three deer sporting on the bank . . . Large kind of white gull [Herring Gull] with a dark stripe along the tip of the wing" (Douglass 1969:102).

They reached Chicago, and Cass' canoe joined them the next morning. The village of Chicago's population was only about 60, and the nearby Fort Dearborn housed about 160 troops. Again Schoolcraft's assessment of this area, now within the city of Chicago, seems at once prophetic and innocent:

"The country around Chicago is the most fertile and beautiful that can be imagined. It consists of an intermixture of woods and prairies diversified with gentle slopes, sometimes attaining the elevation of hills and irrigated with a number of clear streams and rivers which throw their waters partly into lake Michigan, and partly into the Mississippi river. As a farming country, it unites the fertile soil of the finest lowland prairies with an elevation which exempts it from the influence of stagnant waters, and a summer climate of delightful serenity; while its natural meadows present all the advantages for raising stock, of the most favoured part of the valley of the Mississippi. It is already the seat of several flourishing plantations, and only requires the extinguishment of the Indian title to the lands, to become one of the most attractive fields for the emigrant.

To the ordinary advantages of an agricultural market town, it must hereafter add that of a depot, for the inland commerce between the northern and southern sections of the union, and a great thoroughfare for strangers, merchants, and travellers." (HRS:384)

While they remained here 2 days, Schoolcraft and Douglass gathered data from residents on the regions' geology and geography, and explored locally. On 31 August, Cass and some attendants departed on horseback for Detroit. He left no record of his trip. Douglass, Schoolcraft, and the voyageurs continued canoeing along the south and east shores of Lake Michigan, to rejoin Trowbridge et al. at Mackinac. Their journals reveal little aside from their daily progress and the prevalence of sand dunes. From Chicago to today's industrial Illinois/Indiana state line, "The shore of the lake . . . is the sandy margin of a prairie, without hills"; and regarding Michigan's St. Joseph River, "The lands upon its banks are represented to be rich and beautiful, and heavily timbered with black walnut, oak, maple, and elm; and its mouth is skirted by sand hills of the most sterile appearance, and supporting nothing but pines and poplars" (HRS:388-89).

Near today's city of Holland, "there is a river of secondary size, called Black river or Iroquois, chiefly noted for the ginseng which is abundantly found upon its banks"; and on 4 September, "We encamped at the mouth of the Maskagon at twilight, and had a few moments to examine the singular appearances of this part of the coast, which consists of conical hills of loose sand that are changing their forms and position during every gale of wind; and in some places present a few poplars,

pines, or hemlocks . . . The only birds seen along this part of the coast are the gull and the crow" (HRS:397). Approaching the Sleeping Bear Dunes,

"There is a great uniformity in the appearance of the coast, which is characterized by sand banks and pines. In some instances a stratum of loam is seen beneath the sand, and the beech and maple are occasionally intermixed with the predominating pines of the forest; but our impressions in passing along the coast are only those produced by barren scenery or uncultivated woods." (HRS:400-401)

At the dunes,

"The shore of the lake here consists of a bank of sand, probably two hundred feet high and extending probably eight or nine miles without any vegetation except a small hillock, about the centre, which is covered with pines and poplars, and has served to give name to the place, from a rude resemblance it has, when viewed at a distance, to a couchant bear." (HRS:401)

On 7 September, they "heard pigeons on the shore of Grand Traverse Bay" (Douglass 1969:110), and on the 9th they reached Mackinac, where Doty and Trowbridge waited. Douglass' journal ends here.

Although never mentioned in his journal, Douglass had collected a strange reptile along the sandy shores of Lake Michigan—probably along the southern part of the lake, but in which of today's states is uncertain. Mitchill (*in* Schoolcraft 1855:416) wrote, "the serpent is a species of the ophalian genus *anguis* . . . the blind worm of the English. The loss of the tail of this fragile creature renders an opinion a little dubious . . ." The scientist James

DeKay reported to the Lyceum of Natural History of New York (Anon. 1823) that the specimen represented a new species, which he termed *Ophisaurus Douglasii*. It was ultimately found to be a previously undescribed western subspecies (*O. a. attenuatus*) of the slender glass lizard, the eastern subspecies of which was already known. It is now considered threatened in Wisconsin.

The reunited group left Mackinac for Detroit on 13 September. They camped on the island of Bois Blanc, which Schoolcraft asserted was so named for its abundant tulip poplars, or "whitewood" trees. However, this southern tree does not occur naturally in northern Michigan, and in this case "whitewood" obviously refers to basswood. Here, "a vessel bound for Michilimackinac passed up through the narrow strait which separates the island from the main shore. It is interesting to contemplate the progress of commerce through regions which, at no remote period, were only traversed in bark canoes; and which perhaps in a still shorter period may smile under the hand of agriculture, civilization, and the arts" (HRS:409).

At Saginaw Bay,

"... we found a family of Saganaw Indians who had taken up a temporary residence at that place, attracted by the abundance of water fowl found in a contiguous inlet. These people lead a wandering life, abiding but a short time at a place, changing their habitations whenever the deer, the fish, or the wild fowl promise an easier subsistence at another place. They live in tents formed of rushmats, supported by a few slender poles . . . On entering the tent, we found no person in, but the squaw and children . . . The woman was engaged at the moment in picking the feathers from a number of wild ducks, apparently just killed,

which lay at her side, and our entrance appeared to have no more effect on her than it probably would had one of her own family entered. She continued her work . . . We observed a number of smoked squirrels, fish, and ducks hanging in the upper part of the tent . . ." (HRS:413-14)

They reached Detroit eagerly on 23 September, braving rough lake conditions that they would normally have waited out. They had completed their over-3000-mile circuit in 4 months' time, free of mischance greater than the loss of some botanical specimens, torment by biting insects, and some significant frights. They had encouraged mutual regard with the Territory's native residents, who had proven generous except when their land was being taken. Scientifically, the expedition resulted in the discovery of several plant and mussel species, 1 mammal species, and a subspecies of reptile. From direct observation and interviews with Indian and white residents, it recorded valuable data on the abundance, distribution, and uses of many plant and animal species—a record perhaps more valuable now than in 1820, despite the inaccuracies and vagueries evinced by 170 years' hindsight. The journalists also returned with vivid descriptions of landscapes ranging from the Great Lakes shores, to the Minnesota prairies and swamps, and the Mississippi, Wisconsin, and Fox river corridors, and with information on the natural processes such as fire and wind that helped shape these landscapes.

The experiences of these 4 months were probably routine for the voyageurs and Indian guides. For the gentleman journalists the expedition must have been a formative influence on

their lives and their careers in frontier politics, exploration, business, and teaching. For Schoolcraft, it was an initiation to the Upper great Lakes and its native people—subjects that would occupy him for the rest of his life. He would be back.

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The Summer Season: 1992

by Thomas K. Soulen

The main weather word in summer 1992 was "cool." Although June started out fairly normal, with high temperatures sometimes reaching the high 80's or low 90's, and falling to the mid-30's in low northern locations, the third weekend of the month brought frost to many areas, with unofficial temperatures reaching the lower 20's in some locations (the "official" state low was 24 at Harrison June 21). For the rest of June and through July, weekly lows in nearly all parts of the state never climbed out of the 30's or 40's (and sometimes were again below freezing), and only in the first week of July did the state's high temperature exceed 90. For one week in July, temperatures were reported to be 6-12 degrees below normal. It's not surprising that observers who dislike heat commented on the "heavenly" weather. Rainfall was light the first part of the season, but after mid-June most parts of the state received reasonable amounts of rain most weeks.

Three species vied for honors as the season's prime rarity. One was a White-faced Ibis, Wisconsin's fourth, at the Milwaukee Coast Guard Im-

poundment June 1 and 2. Another was Wisconsin's fifth Brown Pelican, which spent part of the 4th of July on Pewaukee Lake, Waukesha Co. Fortunately its presence was captured on videotape. The third was Wisconsin's fifth Rufous Hummingbird, which harassed ruby-throats for parts of two days at a feeder in Tomahawk. Another rare visitor was the Burrowing Owl that spent June 11 and 12 at Crex Meadows, Burnett Co. Even that brief visit afforded the chance for 4 birders to document its presence. And for only the sixth time in summer, observers saw Least Terns, in Buffalo Co. Finally, this year's extensive search for Kirtland's Warblers turned up one individual, in Washburn Co.

Wisconsin birders saw a number of other rarities, some of them rare by virtue of being out of season. The most striking example of such a species was the Rough-legged Hawk, noted by 6 observers in as many counties. Wisconsin didn't have a corner on summering Rough-legs, however; Minnesota birders reported a record 14 of this species in summer 1992. Other species of note were Eared

Grebe, Yellow-crowned Night Heron, Snow Goose, Spruce Grouse, Yellow Rail, American Avocet, Willet, Whimbrel, Hudsonian Godwit, Marbled Godwit, Western Sandpiper, Buff-breasted Sandpiper, Laughing Gull, Snowy Owl, Great Gray Owl, Chuckwill's-widow, Western Kingbird, Carolina Wren, Northern Mockingbird, White-eyed Vireo, Yellow-throated Warbler, Prairie Warbler and Sharp-tailed Sparrow. Details of these observations are in the species account below.

An ever-increasing number of contributors are commenting, via the numbering system described on the field notes forms, on changes in annual abundance. The picture generally continues to resemble that of recent years, unfortunately. Most species that elicit comment from more than one or two observers tend to have decreased rather than increased over last year. The 4 species bucking that trend were Canada Goose, Merlin, Scarlet Tanager and House Finch. Everyone who commented (at least 3 for each species) said these were more common this year. On the flip side, there was unanimous opinion from 3 or more observers for each of these 35 species that it was present in reduced numbers or absent: Green-backed Heron, Black-crowned Night Heron, Blue-winged Teal, American Kestrel, Ring-necked Pheasant, Ruffed Grouse, Sora, Killdeer, Spotted Sandpiper, Upland Sandpiper, American Woodcock, Forster's Tern, Rock Dove, Common Nighthawk, Chimney Swift, Red-bellied Woodpecker, Eastern Wood Pewee, all the swallows, Common Raven, Black-capped Chickadee, White-breasted Nuthatch, Wood Thrush, Brown Thrasher, Warbling Vireo,

Golden-winged Warbler, Chestnut-sided Warbler, Rose-breasted Grosbeak, Rufous-sided Towhee, Yellow-headed Blackbird, Pine Siskin and Evening Grosbeak. For an additional 14 species not listed, some thought numbers were down and others up, but for each of these, the "downs" decidedly outnumbered the "ups." Worthy of special comment among these latter species is the Eastern Bluebird. After a number of years of encouraging increases, most observers who commented felt this year that numbers definitely were down. Schultz wondered "whether there might have been a substantial die-off . . . during the late snowstorms and cold weather . . . in March and April." Similarly, might the June freeze have had an impact on later summer populations of swallows and perhaps other insect-eating species?

Wisconsin birders located 265 species during the season, above the average of recent summers. Of these, 85 were common and widespread enough to be reported from over 25 counties; they are not included in the species account below. An additional 25 were found in 10–25 counties each. They are listed here, with the number of counties for each indicated in parentheses: American Bittern (17), Least Bittern (13), Black-crowned Night Heron (18), Green-winged Teal (23), American Black Duck (16), Northern Shoveler (12), Redhead (10), Ring-necked Duck (11), Hooded Merganser (22), Ruddy Duck (11), Sharp-shinned Hawk (17), Virginia Rail (16), Sora (25), Common Moorhen (10), American Coot (20), Upland Sandpiper (18), Common Snipe (21), American Woodcock (21), Herring Gull (21), Eastern Screech Owl (10), Hermit Thrush (25),

Blue-winged Warbler (25), Golden-winged Warbler (22), Henslow's Sparrow (11), and Brewer's Blackbird (23). Information about the remaining 155 species is in the species account below.

This year's number of contributors (66) was about the average for the past dozen years. In spite of this, probably partly because a few of those birders covered a lot of territory in their travels, there were reports from every one of Wisconsin's counties, for the first time in at least 12 years.

REPORTS (1 JUNE 1992–31 JULY 1992)

Common Loon.—Observed in June along Lake Michigan in Milwaukee (Bontly, Zehner) and Manitowoc Counties (Sontag). Leshner found an adult and 2 young in Jackson Co. June 11. Noted also in Juneau (Burcar), Monroe (Kuechler) and Waupaca (Tessen) Counties, as well as in 17 more northern counties.

Horned Grebe.—This uncommon summer visitor was reported from Door Co. June 11 (Laura Mueller fide the Lukes). Very unusual was a bird in Marathon Co. June 23 (Belter).

Red-necked Grebe.—Ziebell counted 78 in Winnebago Co. June 25, along with 7 nests, 7 young and 22 eggs. Noted by several observers each in Burnett and Green Lake Counties.

Eared Grebe.—Reported from Dane (Burcar June 6–11, Peterson) and Dunn (2 throughout the period, Polk) Counties.

Brown Pelican.—Wisconsin's fifth record of this wanderer came when Russell Droske and his son-in-law videotaped one on Pewaukee Lake, Waukesha Co., July 4 (reported by Boldt). Accepted by the Records Committee. See "By the Wayside."

American White Pelican.—The largest number of summer reports in at least a dozen years. The Mississippi River a few miles south of the La Crosse/Vernon Co. line was the easiest place to see them consistently (birds were in this

same location in 1991). Among the several observers reporting them from this location, Dankert saw the most, at least 103 on June 28. Also noted in Adams and Juneau (Tessen), Burnett (Hoefer), Dodge (Burcar, Domagalski), Door (fide the Lukes), Douglas (Johnson, Semo) and Green Lake (Schultz) Counties.

Great Egret.—Observed in Barron Co. in the west (Goff), Marinette Co. in the east (Lindberg), and 15 more southern counties.

Cattle Egret.—Reported only in Brown Co. June 12 (Tessen).

Yellow-crowned Night-Heron.—Only 2 reports: Columbia Co. June 7 (Burcar) and Dodge Co. June 11 (Domagalski).

White-faced Ibis.—Wisconsin's first well documented summer record of this species was provided by a bird at the Coast Guard Impoundment in Milwaukee June 1–2 (Burcar, Domagalski, Korducki).

Accepted by the Records Committee. See "By the Wayside."

Tundra Swan.—Present at the beginning of June in Ashland Co. (Burcar).

Trumpeter Swan.—Reintroduction continues to produce summer records, this year from Burnett (Burcar, Hoefer, Peterson) and Dunn (Polk) Counties.

Mute Swan.—Noted again by a number of observers in Ashland, Dane, Douglas and Milwaukee Counties. Nussbaum observed 2 adults and one young in Manitowoc Co. June 12–20, and Berner reported birds in Portage Co. for the third year in a row.

Snow Goose.—More reports than usual, from Dodge Co. June 28 (Burcar, Domagalski), Manitowoc Co. June 4 (Peterson) and Winnebago Co. July 28 (Nussbaum).

Northern Pintail.—Observed in fewer counties than usual: Dane June 1 (Burcar), Dodge through June 11 (Domagalski) and Oconto June 13 (Tessen) and 17 (adult and 9 young; the Smiths).

Gadwall.—Observers found these in these

8 counties: Ashland, Brown, Burnett, Dane, Dodge, Oconto, Vilas and Winnebago.

American Wigeon.—Noted in Ashland, Burnett, Dane, Dodge, Green Lake, Juneau, Vilas and Winnebago Counties.

Canvasback.—Present in Dodge Co. June 21–July 19 (Burcar, Domagalski), Manitowoc Co. June 20 (Nussbaum) and Winnebago Co. through June 25 (Ziebell).

Greater Scaup.—Reported in early June from Ashland and Dane Counties (Burcar) and Douglas Co. (Semo). Also noted in Sheboygan Co. June 20 (the Brassers) and Milwaukee Co. July 11 (Korducki).

Lesser Scaup.—Observers found these in Brown, Dodge, Douglas, Dunn, Vilas and Winnebago Counties.

Common Goldeneye.—Noted in Door, Manitowoc and Sawyer Counties.

Common Merganser.—This year's reporting counties were Bayfield, Door, Florence, Forest, Oconto, Price, Taylor, Vilas and Wau-paca.

Red-breasted Merganser.—Noted only in Ashland, Door, Manitowoc, Milwaukee and Oneida Counties.

Turkey Vulture.—Reported from 41 counties, representing all corners of the state. Semo noted flocks of 20–30 in the southern part of Douglas Co.

Osprey.—Most of the 21 counties from which this species was reported were central and northern, but birds were noted also in La Crosse Co. June 16 (Tessen), Milwaukee Co. June 20 (Domagalski), Outagamie Co. June 21 (Nussbaum), Winnebago Co. June 25 (Ziebell), Dodge (Burcar, Domagalski) and Manitowoc (Nussbaum) Counties July 19, and Calumet Co. also in July (Ron Zahringer fide Rudy).

Bald Eagle.—Nested near Lake Puckaway, Green Lake Co. (Schultz). Present most of the season in Outagamie Co. (Nussbaum) and on June 16 in Richland Co. (Duerksen). Observed also in 23 more northern counties.

Northern Goshawk.—Reported from Barron, Door, Douglas, Marathon, Marinette, Oconto, Sawyer, Taylor and Vilas (vigorously defending territory, Baughman) Counties.

Red-shouldered Hawk.—Travels in conjunction with old growth forest surveys turned up birds in 2 far northern counties: Bayfield and Forest (Mossman, Russell). Noted also in 20 counties further south.

Broad-winged Hawk.—Although most of the 31 reporting counties were northern, observers found birds in Buffalo, Dane (nesting?, Cederstrom), Grant, La Crosse, Lafayette, Sauk, Sheboygan, Walworth and Waukesha Counties.

Rough-legged Hawk.—There have been very few summer reports of this species in Wisconsin, but observers noted birds this year in no fewer than 6 counties: Dodge June 28 (Burcar, Domagalski), Douglas June 1 (Semo), Florence June 14 (Mead), Milwaukee June 18 (Jim B. Marks), Oneida July 4 (Spahn) and Vilas July 3 (Burcar) and July 6–15 (Spahn). See "By the Wayside" in this issue and in the Fall 1992 issue for accounts of some of these observations.

Merlin.—Probably nested in Vilas Co. (Baughman, Spahn). Also noted in Douglas (Johnson, Semo) and Price (Hardy) Counties.

Peregrine Falcon.—Reported again from Dane and Milwaukee Counties, sites of reintroduction programs. A bird seen in Kenosha Co. June 11 also could be a product of this program (Hoffmann).

Gray Partridge.—Observed in the south in Columbia and Dodge Counties and in the north in Marinette (Lindberg) and Sawyer (Burcar) Counties. The Sawyer Co. location is considerably outside the normal range of this species.

Spruce Grouse.—The only report was of a very cooperative male in Vilas Co. July 13 (Spahn).

Ruffed Grouse.—Reported from 30 counties, in pretty much expected locations.

Greater Prairie-Chicken.—Observed in expected locations in Burnett (Burcar) and Taylor (Armbrust) Counties.

Sharp-tailed Grouse.—Also noted only in Burnett and Taylor Counties.

Wild Turkey.—Birds have been released over the years, some fairly recently, in a number of Wisconsin locations, and thus how "countable" some of the birds seen is a question. The last 12 years have seen the average number of reporting counties in a summer climb from 3–4 to no less than 21 this year. Rudy reports that Calumet Co. birds are "new here."

Northern Bobwhite.—Might a Price Co. bird (Hardy) have been a local release or escape? The other 13 reporting counties were within normal range.

Yellow Rail.—Reported from Burnett Co. in early June (Burcar).

King Rail.—This species was reported in Dodge Co. from mid-June through mid-July, with at least one sighting (Burcar, Domagalski, Robbins), Fond du Lac Co. June 14 (Burcar) and Winnebago Co. June 25 (nest with one adult and 3 eggs, Ziebell).

Sandhill Crane.—Berner reported that flocks of up to 50 in north central Portage Co. did an estimated \$15,000 of crop damage. Noted in 41 counties overall.

Black-bellied Plover.—Observed in early June in Burnett Co. (Burcar) and until June 9 in Dodge Co. (Domagalski).

Lesser Golden-Plover.—Present on at least 4 dates in Horicon Marsh, Dodge Co., between June 13 and July 9, with a high of 4 birds (3 in breeding plumage) on June 14 (Burcar, Domagalski). Burcar also noted one in Juneau Co. June 4.

Semipalmated Plover.—Lingered into early June in 6 counties, latest in Manitowoc Co. June 10 (Sontag). A fall migrant had appeared in Kewaunee Co. by July 11 (Burcar) and in several more locations within the next week and a half.

Piping Plover.—For the fourth straight summer, there were no reports of this species.

American Avocet.—Observed in Dane Co.

July 4 (Ashman), Dodge Co. July 16 (4 birds; Bill Foster, Robbins), Kenosha Co. July 10 (Greg Septon, Jim Marks) and Milwaukee Co. July 23–24 (Burcar, Domagalski, Korducki).

Greater Yellowlegs.—Was a June 11 bird in Waupaca Co. (Nussbaum) a late spring or an early fall migrant? Hoefler reported this species from June 17 on in Burnett Co., but other returning birds appeared first July 5–9, in 4 locations.

Lesser Yellowlegs.—Birds were observed regularly from June 11 on in Dodge Co. (Domagalski) and from June 17 on in Burnett Co. (Hoefler). The next observations came from Dane Co. June 25 (Burcar) and Manitowoc Co. June 28 (Sontag), but most areas did not report fall migrants until the first week of July or later.

Solitary Sandpiper.—Lingered until early June in Taylor Co. (Armbrust). Observed from June 17 on in Burnett Co. (Hoefler) and from June 28 on in Dodge Co. (Burcar, Domagalski). Subsequent arrival dates were in July, mostly July 11 or later.

Willet.—A bird in Outagamie Co. July 6–8 provided the summer's only record (Nussbaum).

Whimbrel.—One bird was present in Dane Co. June 1 (Burcar), and 2 remained in Manitowoc Co. through June 21 (Sontag).

Hudsonian Godwit.—Birds were present the first few days of June in Burnett (Burcar), Dodge (Domagalski) and Dunn (Polk) Counties.

Marbled Godwit.—Observed in Columbia Co. July 9 (Burcar) and Dodge Co. July 3–9 (Burcar, Domagalski).

Ruddy Turnstone.—Lingered into June in 7 counties, latest until June 9 in Manitowoc Co. (Sontag), where 95 were present on June 1. Returning birds were seen July 30 in Milwaukee Co. (Domagalski, Korducki) and July 31 in Dane (Burcar, Hansen) and Manitowoc (Nussbaum) Counties.

Red Knot.—Several observers found this species in Manitowoc Co. in early June, with Sontag's June 8 report being the latest.

Sanderling.—Remained until June 12 in

Manitowoc Co. (Nussbaum). Three counties reported returning birds July 29–31.

Semipalmated Sandpiper.—As usual, observers saw this species into June in a variety of areas; June 29 was the latest “spring” report, in Manitowoc Co. (Sontag). Fall migrants appeared in 7 locations July 12–21, earliest in Dane Co. (Ashman).

Western Sandpiper.—Tessen reported one bird in Milwaukee Co. July 26.

Least Sandpiper.—Noted until June 14 in Dodge Co., then again from June 28 on (Burcar, Domagalski). Fall migrants also appeared June 28 in Milwaukee Co. (Korducki) and in several other areas within the next week.

White-rumped Sandpiper.—Stragglers remained in at least 5 counties into June, last being noted in Dodge Co. June 17, where 18 were present June 11 (Domagalski). A fall plumage bird was seen in Manitowoc Co. June 30 (Nussbaum).

Baird's Sandpiper.—Had shown up in Milwaukee Co. by July 27 (Domagalski, Korducki).

Pectoral Sandpiper.—Present at the beginning of June in Dodge Co. (Burcar), where the first fall migrants were reported July 3 (Domagalski). Returning birds were not seen elsewhere until July 10 and later.

Dunlin.—Remained into June in 11 counties, latest in Dodge Co. (June 21); birds were also present there July 6 and various other dates through the end of the month (Burcar, Domagalski). Two birds in Manitowoc Co. July 19 constituted the only other July report of this species (Nussbaum).

Stilt Sandpiper.—Noted in Dane Co. July 4 (Ashman), Eau Claire Co. July 10 (Polk), Outagamie Co. July 14–15 (Nussbaum) and in three further counties before the end of the month.

Buff-breasted Sandpiper.—Two were present in Eau Claire Co. July 31 (Polk).

Short-billed Dowitcher.—Reported from Manitowoc Co. through June 3 (Sontag).

There were “fall” reports from 10 counties by July 10, beginning with 7–8 birds seen and heard in Dodge Co. July 3 (Domagalski). As many as 28 birds were reported from Outagamie Co. July 14 (Nussbaum). Although we tend to assume that these earliest migrant dowitchers are Short-billed, again this year very few observers provided any documentation with their reports.

Long-billed Dowitcher.—There were no reports of this species this season.

Wilson's Phalarope.—Reported through most of the period only from Dodge and Burnett Counties. Other reports came from 6 additional counties, either at the beginning of June or after the first week in July.

Laughing Gull.—An adult in Manitowoc Co. June 12 provided the season's only report (Tessen). See “By the Wayside.”

Franklin's Gull.—Single birds were present in Manitowoc Co. June 4 (Tessen) and 12 (Peterson). Observed through July 5 in Milwaukee Co. (Korducki).

Little Gull.—Seen by a number of observers in Manitowoc Co. through the season, with a maximum count of 8 on July 22 (Sontag). Also noted by several observers in Milwaukee Co. in the latter part of the season; reported there first by Korducki June 20.

Bonaparte's Gull.—Eric Epstein saw an immature sitting on a highway on a rainy morning in Shawano Co. (June 17, fide Russell). The remaining 9 reporting counties bordered Lake Michigan or Lake Superior.

Caspian Tern.—Three in Dane Co. July 10 were unusual (Ashman). Also observed in Trempealeau Co. June 1 (Leshner). The other 12 reporting counties bordered Lake Michigan or Lake Superior.

Common Tern.—A very unusual nesting attempt (adult on nest incubating 2 eggs), apparently unsuccessful, was reported from the Milwaukee Coast Guard Impoundment (Korducki). Seen in 11 additional counties.

Forster's Tern.—An adult was observed being very protective of and feeding an obviously juvenile bird at the Milwaukee Coast Guard im-

poundment July 17; the birds remained into August (Boldt). Ziebell found 81 nests containing 163 eggs in Winnebago Co. June 25. Noted in 11 counties overall.

Least Tern.—Two were seen July 25 on a mud/sand bar in the backwaters of the Mississippi River in Buffalo Co. (Philip C. Whitford and members of an Elderhostel birding/natural history tour). This constitutes Wisconsin's sixth summer record. For an account of this observation, see "By the Wayside" in the Fall 1992 issue.

Yellow-billed Cuckoo.—Northernmost among the reporting locations were Burnett, Forest and Oconto Counties. Noted in 19 counties overall.

Snowy Owl.—An adult present in Manitowoc Co. until June 24 provided Wisconsin's third summer record in 5 years (Sontag).

Burrowing Owl.—Wisconsin's first well documented summer observations of this species occurred at Crex Meadows in Burnett Co., where Hoefer first found a bird June 11 that was seen the next day also by Burcar, Domagalski and Johnson. Reports by all these observers were accepted by the Records Committee. See "By the Wayside."

Great Gray Owl.—For the fifth summer in a row, reports came from Douglas Co., where a dead bird was found June 2 (Bacon) and a live one was seen July 14 (Semo, Kimberly Fry). Also noted in Forest Co. June 7 (T. Meyer, Lucas Meyer, Thomas Erdman). Accepted by the Records Committee. See "By the Wayside."

Long-eared Owl.—Semo located a nest with 4 eggs in Douglas Co.

Northern Saw-whet Owl.—Reported through the early part of the period in Douglas Co. (Johnson, Semo).

Common Nighthawk.—The Brassers wondered whether their very late first observation (July 9) and overall very small numbers might have been related to extensive spraying for gypsy moths on 3 consecutive Mondays in May and June along Lake Michigan and up to one mile inland in Sheboygan Co.

Chuck-will's-widow.—Several observers reported hearing the Oconto Co. bird into the first part of July.

Rufous Hummingbird.—Bell and LoAnn Martello watched a male at close range July 30–31 as it harassed ruby-throats at a feeder in Tomahawk, Lincoln Co. This observation constitutes only the second summer record for the state. Accepted by the Records Committee. See "By the Wayside."

Red-bellied Woodpecker.—Of the 37 reporting counties, the most northern were Barron, Burnett, Chippewa, Marathon, Oconto and Taylor.

Yellow-bellied Sapsucker.—Summer reports of this species from south central Wisconsin are very unusual, and yet this season produced nesting in both Dane (Hansen) and Sauk (Burcar, Haseleu, Robbins) Counties. One was seen in Milwaukee Co. July 30 (Bontly). Also noted in Columbia and Iowa (Burcar) and 28 more northern or western counties.

Olive-sided Flycatcher.—A June 9 bird in Portage Co. (Berner) likely was a late migrant. It is difficult to know what to make of a July 1 bird in Clark Co. (Burcar). Also observed in Barron, Douglas, Forest, Price and Vilas Counties.

Yellow-bellied Flycatcher.—Of the southern reports of stragglers, the latest was June 5 in Milwaukee Co. (Bontly). Summer range reports came from Douglas, Forest, Price and Vilas Counties.

Acadian Flycatcher.—As usual, most records came from the southern third of the state. A pair in Calumet Co. was unusual (Rudy). Rudy found 18 singing males in Sheboygan Co., Boldt found birds in every mature pine plantation he visited in the Kettle Moraine area of Waukesha Co., and John Bielefeldt (fide Boldt) located 40 nests in this same area, every one in a pine plantation. Noted in 17 counties overall.

Willow Flycatcher.—Reported north of normal summer range in Forest Co. June 13 (Mead). The other most northern reports came from Burnett, Marathon, Oconto and Taylor Counties. Noted in 30 counties overall.

Western Kingbird.—The season's only re-

port was of a bird seen well in Portage Co. June 12 (Burcar).

Gray Jay.—Noted in five counties within normal range: Douglas, Forest, Iron, Price and Vilas.

Common Raven.—The southernmost reports in the western part of the state came from Juneau (Burcar) and Monroe (Kuecherer) Counties. Further east, and somewhat south of usual summer locations, were birds in Portage Co. through mid-July (Berner), Outagamie Co. on several dates throughout the period (Anderson, Petznick, Tessen) and Waupaca (Tessen, July 15) Counties.

Boreal Chickadee.—Noted only in Forest (Belter, Spahn) and Vilas (Baughman, Spahn) Counties.

Tufted Titmouse.—Reported from these counties: Chippewa, Columbia, Dane, Dunn, Eau Claire, Grant, Iowa, Monroe, Rock and Sauk (where Hansen saw birds with 2 young).

Red-breasted Nuthatch.—Present throughout the period in Dane (Ashman), Dunn (Raile) and Milwaukee (several observers) Counties. Noted in Grant Co. June 18 and Sauk Co. June 23 (Cederstrom). Boldt reported birds in nearly every mature pine plantation he visited in the Kettle Moraine area of Waukesha Co. (noting 10 along 50 feet of trail in one instance), and Polk saw a family group in Eau Claire Co. June 26. The remaining 15 reporting counties were considerably further north.

Brown Creeper.—Two were in Walworth Co. June 10 (Parsons). Noted in Columbia (Burcar), Grant (Belter, Burcar) and 16 more northern counties.

Carolina Wren.—A banner year for this species! Present throughout the period in Dane Co. (at least 2 birds; Ashman, Cederstrom) and at least until July 24 in Milwaukee Co., again with at least 2 present (Burcar, Korducki, Zehner). Cederstrom found birds in June in Grant, Iowa and Sauk Counties, and Robbins located one in Iowa Co. July 7. One bird was present June 3–11 in Calumet Co., sharing its "territory" with one pair each of House and Winter Wrens (Rudy). Far north of any other birds was one heard and seen well for an hour by Johnson in Douglas Co. June 30. Burcar had the amazing

experience of finding 8 birds in one day (July 26) in Grant Co., including a family group of 5 in Wyalusing State Park.

Winter Wren.—Noted in Calumet Co. throughout the period (Rudy, 2 pair), Grant Co. (Burcar, Korducki), Outagamie Co. June 7 (Nussbaum), Sauk Co. (Burcar), and Sheboygan Co. June 30 (Rudy), as well as in 20 more northern counties.

Golden-crowned Kinglet.—This year's 5 reporting counties were all within normal range: Douglas, Florence, Forest, Langlade and Vilas.

Ruby-crowned Kinglet.—Observed in fewer counties than usual: Douglas (Semo), Iron (Burcar) and Vilas (Baughman, Belter).

Blue-gray Gnatcatcher.—The Smiths counted 10 in Oconto Co. June 14. Observations in Price and Taylor Counties are somewhat north of the usual summer range (Burcar). Noted in 37 counties overall.

Swainson's Thrush.—A bird in Milwaukee Co. June 30 through July 6 was very unusual (Bontly). Other records came from more expected counties: Florence, Forest, Menominee and Vilas.

Northern Mockingbird.—Observed in Grant Co. June 27 (Korducki).

Loggerhead Shrike.—Nested again in Oconto Co., with 5 young still present July 23 (the Smiths, Tessen). Reported also from Green Co. June 8 (Cederstrom), Iowa Co. (Elsa Althen, Russell, Andrew Williams; pair in late July), Rock Co. July 24 (Tracy; birds have been present near this site in 4 of the past 9 years) and Taylor Co. through June 10 (Armbrust).

White-eyed Vireo.—Noted in Green Co. June 9 (Peterson) and Grant Co. July 26 (Burcar).

Bell's Vireo.—Reported from Grant Co. (Belter, Soulen) and from Dane (Burcar, Robbins) and Iowa (Elsa Althen, Burcar, Russell, Andrew Williams) Counties.

Solitary Vireo.—This species has sometimes been found in summer in the Kettle Mo-



Loggerhead Shrike photo by Bob Tracy.

rairie area of Waukesha Co.; this year it was present there throughout the season, with a high of 4 birds counted July 4 (Boldt). Also noted in Jackson Co. (Berner, Robbins). All other observations were in 10 considerably more northern counties.

Yellow-throated Vireo.—Among this year's 41 reporting counties, the most northern were Bayfield, Douglas, Florence, and Vilas.

Brewster's Warbler.—A female of this hybrid was associating with a male Golden-winged in the Mead Wildlife Area, Marathon Co. June 24 (Berner). Cederstrom found one again in Grant Co. June 18, in the same location as last year.

Tennessee Warbler.—Present from July 21 on in Portage Co. (Berner), in Outagamie Co. July 29 (Tessen), and in Marathon Co. July 31 (Berner).

Nashville Warbler.—Present through June 4 in Green Lake Co. (Schultz). A June 21 report from Dane Co. is unusual (Burcar). Noted also in 26 considerably more northern counties.

Northern Parula Warbler.—Reports came from these counties: Ashland, Bayfield, Door, Douglas, Florence, Forest, Menominee, Oconto, Oneida, Price and Vilas Counties.

Chestnut-sided Warbler.—6 of this season's 39 reporting locations were in the bottom two tiers of counties.

Magnolia Warbler.—Lingered until June 2 in Milwaukee Co. (Bontly), June 3 in Waupaca and Wood Counties (Burcar), and June 8 in Manitowoc Co. (Sontag). One was still present June 21 in Portage Co. (Berner). Noted June 29 in Sauk Co., where it sometimes summers (Burcar). Other reports came from 4 far northern counties.

Cape May Warbler.—Present throughout the season in Price Co. (Hardy) and June 6 in Vilas Co. (Baughman).

Black-throated Blue Warbler.—Mossman and Russell heard 34 singing males in Menominee Co.! Also noted in Bayfield, Forest and Vilas Counties.

Yellow-rumped Warbler.—Present at the beginning of the period in Manitowoc Co. (Burcar) and throughout the season in Portage Co., where Berner found them in 5 locations; 2 nests fledged young. Also noted in Chippewa, Eau Claire, Jackson, Monroe and 17 counties further north.

Black-throated Green Warbler.—Reported in the first half of June in 5 fairly southern counties, latest June 10 in Calumet Co. (Rudy). A singing bird in Dane Co. June 18 was unusual (Hansen). Two southern locations that have previously yielded summer records, because of suitable habitat, produced again this year: Sauk (Burcar, Hansen) and Waukesha (Boldt) Counties. Also reported from 20 counties further north. Mossman and Russell counted 149 singing males on their Menominee Co. transects.

Blackburnian Warbler.—Lingered into June in 7 southern counties, latest June 12 in Milwaukee (Bontly) and June 19 in Manitowoc (Sontag). Observed in Sauk Co. (Burcar), where it sometimes summers, and in 13 northern counties.

Yellow-throated Warbler.—Two birds were seen and/or heard again this year at Wyalusing State Park, Grant Co. in both June and July (several observers). Several of these Grant Co. records were reviewed and accepted by the Records Committee. See "By the Wayside."

Heard and seen also in the usual Avon Bottoms site in Rock Co. June 27 (Burcar). Reports from a new location, Tower Hill State Park in Iowa Co., apparently were not reviewed by the Records Committee, but the observers provided documentation and are familiar with the species (June 29, Robbins and Bill Foster; July 14, Burcar).

Pine Warbler.—The only southern reports came from the Kettle Moraine area of Waukesha Co., where this species seems to summer most years (Boldt, Burcar). Also noted in 23 central and northern counties.

Kirtland's Warbler.—According to Wes Jones, Kirtland's Warbler Survey Coordinator, Wisconsin DNR, this year's only report was of a bird found by Terry O'Halloran in Washburn Co. Jones also reports (fide Tessen) that during the period 1988–92 the project has banded and/or color marked 4 birds in 3 counties.

Prairie Warbler.—A singing male was present much of June in Sheboygan Co. (Rudy).

Palm Warbler.—Reported through July 12 from Taylor Co., a new summer location, at least in the past dozen years (Armbrust). Also present in Douglas, Oneida, Price and Vilas Counties.

Bay-breasted Warbler.—Still in Sheboygan Co. June 1 (Ashman) and Milwaukee Co. June 2 (Strelka). Might a June 13 Forest Co. bird (Mead) have been a summer resident? And was a July 15 Portage Co. bird (Berner) a very early migrant?

Cerulean Warbler.—More reports than many years, perhaps because more birders were birding more counties than in some years. Birds in Marathon (Belter), Oconto (the Smiths) and Polk (Soulen) Counties represent the northernmost records. Reported from 19 more southern counties. Rudy heard 16 singing males in Sheboygan Co.

Prothonotary Warbler.—This season's observations were in Buffalo, Calumet, Columbia, Dodge, Grant, Iowa, La Crosse, Outagamie, Richland and St. Croix Counties.

Worm-eating Warbler.—Burcar reported hearing one in atypical habitat in Portage Co. June 3.

Northern Waterthrush.—Still present in Dodge Co. June 2. A June 23 bird in Dane Co. is puzzling (Burcar). Noted in 13 central and northern counties.

Louisiana Waterthrush.—This summer's reports came from these counties: Burnett, Dunn, Grant, Iowa, Portage, Sauk and St. Croix.

Kentucky Warbler.—Noted in Iowa Co. July 4 (Robbins) and in Grant Co. through the period (several observers).

Connecticut Warbler.—Recorded in Douglas, Jackson, Menominee, Price and Vilas Counties.

Mourning Warbler.—Of the 38 reporting locations, 4 were in the southernmost 2 tiers of counties.

Hooded Warbler.—Over 30 individuals were reported this summer (several individuals conducted surveys), from these counties: Dane (Ashman, Robbins), Jefferson (Ashman), Menominee (seen and heard June 19, Peterson), Sheboygan (Rudy, who found 12 singing males; Ashman), Walworth (Ashman) and Waukesha (Boldt, Burcar).

Wilson's Warbler.—Present in 3 southeastern counties along Lake Michigan into June, latest in Manitowoc Co. June 8 (Sontag).

Canada Warbler.—Present in Sauk Co., where it regularly summers. Birds noted in early June in Calumet, Manitowoc and Ozaukee Counties may have been late migrants, although there have been summer records from this region of the state. One bird lingered in Milwaukee Co. until June 22 (Bontly, Strelka). Other reports came from 8 considerably more northern counties.

Yellow-breasted Chat.—Nested in Dane Co., where up to 4 birds were seen (Ashman, Burcar). Also noted in Columbia Co. June 7 (Burcar), Green County June 9 (Peterson, 2 birds) and Washington Co. June 13 (Frank).

Northern Cardinal.—Among this year's 50 reporting counties, these were the northernmost: Barron, Burnett, Door, Florence, Forest, Oconto, Price and Taylor.

Dickcissel.—No one commented on large numbers, but records came from 30 fairly widely distributed counties. The northernmost were Brown, Burnett, Douglas, Oconto, Shawano and Taylor.

Field Sparrow.—Reported from 45 counties in all, of which these were furthest north: Barron, Burnett, Douglas, Forest, Oconto and Vilas.

Lark Sparrow.—Nested in Monroe Co., where 3 pair were observed (Kuecherer). Reported also from Dunn (Polk, Soulen), Eau Claire (Polk), Grant (Spahn) and Sauk (Burcar) Counties.

Grasshopper Sparrow.—Noted in 32 counties, with these being the most northern: Barron, Burnett, Door, Douglas, Marathon, Oconto and Shawano.

LeConte's Sparrow.—Reports came from Ashland, Burnett, Douglas, Marathon, Langlade, Oneida, Price, Taylor, Vilas and Winnebago Counties.

Sharp-tailed Sparrow.—Birds were in at least 3 locations at Crex Meadows, Burnett Co. June 26–27 (Peterson, Soulen).

Lincoln's Sparrow.—A singing male was seen June 13 in Jackson Co., where this species summers occasionally (Boldt, Korducki). A Polk Co. bird July 7 was outside normal summer range (Burcar). Might a June 8 bird in Marathon Co. (Belter) have been a very late migrant? Noted also in Douglas, Forest, Iron, Lincoln, Oneida, Price and Vilas Counties.

White-throated Sparrow.—A straggler was in Milwaukee Co. June 4–13 (Strelka). The other 21 reporting counties were within normal range.

Dark-eyed Junco.—This species is to be expected in the northernmost tier of counties and was found this year in Douglas, Forest and Vilas Counties. It is not known how commonly they occur even a bit further south. Undocumented reports this summer came from Lincoln Co. July 2 (Burcar), Marinette Co. (Lindberg), Sheboygan Co. at the beginning of the season (the Kuhn family), and Taylor Co. through June 18 (Armbrust)

Yellow-headed Blackbird.—Ziebell located 286 in Winnebago Co. June 25, including 144 young. Hardy saw one male in Price Co. through July 14. Other reports came from Barron, Douglas, Marinette, Oconto, Taylor and 21 central and southern counties.

Orchard Oriole.—Noted in Calumet, Dane, Dunn, Iowa, Marquette, Monroe, Ozaukee, Sauk, Trempealeau and Walworth Counties.

Purple Finch.—A June 1 bird in Dane Co. was unusual (Burcar). The remaining 20 counties were within normal range.

House Finch.—Noted in 40 counties this year, up from 30 last year. There remain only 21 counties for which there are yet no summer records.

Red Crossbill.—Observed in Douglas Co. June 10–12 (Johnson), La Crosse Co. June 27 (Leshner) and Vilas Co. July 13 (Spahn).

White-winged Crossbill.—The only report came from Douglas Co. June 26 (Johnson).

Pine Siskin.—Small numbers, in 12 counties overall, mostly in the east and north.

Evening Grosbeak.—Recorded in 8 northern counties.

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50 Years Ago in *The Passenger Pigeon*

The notice of the Fifth Annual Convention to be held at the Milwaukee Public Museum on May 1-2, 1943 and sponsored by the Milwaukee Bird Club was included in this issue. The program included presentations on the following topics:

Overwintering Waterfowl in Milwaukee Harbor—Earl Loyster
A Falconry Program for Wisconsin—W. S. Feeney
Parasitic Bird Flies—Kenneth MacArthur
Bird Banding on Lake Michigan—Earl Wright
Adventures with Western Birds—Cleveland Grant (Dinner Speaker)
Birds At My Window—Mrs. Water Pierce
The Horicon Marsh Wildlife Area—Earl Mitchell
Bird Banding Highlights for 1942-43—Harold Wilson
Bird Neighbors—Howard Orians
Adventures with a Bird Sanctuary—B. L. Von Jarchow
Rearing Barn Owl Nestlings—Elizabeth Oehlenschlaeger
Winter Birds in Deer Yards of Northern Wisconsin—Staber Reese

Seven of the presentations included motion pictures. (Excerpts from Volume 5, 1943)

“By the Wayside”

Reports of Brown Pelican, White-faced Ibis, Laughing Gull, Burrowing Owl, Great Gray Owl, Rough-legged Hawk, Rufous Hummingbird and Yellow-throated Warbler are featured.

BROWN PELICAN (*Pelecanus occidentalis*)

4 July 1992, Pewaukee Lake, Waukesha County—I first heard about this bird on the 10th via a message on the hotline. The next evening I visited the man who had reported it, Mr. Russell Droske. He said he had first seen the bird from shore at the northwestern corner of the lake. This area is the only area on the northern half of the lake with any emergent vegetation to speak of. Mr. Droske subsequently went out on a boat with his son-in-law who videotaped the pelican. I viewed this tape, and although having been taken on the boat made it quite jerky, the picture was quite clear, and when the camera was zoomed in the bird almost filled the frame. All typical characteristics were noted—dark gray bill and throat pouch, creamy white head and neck being highly visible, but I do remember noting a dark rust-brown color on the back of the head, forming a small crest at the top, indicating an adult bird. Mr. Droske observed the bird heading north away from the lake after the taping.—*Brian Boldt, 1832 Jeffery Lane, Waukesha, WI 53186.*

WHITE-FACED IBIS (*Plegadis chihi*)

1–2 July 1992, Coast Guard Impoundment, Milwaukee County—A dark iridescent wading bird with a body size larger than a Ring-billed Gull. Long, slender, down-curved bill with a yellow-gray color. Legs bright rose red. Head, neck, upper back and breast a rich chestnut color. Wings are an iridescent mix of green and purple. I focused mainly on the face. Bright maroon skin patch around the red eye and extending forward to the bill. Bordering this skin patch was a distinct white line of uniform width that extended over the base of the bill at forehead, bent behind the red eye and then came back to under the bill at chin.

The bird seemed ill at ease. It alternated between a sleeping position and walking the muddy edge of the impoundment. Briefly flew over the north east mud flat of the impoundment, then landed again on the south shore. In flight, the neck was extended out, the legs hung out behind, and the long down-curved bill was very noticeable. Had an overall dark appearance but on close look in flight, the primaries were iridescent green while the

base of the wings (both above and below) were chestnut colored.

First saw this bird at 7:30 P.M. on June 1st. I watched it leave the impoundment, flying south, at 5:30 A.M. on June 2nd.—*Robert C. Domagalski, W140 N8508 Lilly Road, Menomonee Falls, WI 53051.*

2 July 1992, Coast Guard Impoundment, Milwaukee County—From the southern shoreline of the impoundment I spotted a dark bird on the eastern shoreline among a flock of about 100 ring-billed and Bonaparte's gulls. From a distance of 200 yards, I first noted the long downcurving bill and all dark plumage. Then I moved to the north side of the impoundment and approached to within a distance of 50 yards of the bird. I observed the white facial border which extended under the chin to the bill, behind the eye, and over the top of the red eye and red face patch to the forehead. I was able to distinguish a reddish colored plumage from this distance. The grayish bill was over two times the length of the head and had a pronounced down curve. I also noted the reddish legs. The long neck of the bird was noted as it stood much taller among the gulls. The bird then flushed after a few minutes, flew around the southern edge of the impoundment, then landed there. When the bird flew, I especially noted the long curved bill. The dark red legs trailed behind the tail in flight. Now from a distance of 150 yards I watched the bird feed by probing with its bill along the muddy shore for several minutes, then it flew south at 5:30 A.M. and hadn't returned by 7:30 A.M. when I left the area.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*

2 July 1992, Coast Guard Impoundment, Milwaukee County—After learning that Robert Domagalski had located a White-faced Ibis on the evening of June 1st, I arrived at the impoundment before sunrise on June 2nd. I quickly located the bird amidst a sleeping flock of Bonaparte's Gulls. In the pale pre-dawn light, the long decurved bill, dark color, and white border around the face were illuminated. As the light gradually improved, I noticed that the body feathering was glossy chestnut and the wings were iridescent green. The face was fairly dark and appeared to be about the same color as the head feathers: reddish brown. Surrounding the face was a border of white feathering about 1/4 inch in width. This border extended below the chin and behind the eye. The bill was dark gray. Size was slightly smaller than a Black-crowned Night Heron and the ibis was longer-necked and more slender.

After about 20 minutes, I was joined by Kay Burcar and Bob Domagalski. They were also fortunate enough to view the bird as it rested about 40 meters away. After a few minutes, the ibis flew to the south side of the impoundment. Although the distance was much greater, more favorable light highlighted the red legs. After a few minutes, the White-faced Ibis flew and was last observed flying south at 5:20 A.M. Several other birders searched for this bird but no one was able to relocate it.—*Mark Korducki, 4410 S. 21st Street, Milwaukee, WI 53221.*

LAUGHING GULL (*Larus atricilla*)

12 June 1992, Manitowoc County—Stopped at Manitowoc to check for unusual gulls, in particular the Little

Gull. At the Little Manitowoc River I immediately spotted a black backed gull, about Ring-billed Gull size standing amongst the other gulls. Besides the black head and mantle (wings) the thicker, larger, slightly drooped dark bill and limited white around the eye were seen. After a few minutes it took flight revealing the black wings with an outer white border. For a few brief minutes it harassed the Bonaparte's Gulls, then flew out over the lake and did not return. The Franklin's has a smaller bill and more white around the eye.—*Daryl Tessen, 2 Pioneer Park Place, Elgin IL 60123.*

BURROWING OWL (*Athene cunicularia*)

11 June 1992, Crex Meadows, Burnett County—I was driving south on East Refuge Road in the Crex Meadows Wildlife Area when I noticed a bird standing on a sand pile at the entrance of a badger den along the edge of the road. I had only a glimpse of the bird before it flew approximately 150 feet and landed on a clump of sod in an adjacent farm field. With binoculars, I could see that it was a small, long-legged, medium brown colored owl. Its eyes were bright yellow with black centers.

As I walked toward the owl, it bobbed its body several times and gave a single coo-like call. When I got to within 60 feet, it flew and landed in an alfalfa field 200 feet to the north. The back and wings were brown and somewhat mottled. There was a noticeable backward curve in the wing between the wrist and tip. It was missing one to two secondary feathers from its right wing. The flight was rapid and direct.

On my next approach, I could see a

horizontal buff-colored strip on the chin or upper breast of the bird. This strip also extended vertically on its upper breast, forming a t-shaped pattern. Its breast was a light brown color with no noticeable streaking.

I flushed the bird several more times. Twice it flew across the road and flew over the adjacent brush-prairie but always returned to the farm fields or landed on the road.

When it landed on the road, its long legs were clearly evident. The legs accounted for approximately one third of its height. On several more occasions, it bobbed its body rapidly as I approached.—*James Hoefler, 10549 Blomgren Road, Grantsburg, WI 54840.*

12 June 1992, Crex Meadows, Burnett County—I first spotted the bird sitting in full view on top of a large mound of earth on the west side of the road near the intersection with North Refuge Road. I drove slowly past the bird and stopped the car about 75 yards away. With my binoculars I noted the small size of this owl, the large eyes with dark pupils, and brown mottled plumage. Then with my scope I zoomed in on the bird and noted the detail of light brown mottling on the head with no ear tufts, the lighter area above the eyes which extended across between the eyes, and the large yellow eyes with dark pupils. The wings and back were also mottled with large lighter brown patches throughout. I noted a white throat patch and two darker brown areas directly below the throat on the sides. The upper breast was mottled with light brown barring and the belly was white. The bill was grayish. The bird stood on the ground next to the burrow on long legs which were about one-third the height of the

entire bird. I continued to watch this bird in the same field for an hour. The owl did not flush this entire time. I returned two more times to the area and observed the owl both times. The first time the bird was perched in the den with just its head visible as I drove slowly past. I noted the bird bobbed its head several times as I passed by. The second time the bird flushed as another birder stopped their car directly in front of the burrow. The bird flew with an undulating motion much like a woodpecker to a small bush and perched. I then left the area to reduce stress to the bird from my presence.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*

12 June 1992, *Crex Meadows, Burnett County*—After driving slowly along East Refuge Road searching for the Burrowing Owl and stopping at the intersection of North and East roads to glass the area, I decided the bird was gone. I then walked south along East Road to check the mounds for tracks, etc. As I approached the largest mound, the Burrowing Owl flew from the burrow and landed about 200 feet to the west in a short grass field. I glassed the bird for about 15 seconds before returning to my car, from where I watched the owl for about one hour through a spotting scope. Before I was back to the car, the owl was back to the burrow area, standing on the large mound on the east edge of burrow. While standing here, it was repeatedly attacked by a Barn Swallow and did not get relief until it again entered the burrow, with only its head showing.

A small, earless owl with dark pupil and yellow eye. Tail very short. When seen in the grass field and when on top

of the mound, the long pale colored legs were easily seen. The body was a general light sandy color with spotting on the back and dull barring on breast. A quite noticeable white chin or throat stripe. White eyebrows were not distinctive. When I had flushed the bird from its burrow and it had landed in the field, it made a series of quick bobbing movements with its body.—*Robert C. Domagalski, W140 N8508 Lilly Road, Menomonee Falls, WI 53051.*

12 June 1992, *Crex Meadows, Burnett County*—I arrived about 7:45 A.M. at the site of a reported Burrowing Owl. I drove past some small burrows without seeing anything, turned around and parked at the intersection. I set up my scope and scanned with binoculars, finding the bird instantly. From that distance (about 2 city blocks) I could see a small tan owl about the color of a short-eared, but smaller. The bird stood upright on long legs its short tail well off the ground. The eyes appeared to be unnaturally high on the head with only heavy light "eyebrows" appearing above them. I was not close enough to see more detail. I enjoyed the bird for about 15 minutes, drove by once, stopping for about 3 seconds for a quick photo while it peered at me from the burrow, then I left.—*Robbye J. Johnson, 2602 N. 28th Street, Superior, WI 54880.*

GREAT GRAY OWL (*Strix nebulosa*)

2 June 1992, *Douglas County*—On February 26, 1992 I was surveying deer yards for dead deer, near "Brackets Corner" on HWY 13 in NE Douglas County, when I heard what I thought was a Great Gray Owl. I could

not find the bird. It had hooted 3 or 4 times but was some distance away. In early May, Andrea Pokrzywinski had a large dark owl fly in front of her car at this same location. It was after dark, but it was a Great Gray Owl carrying food. But we weren't sure, yet. I tried hooting for the owl twice in May, with no luck. Then on June 2, 1992, two days after the WSO Convention in Ashland, I received a message that a large owl had been hit and killed around 4:30 A.M. up at Brackets Corner. I had mentioned to several WSO members the possibility of a Great Gray Owl there, but no one found it. When I drove up to Brackets Corner on June 2, I found a dead adult male Great Gray Owl. It is now in the DNR freezer at Brule. Picture enclosed.—*Bruce R. Bacon, P.O. Box 126, Brule, WI 54820.*

7 July 1992, Forest County—On June 7, 1992, at 9:45 P.M. after a long day censusing Red-shouldered Hawks in the Nicolet National Forest, Luke Meyer of Sheboygan and Tom Erdman of Pensaukee were still awake enough to spot a Great Gray Owl hunting from a perch in a bog along the road. The large owl, white mustache strikingly visible, was sitting in a dead snag approximately 30 yards off the road. As we passed in our van the bird took flight and disappeared into the trees surrounding the bog. After backing up the van to the spot the owl was last seen we searched with binoculars and spotting scope for the owl with no luck. Having a tape of woodland hawks and owls we decided to try to call the owl in. After the first series of hoots the owl returned and perched in a dead white birch about 100 yards from the

truck. After positively identifying the owl from this distance we again played the tape only to have the owl fly directly overhead at a height of about 30 feet and land in a large white spruce 50 feet off the road. Because of failing light and the density of the tree limbs we could no longer see the owl but after another series of taped calls the owl responded with deep resonant hoots of his own. After calling back and forth with the owl for about 10 minutes we left the area. This entire episode lasted about 30 minutes. Two nights later we returned to the area and again tried to get the bird to respond to taped calls. Our only response this night was from three Barred Owls. Because this area is a possible breeding site for the Great Gray Owl the exact location will not be released.—*Tom Meyer, 808 Brill Rd., Kaukauna, WI 54130.*

14 July 1992, Douglas County—While conducting raptor surveys in western Douglas County on the evening of July 14, 1992, Kimberly Fry and I observed a Great Gray Owl. It was first spotted flying parallel with the vehicle and then crossed the road and perched in a dead birch approximately 30 yards away. The very large wing spread, gray plumage, and over proportionate large head were noted in flight. When perched, the yellow eyes, and white 'bow-tie' were diagnostic. It perched only briefly (10 seconds) and flew to the west across the state line into Minnesota. This sighting occurred in a remote area and was associated with a mixed Black Spruce/Tamarack type. Further work in this area failed to relocate this individual, however.—*Larry Semo, Rt. 2 Box 435, Superior, WI 54880.*

ROUGH-LEGGED HAWK (*Buteo lagopus*)

28 June 1992, Dodge County—I saw a large raptor flying north along the west side of county MM. I first noted the buteo shape, then observed the black wrist patches. I saw the long white tail with a black band, and the white rump. As the bird continued to fly north, I noted the dark belly band and dark primaries.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*

28 June 1992, Dodge County—See a buteo at a distance that I first dismiss as a Red-tailed Hawk. As the hawk came closer, I put my binoculars on the bird and was shocked to find I was looking at a Rough-legged Hawk. Watched the bird several minutes as it flew steadily north, up river, quite near. Light phased Rough-legged. Black at wrists of wings very noticeable, dark belly, broad area of white on upper two thirds of tail (both above and below) with broad dark terminal area (about $\frac{1}{3}$ length of tail). Wings appear longer than on the more stubby Red-tailed Hawk.—*Robert C. Domagal-ski, W140 N8508 Lilly Road, Menomonee Falls, WI 53051.*

3 July 1992, Vilas County—I stopped the car to check the buteo soaring over an open field. I first noted the buteo wings and dark wrist patches. The underparts were white with black patches on the wrist, belly, and wing tips. The tail was white underneath with a black band and small white terminal band. Above there was a white patch on the rump and black band on the tail. There was slight dark streaking on the breast, head and neck. The bird hovered for

about one minute at two separate locations while I was watching.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*

RUFIOUS HUMMINGBIRD (*Selasphorus rufus*)

30 July 1992, Tomahawk, Lincoln County—LoAnn Martello of Spring Creek Drive called to report an unusual-looking hummingbird at her feeder, harassing the ruby-throats. I went to see right away.

She was right. I was able to get within eight feet of it and sat watching it for at least half an hour. It did not seem to fear my presence but was more concerned in driving the ruby-throats away. I took about 10 slides but failed to come up with any that could verify the sighting.

The tail and back were a tan, reddish-brown, almost orangish color. The breast was grey. The throat patch looked black at times, then the bird would turn slightly and it became a brilliant orange-red. It had to be a male Rufous Hummingbird.

The bird disappeared the following day and has not been seen since.—*Alan Bell, N8429 Hwy 107, Tomahawk, WI 54487.*

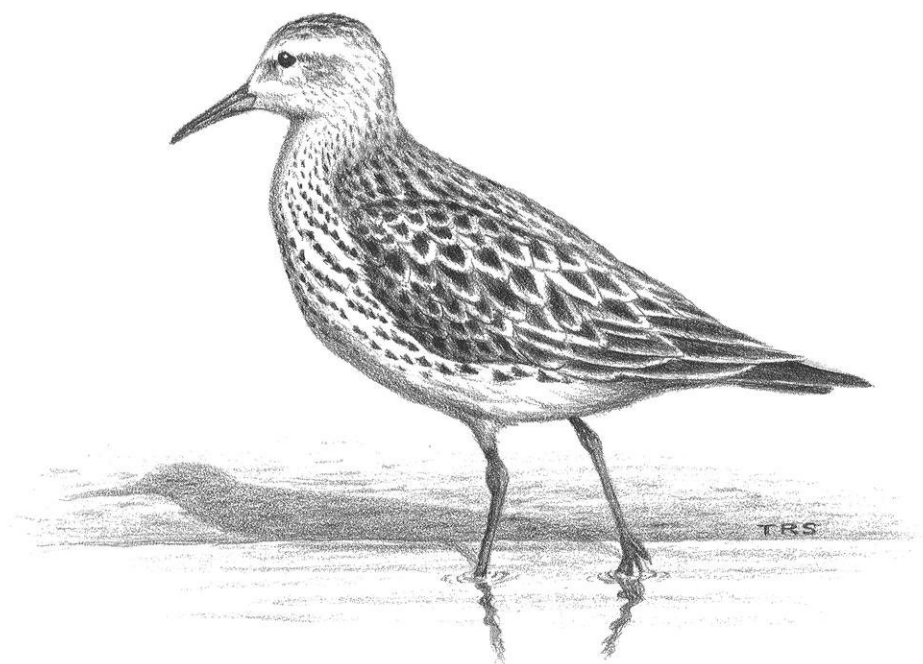
YELLOW-THROATED WARBLER (*Dendroica dominica*)

27 June 1992, Wyalusing State Park, Grant County—I found two singing Yellow-throated Warblers in the pines along Long Valley Road. Both were giving the typical call: clear, methodical tee-ew, tee-ew, etc. I located one male at the top of a white pine tree. His yellow breast, black face, white eyebrow stripe, and white wing bars

were immediately evident. Other good marks were the black streaks on the flanks and a bluish-gray back. The two birds were about 200 yards apart and were both singing frequently in these early morning hours.—*Mark Korducki, 4410 S. 21st Street, Milwaukee, WI 53221.*

26 July 1992, Wyalusing State Park, Grant County—As I drove slowly up the hill to the Passenger Pigeon monument area I heard the “ti de’ti de’ti de’ti de’ti ti” call of this bird coming from the tall pine trees on the north side of the road. I checked the area close to the road and listened for about five minutes but could not see the bird

so continued up the hill. I then walked the Old Immigrant trail to the Indian Trail and ended my walk in this location about 10:15 A.M. I heard the bird calling again as I came through the woods so checked for a visual sighting. I saw the bird in the top of a deciduous tree singing with sunshine reflecting from its bright yellow throat. I also saw the bold black and white stripes along the sides and the black cheek patch and white eyeline. The back and tail were dark, but two white wing bars were noted. The bird continued to sing the entire viewing time of 15 minutes as it foraged in several trees in the area.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*



White-rumped Sandpiper by *Thomas R. Schultz*.

KARL E. BARTEL
1913–1993



Karl was a resident of Blue Island, Cook County, Illinois his entire life. I first met Karl about 1960 when I became interested in bird banding and needed the help of other banders in order to get my banding license. Since then, I have gone to innumerable Christmas Counts, Illinois Audubon Society meetings, IBBA meetings and other field trips, conventions, seminars, etc. I can look back on my memories of Karl and find they are all pleasant. He was an easy going, energetic friend with whom I may not have always agreed, but can never remember arguing. I enjoyed his idiosyncracies and we have spent many hours on the road, to and from various meetings, discussing a variety of nature related subjects.

Karl was a life member of WSO and a member of countless bird and natural history organizations. His all consuming passion was the trapping and banding of birds, followed closely by the study of wildflowers. He received his banding permit on February 11, 1933, when F. C. Lincoln was "chief" of the Banding Office. After sixty years and one month of banding, Karl had placed leg bands on over 100,000 birds. His first was a Slate Colored Junco number H-78601. He used wire traps for most of his career, but did use mist nets for the last several years.

Karl participated in well over 200 CBC's, usually averaging at least five per year.

Karl was a friend for over thirty-five years and will be missed.—*Peter B. Dring*

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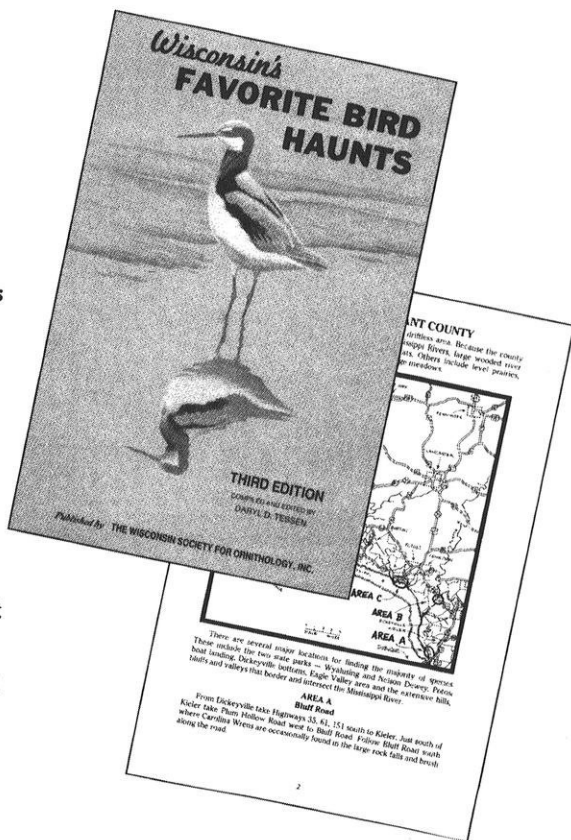
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