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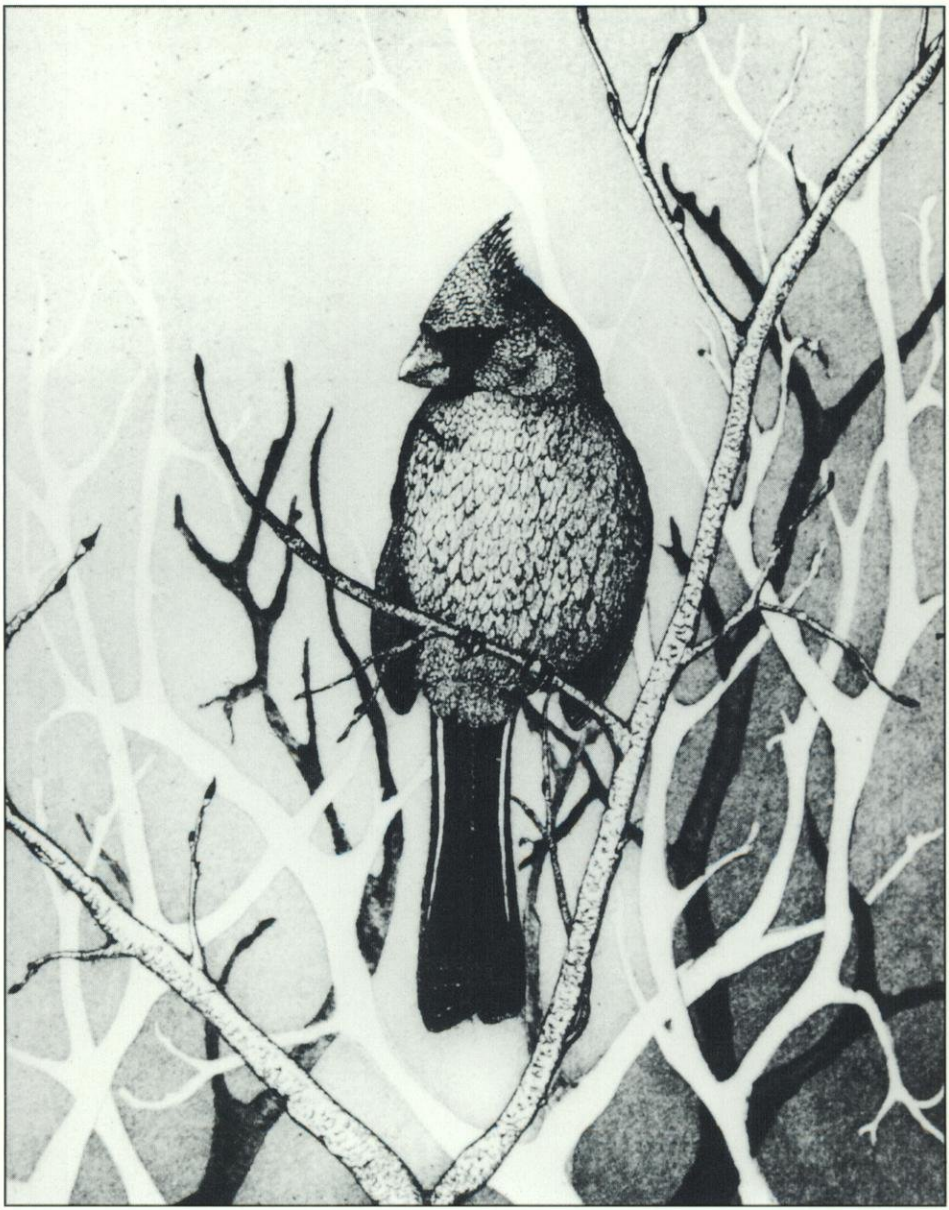

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Send all manuscripts and correspondence to the Editor; information for "Seasonal Field-Notes" should be sent to the Associate Editor or the appropriate Field-Note Compiler. Manuscripts that deal with information on birds in the State of Wisconsin, 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.

WSO Conventions

I took a couple days of vacation even though rain was forecast. With Jody and Parker both loaded into the car and Mosquito Hill Nature Center in my rear view mirror, I headed for Mishicot, WI to attend the 1997 Wisconsin Society for Ornithology Annual Convention. It was a good move because the gathering was as enjoyable as any I could remember! Bernie and Lynn Brouchoud, Woodland Dunes Nature Center, and Aegolius Bird Club together with nearly one hundred volunteers made sure WSO members in attendance had fun, were well informed of scheduled activities, saw several bird specialties, had fun, ate well and had fun.

This wasn't a convention. It was a happening! You could hardly make a move without someone winning a door prize. Thousands of dollars in contributions from area merchants were awarded throughout the festivities. Everyone liked the bird tee shirt contest. My table was chosen to pick a winner which turned out to be a real challenge considering we had fifty or so contestants! We gobbled pop corn and washed it down with free beer and soda. Some people stayed up quite late to continue the frivolity. Before the weekend was over, one very lucky person tucked an original sketch by Roger Tory Peterson under his arm after offering the highest bid during an auction of bird memorabilia.

Eager birders were up in the wee hours of dawn to search for birds. At times it was cold and it rained a bit. The numbers of species were lower than expected at this time of year but nobody complained. We were all having way too much fun!

We were somewhat serious during workshops, paper sessions and the keynote speech by Dr. Stanley Temple . . . but not totally. Even Stan told a humorous tale of the vanity license plate he gave to his wife, Anita. She soon found that the message boldly displayed on her shiny new car had several very different interpretations!

Paper sessions took on a whole new meaning for me. While President Bettie Harriman was safely tucked away on a pre-convention tour bus, Bernie knew that I would be easy pickins' if he called me at Mosquito Hill just two days before conference. He was very convincing because "it clearly stated in the convention handbook that the president or vice president can be called upon to introduce each speaker." My hands were tied; I would emcee the sessions! I mispronounced one speaker's name and gave an entirely new identity to another. But all in all, we enjoyed a very interesting and educational set of papers covering a variety of bird related topics.

Members must have had an intuition about the conference in Mishicot. Your response was tremendous. I'd called for reservations early but still couldn't come up with a non-smoking room. Two motor coaches were necessary for the pre-convention trip to Door County, Friday evening workshops were filled to capacity and five hours of paper presentations were very well attended.

We even attracted a large group of attendees to the annual WSO business meeting. This is important! The business meeting is the most direct way that members can see first hand how your talented and dedicated board of directors works at the national, state and local levels to uphold and expand the goals of WSO. This group is your voice. If you can add to the effectiveness of WSO, we want your ideas and/or participation. If you have criticism, we need that too. Don't be one of the silent majority. Give me or any other board member a call so we can act on your thoughts.

I thank everyone who made the 1997 event a total success. If you attended, I'm sure you'll agree that this conference was a landmark to remember. Mark your calendars because we are headed for the Eau Claire area in 1998.

Activities will be facilitated by another long time friend and cohort of mine, Rick Koziel, Director of Beaver Creek Reserve. If anyone can generate an equally exciting conference, Rick and his team of birders and planners can and will. The pre-convention trip will occur on May 21 and 22 with the conference convening from May 22 to 24. This is Memorial Day weekend so an extra day of leisurely travel and birding will help take the edge off your trip home. With any luck, you won't have to listen again as I introduce speaker after speaker during paper sessions; Rick, that's what vice presidents are for! I look forward to serving as your president for the next two years and seeing all of you in Eau Claire.

President

Fall Raptor Migration Count at Eagle Valley Nature Preserve in Southwest Wisconsin, 1995

A fall raptor migration count was conducted at Eagle Valley Nature Preserve, along the Mississippi River in southwest Wisconsin, between 29 August and 26 December 1995, in order to document the number, diversity, and timing of raptor species using the Mississippi River Valley as a migration corridor. For the second consecutive year a standardized count format was utilized from 29 August through 14 November, after which non-standardized, opportunistic counts were performed. Occasional trapping and banding also were conducted. In 612.05 hours of observation, of which 584.95 were conducted during the standardized portion, 30,690 raptors of 15 species were tallied (29,613 during the standardized portion). The total count and overall rate of 50.14 raptors per hour more than doubled those of 1994, using virtually identical methods. We suspect this increase was largely attributable to weather conditions that brought a greater percentage of the migrants into viewing range.

Four species comprised 89.5% of the total count. They are, in decreasing order, Broad-winged Hawk (Buteo platypterus), Sharp-shinned Hawk (Accipiter striatus), Red-tailed Hawk (Buteo jamaicensis), and Bald Eagle (Haliaeetus leucocephalus). Bald Eagle numbers are among the highest reported at any North American count site.

Individual species accounts, including number of migrants and the change from 1994, migration timing trends, and, for several species, age and sex classification, are discussed. Weather phenomena associated with peak migration days also are addressed. Long-term monitoring utilizing the described format will provide valuable information on regional raptor population trends.

by Brett A. Mandernack and Kelly J. McKay

Because raptors feed at the top of the food web and have widespread distribution, they have proven to be important environmental indicators. The declines and recoveries of several raptor species have reflected significant changes in habitat and/or food quality or quantity (Bednarz et al. 1990). By monitoring raptor migration at concentration points for several years, important information used to assess the health and stability of regional populations of several species can be obtained in a cost-effective manner (Titus and Fuller 1990; Hoffman et al. 1992). This study at Eagle Valley Nature Preserve in southwest Wisconsin yields valuable information on raptor population trends and migration dynamics in the midwestern United States. Previously, little information was available from this area, so this study permits the formulation of better-informed management decisions for several raptor species and their habitats.

Previous migration counts conducted at Eagle Valley have averaged higher numbers of raptors per hour than any other site monitored along the Mississippi River Valley during the last 12 years (Stravers 1987, Mandernack 1987–91, Stravers et al. 1994, Mandernack and McKay 1995, Dankert and Lesher 1994–95 unpub. data). Bald Eagle numbers have proven to be among the highest reported at any North American count site (Hawk Migration Studies 1991–95). The results of non-standardized counts at Eagle Valley prior to 1994 strongly encouraged the establishment of the more rigorous standardized methodology utilized in 1994 and 1995 in order to strengthen the results and minimize inconsistencies.

The objective of this study was to obtain a more thorough understanding of regional raptor population trends and the dynamics of non-coastal, midwestern raptor migration by continuing the multi-year, standardized monitoring program. Specifically, we gathered information on the diversity and number of raptors using this corridor, their age and sex structure, and their seasonal timing. On-site trapping and banding efforts served to augment this knowledge.

Study Site

Eagle Valley Nature Preserve, a private preserve owned and managed by Kohler Company and the Kohler Trust for Preservation, is located along the Mississippi River in Glen Haven township, Grant County, Wisconsin (Figure 1); Guttenberg, Iowa, lies directly across the river. The observation site, 355 feet above the river at the edge of a bluff prairie, offers an excellent view of the river valley and adjacent uplands. Its location, orientation, and topography contribute to it being a premier non-coastal migration site.

Methods

Standardized daily migration counts were conducted for 584.95 hours over 76 of 78 consecutive days, beginning 29 August and ending 14 November 1995. Due to continuous rain, no observations were made on 19 September or 1 November; persistent rains abbreviated counts on eight other days.

We conducted daily observations from 0800 to at least 1400 hours, Central Standard Time, from 29 August through 13 September. After that date, observations began at 0730 to 0800 and

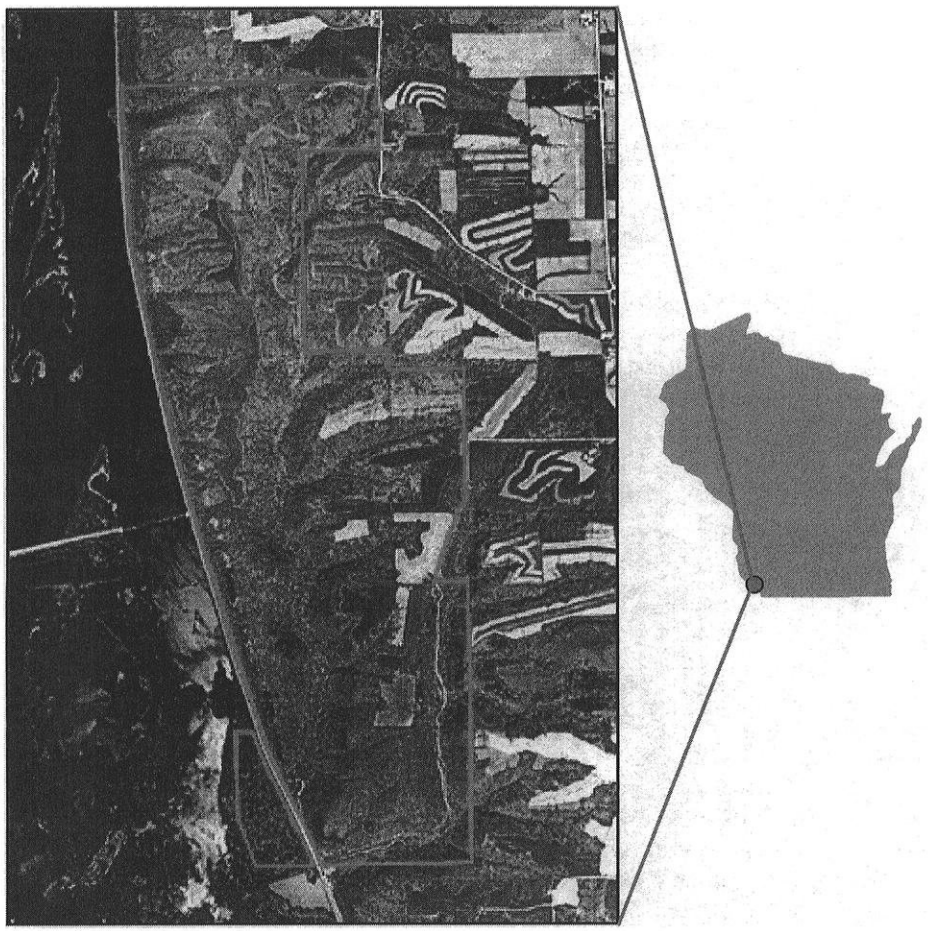

Figure 1. Eagle Valley Nature Preserve study site, Grant County.

continued until 1600. During active migration periods, the counts were occasionally extended.

Due to the expense of continuing standardized counts beyond 14 November, non-standardized (opportunistic) counts were performed for 27.10 hours over 12 days through 26 December. This was done to document the extensive Bald Eagle migration, and other late raptor movement, which experience has proven occurs here during this period. The non-standardized data is utilized in the study but segregated from the standardized portion.

Two experienced observers staffed the observation site at all times to provide thorough coverage. On very active migration days we found it imperative to utilize additional personnel to record data, allowing us to maintain accurate records. Fatigue was minimized by limiting observers to a maximum of four consecutive days of observation followed by one or more days off.

Weather conditions, including wind speed (both average winds and peak gusts) and direction as taken from a Taylor Windscope, temperature, cloud cover, precipitation, and maximum visibility (in miles), were recorded hourly.

For each migrant raptor observed, the time, species, age, and sex (when possible) were recorded. Bednarz and Kerlinger (1989) also thought it advantageous to record ages, as this may be useful to compare with the species' breeding performance in the sampled population. Factors inhibiting age/sex classification included distance, poor visibility, and lack of time; the latter occurred especially during high migration periods when it was difficult to distinguish and/or record this information. Also recorded were the number of raptors (single, pair, or kettle), their relative altitude, and the flight path (over the river, bluff face, or one of three inland paths). In addition, unusual plumages or behaviors were noted. Great care was taken not to count raptors that were considered as possible local birds, or that did not show a true southerly flight direction. The chance for multiple counting was further minimized by deducting all northbound raptors from the total number of south-bounders of that species, and recording only the "net" number of migrants; casual movement up and down the bluffs was minimal in the first place. Standard report forms of the Hawk Migration Association of North America (HMANA) were filled out daily using their codes and recording criteria.

Daily totals and per-hour rates were calculated. By adding the number of raptors together in three-day intervals, we demonstrated seasonal migration timing trends for all raptors, and for individual species, which we plotted on a graph. Using the same interval, we graphically show the per-hour rates for total raptors and Bald Eagles. For comparison, both 1994 and 1995 data are presented in each graph.

Occasional raptor trapping and banding efforts were conducted for 66.5 hours on 22 days between 11 September and 1 December by personnel other than those performing the migration counts. The banding station was located 235 yards east of the migration count site. Rock Doves (*Columba livia*), House Sparrows (*Passer domesticus*), and Ringed Turtle Doves (*Streptopelia risoria*) were used to lure migrating raptors into a 45-foot mist net, a dho-gazza net, or one of two bow nets. Upon capture, the time, species, age, and sex (when possible) were recorded. We noted the wing cord length, tail length, eye color, and general condition, and attached a U.S. Fish & Wildlife Service band prior to release.

Results and Discussion

In 612.05 hours of observation, of which 584.95 were conducted during the standardized portion, 30,690 raptors of 15 species were tallied (29,613 during the standardized portion; Table 1). Virtually every species was observed in greater numbers in 1995 than in 1994. The only exception was a single Swainson's Hawk (*Buteo swainsoni*) observed in 1994; none were observed in 1995. The overall rate of 50.14 raptors per hour (50.62 r/h, standardized only) more than doubled the 1994 rates of 24.52 r/h, overall, and 24.07 r/h, standardized only (Mandernack and McKay 1995). A difference of this

Table 1. Eagle Valley Raptor Migration Totals—Fall 1995. TV—Turkey Vulture, OS—Osprey, BE—Bald Eagle, GE—Golden Eagle, UE—Unidentified Eagle, NH—Northern Harrier, SS—Sharp-shinned Hawk, CH—Cooper's Hawk, NG—Northern Goshawk, UA—Unidentified Accipiter, RT—Red-tailed Hawk, BW—Broad-winged Hawk, RS—Red-shouldered Hawk, RL—Rough-legged Hawk, SW—Swainson's Hawk, UB–Unidentified Buteo, AK—American Kestrel, ML—Merlin, PG—Peregrine Falcon, PR—Prairie Falcon, UF—Unidentified Falcon, UR—Unidentified Raptor.

Month	No. of hours	No. of days	Species																					Total raptors	Raptors per hour
			TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR		
Standardized counts																									
Aug.	18.00	3	1	11	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0.78
Sept.	210.20	29	335	231	105	0	0	10	1,451	145	4	67	189	9,928	4	0	0	50	19	22	43	0	6	103	12,712	60.48
Oct.	250.00	31	960	60	944	11	0	77	5,844	418	4	69	4,527	179	46	7	0	43	113	51	45	0	54	83	13,535	54.14
Nov.	106.75	13	1	1	1,834	12	0	23	42	8	0	0	1,375	0	4	29	0	4	1	0	0	0	0	18	3,352	31.40
Std. Total	**584.95**	**76**	**1,297**	**303**	**2,883**	**23**	**0**	**110**	**7,338**	**572**	**8**	**136**	**6,091**	**10,107**	**54**	**36**	**0**	**97**	**133**	**73**	**88**	**0**	**60**	**204**	**29,613**	**50.62**
Non-standardized counts																									
Nov.	0.00																							0	
Dec.	27.10	12			981	7		1					80			4		3						1	1,077	39.74
N-std. Total	**27.10**	**12**	**0**	**0**	**981**	**7**	**0**	**1**	**0**	**0**	**0**	**0**	**80**	**0**	**0**	**4**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**1,077**	**39.74**
TOTAL	**612.05**	**88**	**1,297**	**303**	**3,864**	**30**	**0**	**111**	**7,338**	**572**	**8**	**136**	**6,171**	**10,107**	**54**	**40**	**0**	**100**	**133**	**73**	**88**	**0**	**60**	**205**	**30,690**	**50.14**

magnitude is probably a function of many factors, most notably local weather conditions that brought a greater percentage of the migrants closer to our observation site (including lateral distance as well as altitude), and/or increased our ability to see them. This calls to the forefront the question, "What is the average rate for Eagle Valley?" Continued standardized counts will yield that answer.

The five days with the highest migration counts during the standardized period were 21 September (2,743 raptors), 20 September (2,385), 22 September (2,120), 1 October (1,634), and 14 October (1,326; Table 2). In that period, 49 days witnessed greater than 100 raptors, and 22 days saw 500 or more. This compares to a peak day of 950 raptors, 41 days tallying over 100, and six days over 500 in 1994 (Mandernack and McKay 1995).

1 October was an especially impressive day not only in terms of total number of raptors and number of species observed (12), but also because six species matched or surpassed record daily highs for both years. A passing cold front the previous day resulted in west to west/southwest winds at approximately 10–20 mph, temperatures ranging from 53 to 78°F, and decreasing cloud cover (100% at 0900, 0% at 1600).

During the non-standardized portion, despite the meager 27.10 hours of observation, five of the 12 days had greater than 100 raptors, and one had over 300 (Table 2).

Rates of 10 or more raptors per hour occurred on 59 days throughout the study (52 days, standardized only), and exceeded 20 per hour on 47 days (42 days, standardized only; Table 2). For comparison, the following were the 1994 rates: 10 or more r/h—64 days (52 days, standardized only); 20 or more r/h—42 days (33 days, standardized only; Mandernack and McKay 1995). The first 12 days, and six of the last 10 days of standardized counts all had less than 10 raptors per hour, demonstrating the initial and waning stages of the majority of the migration. The remaining standardized count days with less than 10 raptors per hour were characterized by periods of rain, drizzle, overcast skies, and/or easterly winds, which rarely generate much migration at this site.

Four species comprised 89.5% of the total count. They are, in decreasing order, Broad-winged Hawks (*Buteo platypterus*), Sharp-shinned Hawks (*Accipiter striatus*), Red-tailed Hawks (*Buteo jamaicensis*), and Bald Eagles (*Haliaeetus leucocephalus*). The same species comprised 83.8% of the 1994 count, but Sharp-shins outnumbered Broad-wings that year (Mandernack and McKay 1995).

The seasonal migration timing of all species combined, in terms of total numbers and per-hour rates, using three-day intervals for both 1994 and 1995, is shown in Figures 2 and 3. During the standardized portion of the count, Figures 2 and 3 look similar. It is important to remember that the non-standardized segment of all the migration timing graphs represent far fewer observation hours than the standardized segment, hence considerably lower numbers. Furthermore, the non-standardized observation periods of 1994 were different from those of 1995. When shown on a per-hour basis, however, striking peaks become apparent in both years (Figure 3), though the intensity of those peaks is visually

Table 2. Migration Daily Totals—August 1995. TV—Turkey Vulture, OS—Osprey, BE—Bald Eagle, GE—Golden Eagle, UE—Unidentified Eagle, NH—Northern Harrier, SS—Sharp-shinned Hawk, CH—Cooper's Hawk, NG—Northern Goshawk, UA—Unidentified Accipiter, RT—Red-tailed Hawk, BW—Broad-winged Hawk, RS—Red-shouldered Hawk, RL—Rough-legged Hawk, SW—Swainson's Hawk, UB—Unidentified Buteo, AK—American Kestrel, ML—Merlin, PG—Peregrine Falcon, PR—Prairie Falcon, UF—Unidentified Falcon, UR—Unidentified Raptor.

		Species																					Total	Raptors
Date	Hours	TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR	raptors	per hour
8/29/95	6.00	1	2																					3	0.50
8/30/95	6.00		8					1																9	1.50
8/31/95	6.00		1						1															2	0.33
3 Day Total	**18.00**	**1**	**11**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0.78**

(continued)

Table 2. Migration Daily Totals—September 1995.

Date	Hours	Species																					Total raptors	Raptors per hour
		TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR		
9/1/95	6.00	10	5	2					1			4	1											23	3.83
9/2/95	6.00	13	21	4				1	1											1				41	6.83
9/3/95	6.00	8	5	4				2	3		1	4	1				1	2					1	32	5.33
9/4/95	6.00	3	2					4	1				1					1				1		13	2.17
9/5/95	6.10	1	3					6	1									1	1					13	2.13
9/6/95	6.10	2	20	4																				26	4.26
9/7/95	4.50		1					1				1											1	4	0.89
9/8/95	6.00	2	6	3				1	8			11	8					1						40	6.67
9/9/95	6.00	9	3	2				4	4			3	3				1							29	4.83
9/10/95	7.50	5	7	3				12	4		2	14	110				3							160	21.33
9/11/95	6.00	2	5	2				12	3		1	3	53				9						4	94	15.67
9/12/95	4.40		1																					1	0.23
9/13/95	7.25	1	16	4			1	62	3		2	9	14				2	1	4	4		1	2	126	17.38
9/14/95	8.50	13	9	2			1	81	12		2	18	459				3	1	2	1			6	610	71.76
9/15/95	8.0	1	19					30	5		3	7	799				4		1				3	872	109.00
9/16/95	8.00	4	20	4			2	68	14		2	9	362	2			3	1	2	3			2	498	62.25
9/17/95	8.25	3	1	3				33	13		8	5	171	1			2		1				2	243	29.45
9/18/95	8.00	2	3					14	2		1		112							6			3	143	17.88
9/19/95	0.00																							0	
9/20/95	8.50	3	22	6				41	10		9	9	2,264				3		1	7			10	2,385	280.59
9/21/95	8.50	1	17	1				33	2		1	2	2,681							4			1	2,743	322.71
9/22/95	9.10	52	21	41				82	10		9	25	1,849				6	1		4			20	2,120	232.97
9/23/95	8.50	35	8	6				168	2		2	6	554				1	1		1				784	92.24
9/24/95	8.50	11	2	1				57	3			3	46	1			1			1		2		128	15.06
9/25/95	8.50	37	5	1				76	3	1	3	7	82				2	1	2	1			15	236	27.76
9/26/95	9.00	41	1	4			2	111	3		8	11	4				2						4	191	21.22
9/27/95	8.50	24	2	4			2	151	11	2	2	22	252				4	3	4	2			15	500	58.82
9/28/95	8.50	40	2	3			1	244	16		5	14	91				2	4	2	6		1	9	440	51.76
9/29/95	5.50	1	1				1	18	1										1	1			1	25	4.55
9/30/95	8.50	11	3	1				139	9	1	6	2	11				1	1	1	1		1	4	192	22.59
29 Day Total	**210.20**	**335**	**231**	**105**	**0**	**0**	**10**	**1,451**	**145**	**4**	**67**	**189**	**9,928**	**4**	**0**	**0**	**50**	**19**	**22**	**43**	**0**	**6**	**103**	**12,712**	**60.48**

(continued)

Table 2. Migration Daily Totals—October 1995.

Date	Hours	Species																					Total raptors	Raptors per hour
		TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR		
10/1/95	10.50	24	33	52			2	1,201	81		11	105	46	2			2	20	10	27		8	10	1,634	155.62
10/2/95	8.50	28	6				1	632	21		1	70	65				4	19	4	4		7		862	101.41
10/3/95	8.50	25	2	9				125	20		8	54	8				4	3	3	1			4	266	31.29
10/4/95	8.50	32					1	325	39		6	47	45	1			1	8	3	2		3	10	523	61.53
10/5/95	7.75	14					2	213	16		3	20	2				1	2	1	2		5	2	283	36.52
10/6/95	5.25			1				3																4	0.76
10/7/95	9.00	314	3	33			1	103	11		1	149	2					2	5	2		3	2	631	70.11
10/8/95	8.50	182	4	10			2	395	20		6	73	5	1			10	10	2	1		5	7	733	86.24
10/9/95	8.50	27	3	19				319	34	1	6	131	1	2			1	3	5	1		2	7	562	66.12
10/10/95	8.50	41		12			1	190	22		12	52	1	1			2	1					4	339	39.88
10/11/95	9.25	80		15			6	398	20		2	86		1			2	4	3	1		1	7	626	67.68
10/12/95	8.50	54		12			2	338	35		3	70	1					10	3				1	529	62.24
10/13/95	8.50	19	2	53			4	538	36			241						8	3	3		5	1	913	107.41
10/14/95	10.00	48	3	78			17	345	25		1	767	1	2				20	4	1		14		1,326	132.60
10/15/95	8.75	3		29			2	59	9		1	234	1	10					1					349	39.89
10/16/95	8.50	21		5	1			36	2		3	32	1	1									6	108	12.71
10/17/95	8.50	13		54	1			36	2		1	58							1					166	19.53
10/18/95	8.50	2		7			3	40	3	1	2	95		6									2	161	18.94
10/19/95	4.50	4	1	12				33	2			25						1						78	17.33
10/20/95	8.50	17	1	54			11	23	4			169			2		3	2	1			1	2	290	34.12
10/21/95	8.00			52			4	30	3			270					2							361	45.13
10/22/95	8.00	2	1	11				33				35		1			1							84	10.50
10/23/95	6.00						1	28				3												32	5.33
10/24/95	8.50	3	1	104	5		3	53	2		2	458		2			1		1				7	642	75.53
10/25/95	8.00	1		58	1		2	167	2	1		101		1	1				1				1	337	42.13
10/26/95	8.00	1		17			1	70	3			67		4	1		1							165	20.63
10/27/95	8.00			24				18				34											2	78	9.75
10/28/95	4.50			89			4	17	1			334		2	2								2	451	100.22
10/29/95	8.00	3		88	3		5	68	4	1		645		9			6						1	833	104.13
10/30/95	8.00	2		31			2	8	1			100			1		2						5	152	19.00
10/31/95	8.00			15								2												17	2.13
31 Day Total	**250.00**	**960**	**60**	**944**	**11**	**0**	**77**	**5,844**	**418**	**4**	**69**	**4,527**	**179**	**46**	**7**	**0**	**43**	**113**	**51**	**45**	**0**	**54**	**83**	**13,535**	**54.14**

(continued)

Table 2. Migration Daily Totals—November 1995.

Date	Hours	Species																					Total raptors	Raptors per hour
		TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR		
11/1/95	0.00																						0	
11/2/95	8.25			307	1		4	3	1			477		1	8		2						12	816	98.91
11/3/95	8.00			161			1	11	3			243			2		1						2	424	53.00
11/4/95	8.00			84	2		5	9	1			82			2									185	23.13
11/5/95	8.00			1				1				7			1									10	1.25
11/6/95	8.00			6	1		1	3				6			1			1						19	2.38
11/7/95	8.75	1	1	332	2		4	5	2			214			1								3	565	64.57
11/8/95	8.50			236	6		1	6				149			6								1	405	47.65
11/9/95	8.00			18				1				1			1									21	2.63
11/10/95	8.00			167			2					55		2	3									229	28.63
11/11/95	9.00			483			3	2	1			127		1	2		1							620	68.89
11/12/95	8.00			7			1					1												9	1.13
11/13/95	8.25			26				1				10			1									38	4.61
11/14/95	8.00			6			1					3			1									11	1.38
13 Day Std. Total	**106.75**	**1**	**1**	**1,834**	**12**	**0**	**23**	**42**	**8**	**0**	**0**	**1,375**	**0**	**4**	**29**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**18**	**3,352**	**31 .40**
Non-standardized counts																									
0 Day N-std. Total	**0.00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
13 Day Total	**106.75**	**1**	**1**	**1,834**	**12**	**0**	**23**	**42**	**8**	**0**	**0**	**1,375**	**0**	**4**	**29**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**18**	**3,352**	**31 .40**

(continued)

Table 2. Migration Daily Totals—December 1995.

Date	Hours	Species																					Total raptors	Raptors per hour
		TV	OS	BE	GE	UE	NH	SS	CH	NG	UA	RT	BW	RS	RL	SW	UB	AK	ML	PG	PR	UF	UR		
12/1/95	3.00			153	2		1					38												194	64.67
12/3/95	1.50																							0	0.00
12/5/95	4.50			296	2							10												308	68.44
12/6/95	3.50			116	1							16												133	38.00
12/9/95	2.00			174								2			2		2							180	90.00
12/10/95	1.00			181								5											1	187	187.00
12/15/95	2.00			1								1												2	1.00
12/19/95	2.00			1								5												6	3.00
12/20/95	2.10			28	1							2			1									32	15.24
12/21/95	1.50																							0	0.00
12/22/95	1.50			5																				5	3.33
12/26/95	2.50			26	1							1			1		1							30	12.00
12 Day Total	**27.10**	**0**	**0**	**981**	**7**	**0**	**1**	**0**	**0**	**0**	**0**	**80**	**0**	**0**	**4**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**1,077**	**39.74**

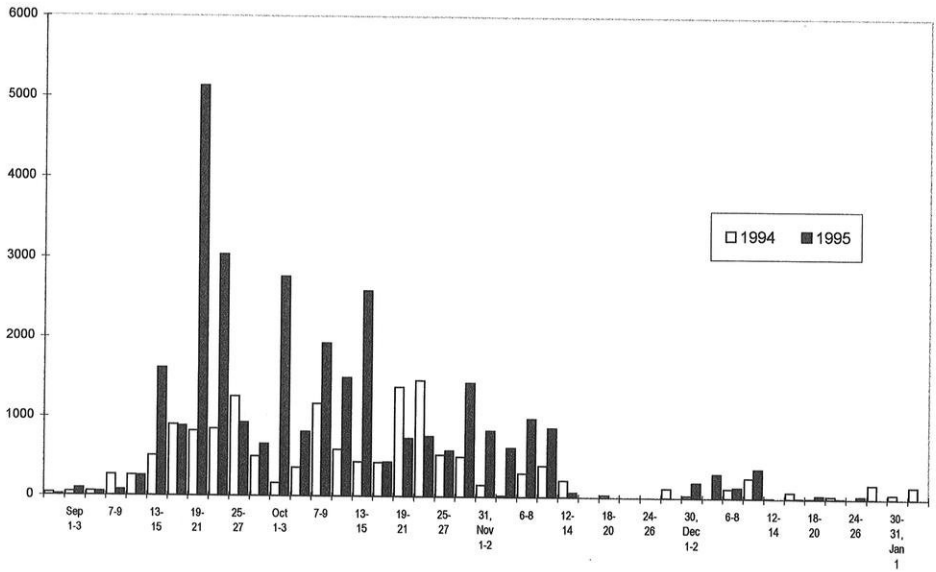

Figure 2. The seasonal migration pattern of all raptors at Eagle Valley. N = 14,603 in 1994; N = 30,690 in 1995.

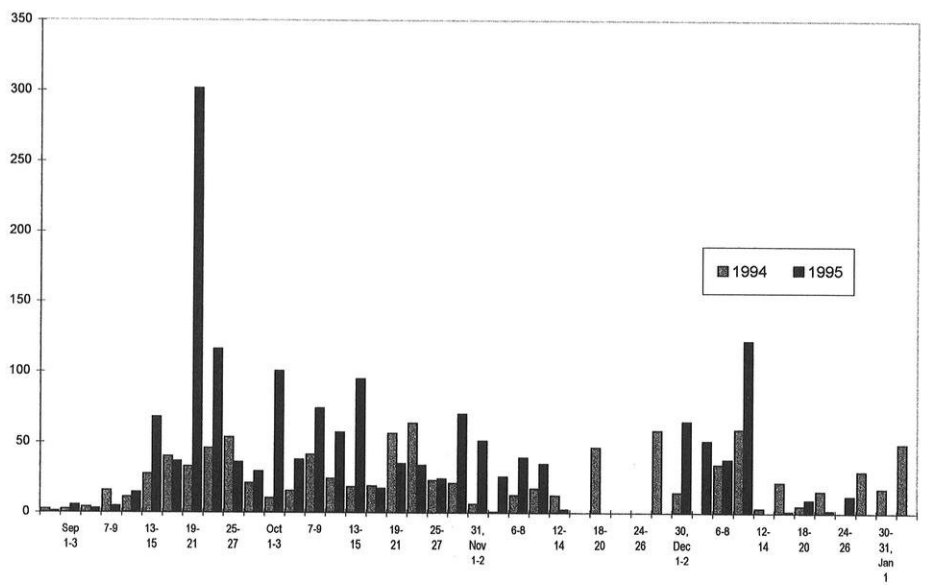

Figure 3. The seasonal migration pattern of all raptors tallied, on a per hour basis, at Eagle Valley, 1994 and 1995.

suppressed in relation to the high rates of mid-September 1995.

Figures 2 and 3 vividly illustrate the mid-to-late September 1995 peak comprised primarily of Broad-winged Hawks. Also evident in both graphs are two lesser 1995 peaks in early and mid–October. Sharp-shinned Hawks were the dominant species of the early October peak, and Red-tails, followed by Sharp-shins, were the major contributors to the mid–October peak.

Individual Species Accounts—*Turkey Vulture* (*Cathartes aura*). A total of 1,297 Turkey Vultures (4.2% of the total count) were observed on 54 days between 29 August and 7 November, though all but one were observed by 30 October (Tables 1 and 2). This species ranked fifth in number of days observed throughout the study (or, consistency of observations). The total is 76% higher than the 1994 total of 737. The highest daily count occurred on 7 October when 314 passed overhead, 88 of which were in one long "kettle/band." This was the apex of the species' peak migration period (Figure 4). The 1994 peak day was also October 7, and it, too, was part of the seasonal peak. The total count is likely very conservative, since those not showing definite southward movement (which is typical of the species) were not recorded.

Osprey (*Pandion haliaetus*). A total of 303 Osprey were recorded on 45 days between 29 August and 7 November, though all but one were observed by 24 October (Tables 1 and 2). As in 1994, it is apparent when reviewing Figure 5 that the Osprey migration began earlier than our observations. The 1995 total represents a 32% increase over the 1994 total of 229. The highest daily count was 1 October when 33 were tallied. Five days throughout September had 20 to 22 Osprey recorded. Their numbers rose until mid–September, then tapered toward the end of the month, followed by the brief but impressive passage on 1 October, before falling steadily the rest of the season. Four of the six heaviest migration days, including 1 October, had winds from south to west with speeds from 2 to 23 mph. The other two days had west/northwest or north/northwest winds ranging from 4 to 16 mph. Cloud cover and temperatures were variable.

Of the 303 Osprey observed, 29 clearly showed the dark streaks on the breast forming the "necklace" (presumably females; Clark and Wheeler 1987), 81 did not show any sign of a necklace, and the remainder were not able to be observed closely enough to distinguish such markings.

Bald Eagle (*Haliaeetus leucocephalus*). The 3,864 Bald Eagles observed comprised 12.6% of the total raptor count (Table 1). They were observed on 72 of the 88 count days (62 of 76 days, standardized only), from 1 September through 26 December, ranking second only to Red-tailed Hawks in consistency of observation (Table 2). The 1995 total is an 82.2% increase over the 1994 total of 2,121. Peak numbers of Bald Eagles during the standardized portion occurred on 11 November (483 eagles; 53.7/hr), 7 November (332; 37.9/hr), and 2 November (307; 37.2/hr). However, as observed in previous years, the heaviest eagle migration typically occurs in late November, throughout December, and, depending on regional weather patterns, even into early January; as northern waterways freeze, foraging areas are reduced, prompting eagles south. Bald

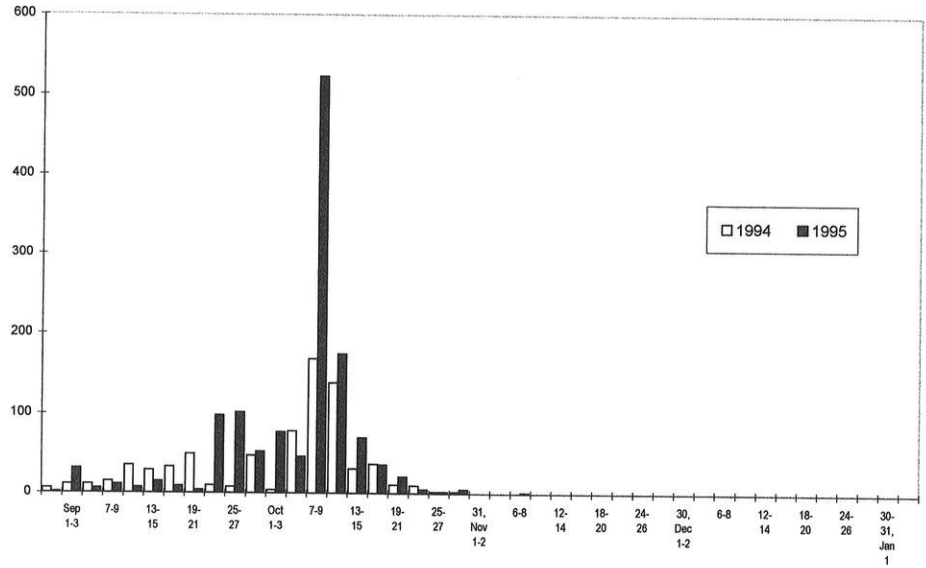

Figure 4. The seasonal migration pattern of Turkey Vulture at Eagle Valley. N = 737 in 1994; N = 1,297 in 1995.

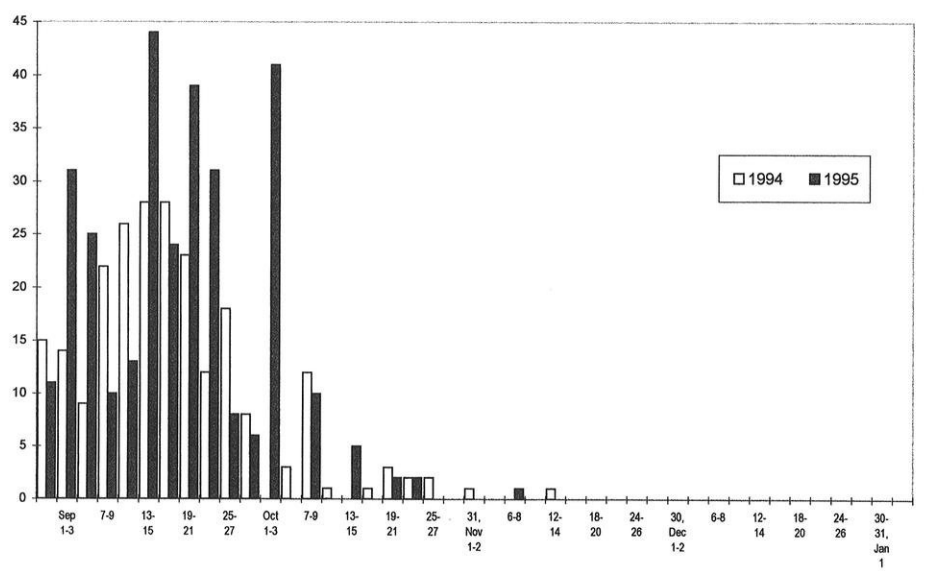

Figure 5. The seasonal migration pattern of Osprey at Eagle Valley. N = 229 in 1994; N = 303 in 1995.

Eagles are unopposed as the dominant migrants during the non-standardized period. Peak eagle numbers during that period occurred on 10 December (181 eagles in a one-hour sample), 9 December (174 eagles; 87/hr), and 5 December (296; 65.8/hr). It is important to recall that these are just samples of the days' migrations, and it is unknown what the rates were prior to or following these samples. Still, 25.4% of all migrating Bald Eagles were observed in the non-standardized portion of the count which made up only 4.4% of the total observation hours. We believe it is important to sample the late-season migration to afford a glimpse of the magnitude it can reach. Figures 6 and, in particular, 7 clearly suggest the 1995 eagle migration numbers building late in the standardized period, and peaking 9 and 10 December. This was concurrent with an Alberta Clipper, a rather severe cold front, that passed through the area the evening of 8 December. As a result, many of the foraging areas north of Eagle Valley iced over. The clipper also caused a 10- to 30-mph west/northwest tail wind on 9 and 10 December. Migration decreased rather abruptly after that peak.

All of the peak eagle migration days mentioned above were characterized by north/northwest to west/northwest winds at approximately 10 to 35 mph and falling temperatures ranging from 0 to 38°F. These conditions are strongly associated with the recent passage of a cold front. Cloud cover was variable and precipitation was virtually absent. Mueller and Berger (1961) also identified these conditions as optimal for peak migration at Cedar Grove, Wisconsin.

In comparison, the fall and early winter of 1994 experienced milder weather than that of 1995, so the 1994 eagle migration was less intense and

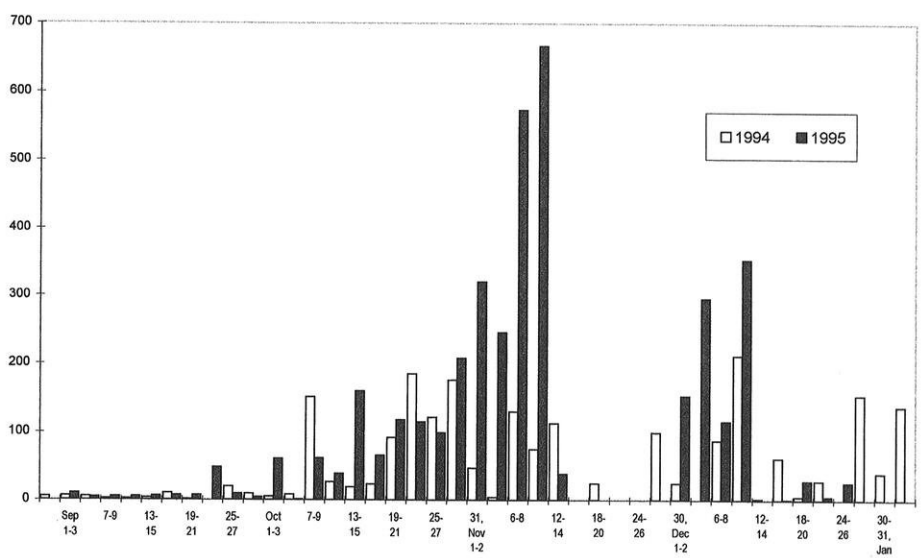

Figure 6. The seasonal migration pattern of Bald Eagle at Eagle Valley. N = 2,121 in 1994; N = 3,864 in 1995.

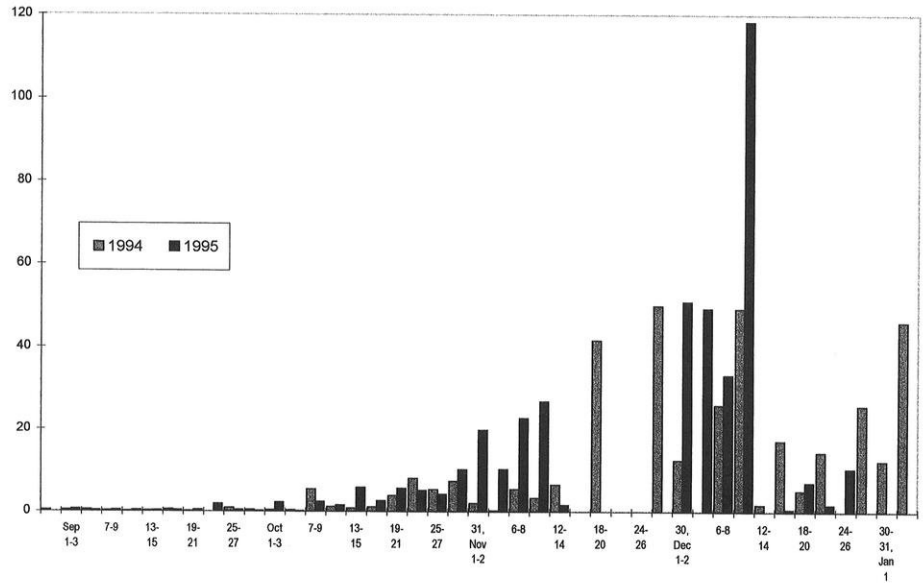

Figure 7. The seasonal migration pattern of Bald Eagle, on a per hour basis, at Eagle Valley, 1994 and 1995.

protracted, extending into early January.

Eagle ages were determined on 98.9% of those observed. Of those aged, 50.2% were adults, 0.9% were subadults (showing noticeable dark eyelines, dark edges or tips on an otherwise white tail, and/or mottled underwings), and 48.9% were immatures. During the standardized portion, immatures (including subadults) comprised 57.0% of the eagles observed, and adults made up 43.0%. Conversely, during the non-standardized portion adults comprised 71.0% and immatures/subadults the remaining 29.0%. It is likely that expanded late-season coverage would raise the overall proportion of adults tallied.

Golden Eagle (*Aquila chrysaetos*). Thirty Golden Eagles were observed on 15 days between 16 October and 26 December (10 days, standardized only; Tables 1 and 2). This more than doubles the 14 observed in 1994. The two highest daily counts were six on 8 November and five on 24 October. It becomes increasingly evident with each additional year of observation that Golden Eagles are a late-migrating species in this area (Figure 8). The seasonal peak appears to be early November, though extended standardized counts would elucidate their timing more accurately.

Age classification followed that of Wheeler and Clark (1995). Eight (26.7%) of the Goldens were adults (compared to no adults in 1994), three (10%) were subadults, and 19 (63.3%) were immatures. Though the sample is small it was noted that immatures were observed migrating earlier than adults and subadults. In December, however, the combination of adults (2) and subadults (3) outnumbered immatures (2).

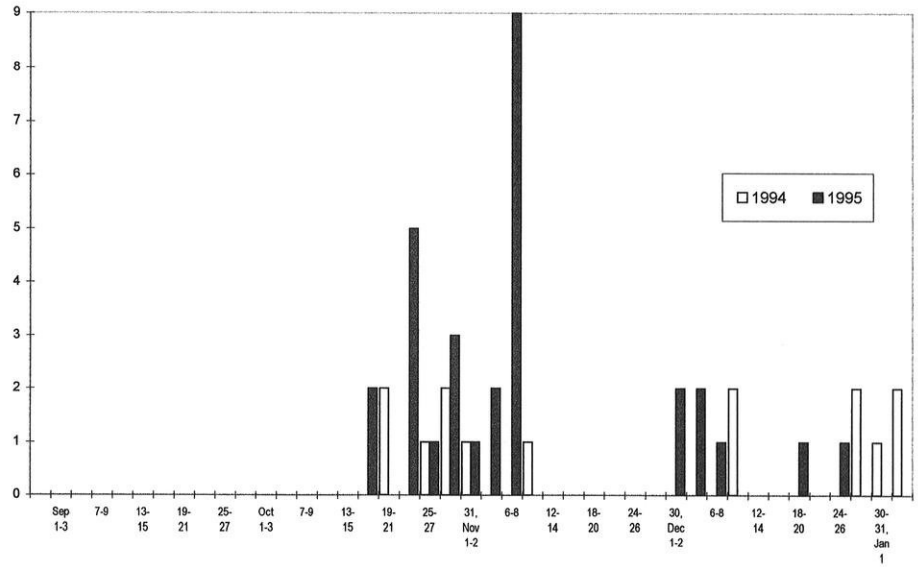

Figure 8. The seasonal migration pattern of Golden Eagle at Eagle Valley. N = 14 in 1994; N = 3 in 1995.

Northern Harrier (*Circus cyaneus*). A total of 111 Northern Harriers were observed on 40 days from 13 September through 1 December (39 days, standardized only; Tables 1 and 2); this is four more (3.7%) than observed in 1994. The daily high count of 17 was recorded on 14 October. Eleven were tallied on 20 October. These dates marked the seasonal peak for the species (Figure 9).

Age/sex data was obtained for 56 of the harriers: adult females—14 (25% of those classified), adult males—24 (42.9%), immatures of either sex—13 (23.2%), and "brown" birds (adult females or immatures of either sex)—5 (8.9%).

Sharp-shinned Hawk (*Accipiter striatus*). Sharp-shinned Hawks were the second most abundant species with 7,338 individuals (23.9% of the total count) observed on 67 days from 30 August through 13 November (Tables 1 and 2). They ranked third overall in consistency of observations, but during the 76 days of standardized counts they ranked first. Their total numbers were a 60.3% increase over the 1994 total of 4,579. Peak passage day occurred on 1 October with 1,201, more than doubling the peak 1994 day. 2 October saw the second highest daily Sharp-shin count of 632 and 13 October had 538 fly over. Early October marked the seasonal peak for the species, which was approximately 7 to 10 days earlier than the 1994 peak (Figure 10).

Age/sex classification was made on 1,532 (20.9%) of the Sharp-shins observed. Sex was recorded only when noticeably large (female) or small (male) individuals were clearly observed. The following is the age/sex classification for the season: adult females—80 (5.2% of those classified), adult males—54 (3.5%), adults of unknown sex—888 (58.0%), immature

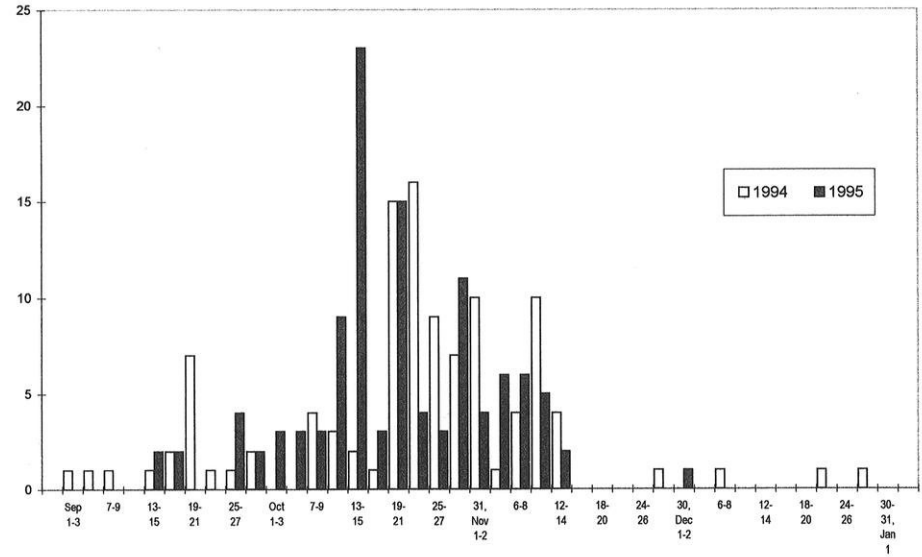

Figure 9. The seasonal migration pattern of Northern Harrier at Eagle Valley. N = 107 in 1994; N = 111 in 1995.

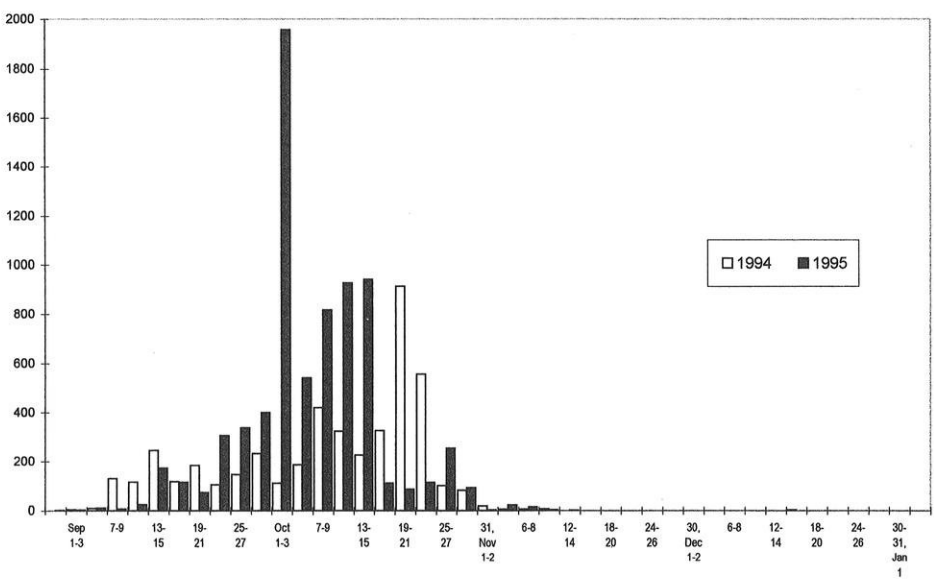

Figure 10. The seasonal migration pattern of Sharp-shinned Hawk at Eagle Valley. N = 4,579 in 1994; N = 7,338 in 1995.

females—25 (1.6%), immature males—20 (1.3%), immatures of unknown sex—271 (17.7%), females of unknown age—136 (8.9%), and males of unknown age—58 (3.8%).

Of the Sharp-shins aged in September, 167 (51.4%) were adults, and 158 (48.6%) were immatures. Immatures outnumbered adults through the third week of September, but by the end of the month, with the increased number of migrating Sharp-shins, adults slightly outnumbered immatures. Of those aged in October, 843 (84.6%) were adults and 153 (15.4%) were immatures. Mueller and Berger (1967) noted that immature Sharp-shins migrate earlier than adults at Cedar Grove, Wisconsin, and Rosenfield and Evans (1980) observed similar age segregation at Hawk Ridge, near Duluth, Minnesota.

Weather conditions on the five peak Sharp-shin migration days were characterized by winds that usually contained a southerly element, three of which were west/southwest to south/southwest, and two that were primarily south/southeast to east/southeast. Wind speeds were variable from very light to approximately 20 mph. Temperatures ranged between 44 and 80°F, and cloud cover was variable.

Cooper's Hawk (*Accipiter cooperii*). A total of 572 Cooper's Hawks (1.9% of the total count) were observed on 58 days from 31 August through 11 November (Tables 1 and 2), ranking this species fourth in consistency of observations. This total is a 23.3% increase over the 1994 total of 464. The two days with the highest counts were 1 October when 81 were tallied, and 4 October with 39. The first two weeks of October marked the seasonal peak of their migration, after which time their numbers tapered abruptly (Figure 11). The bell-shaped curve of their migration timing had a higher peak and was more compressed than that of 1994.

Age/sex classification was made on 129 (22.5%) of the Cooper's Hawks observed. The following is the classification for the season: adult females—10 (7.8% of those classified), adult males—17 (13.2%), adults of unknown sex–63 (48.8%), immature females—7 (5.4%), immature males—6 (4.6%), immatures of unknown sex—20 (15.5%), and males of unknown age—6 (4.6%).

Of those aged in September, eight (28.6%) were adults, and 20 (71.4%) were immatures, whereas in October, 81 (86.2%) were adults, and 13 (13.8%) were immatures.

Northern Goshawk (*Accipiter gentilis*). Eight Northern Goshawks were observed on seven days from 25 September through 29 October (Tables 1 and 2). The 1994 total was two. Two Goshawks were spotted on 27 September, the other six days each recorded one.

Red-tailed Hawk (*Buteo jamaicensis*). The 6,171 Red-tailed Hawks (20.1% of the total count) were observed on 74 days (65 days, standardized only) from 1 September through 26 December (Tables 1 and 2). They ranked first for the second consecutive year in consistency of observations. This year's total represents a 129.4% increase over that of 1994. The three highest daily counts occurred on 14 October (767), 29 October (645), and 2 November (477). 28 October had an impressive 334 Red-tails in a 4.5 hour rain-shortened day. In fact, 97% of those passed over in the last 2.5 hours. The seasonal peak was concentrated around these dates (Figure 12), and, though greater in magnitude, was similar in timing to 1994.

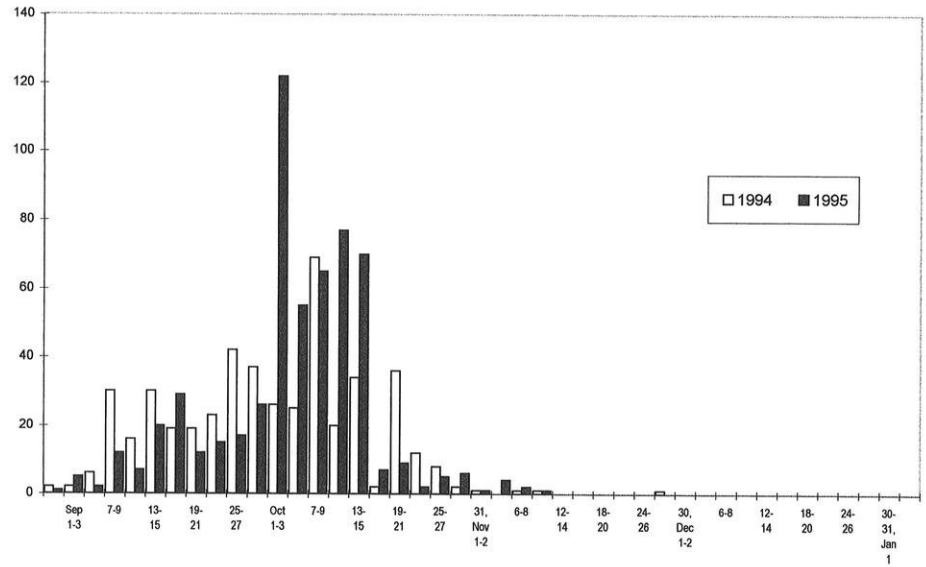

Figure 11. The seasonal migration pattern of Cooper's Hawk at Eagle Valley. N = 464 in 1994; N = 572 in 1995.

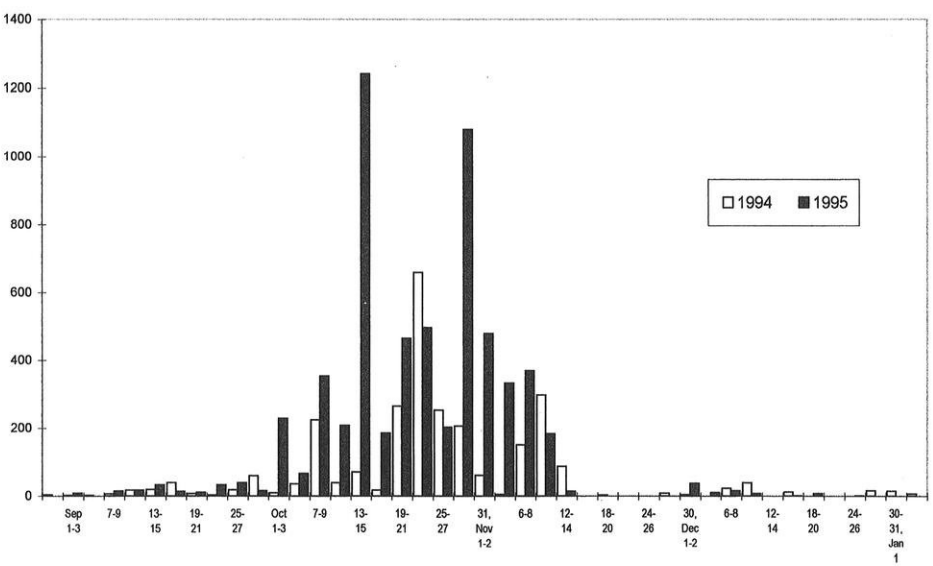

Figure 12. The seasonal migration pattern of Red-tailed Hawk at Eagle Valley. N = 2,690 in 1994; N = 6,171 in 1995.

14 October saw the vast majority of Red-tails traveling singly, in pairs, or small kettles of three or four. The largest kettle that day had 26 Red-tails, seven others had from five to nine. Nine dark-morphs, an albino, and a Harlan's were identified. 29 October had 15 small kettles with between five and nine Red-tails; the remainder passed as singles, pairs, or kettles of three or four. Eight dark-morphs, a Harlan's, and a rufous-morph adult were spotted that day. 2 November saw only five kettles with five to eight Red-tails, the rest passing in lower numbers. Six dark-morphs passed in about 1.5 hours in the afternoon.

Age determinations were made on 1,505 (24.4%) of the Red-tails observed. Of those aged, 1,065 (70.8%) were adults, 440 (29.2%) were immatures. Of those aged in September, 39 (48.1%) were adults, 42 (51.9%) were immatures. In October, 737 (71.8%) were adults, 290 (28.2%) immatures. Nearly identical percentages were recorded for November, and December had 43 (78.2%) adults and 12 (21.8%) immatures.

The five top migration days all had northwest to west/northwest winds ranging from 5 to 35 mph, temperatures between 30 and 59°F, and variable cloud cover from 0 to 100%. Occasional drizzle and extensive cloud cover all day on 14 October did not appear to deter the Red-tail migration. On the other four days, however, their migration noticeably decreased when snow or light rains occurred and cloud cover became extensive. When overcast skies began to break up and thermal development improved, Red-tails often quickly rose to heights over 1,000 feet.

Broad-winged Hawk (*Buteo platypterus*). Broad-winged Hawks were the most abundant species of the study, with 10,107 individuals (32.9% of the total count) observed on 36 days from 1 September through 16 October (Tables 1 and 2). This total is a 255.4% increase over the 2,844 Broad-wings tallied in 1994. The three days with the highest counts were 21 September (2,681), 20 September (2,264), and 22 September (1,849). These days comprised the obvious short, intense seasonal migration peak for the species (Figure 13). Not only was the 1995 peak of a greater magnitude than that of 1994, but the numbers prior to and after the peak also were greater. The timing was similar in both years.

The three peak migration days followed an all-day rain on 19 September. All three days had north/northwest to west/northwest winds from 2 to 16 mph. Temperatures ranged from 37 to 56°F, and cloud cover varied from 30 to 100%. Migration on 20 September was good from the start but was most intense in the afternoon until light rain at 1600 seemed to shut it down. At 0800 most were already traveling at heights of 500 feet to the limit of the unaided eye. From 1000 many kettles were spotted only through extensive binocular scans. The largest kettle of the season, 385, was observed that day. Broad-wings were moving en masse by 0800 the next morning, and moved steadily until 1400 after which time the migration slowed, or rose to undetectable altitudes. The migration was very strong on the morning of 22 September, then tapered but remained steady during the afternoon. It is again possible that the broad-wings (and other raptors) may have been too high to be detected with binoculars, since many spotted were "specks."

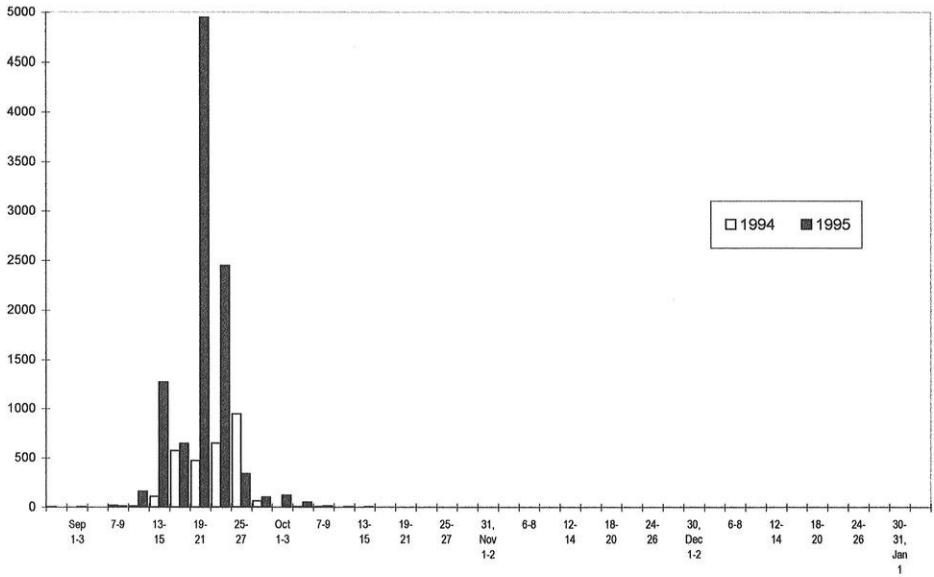

Figure 13. The seasonal migration pattern of Broad-winged Hawk at Eagle Valley. N = 2,844 in 1994; N = 10,107 in 1995.

Red-shouldered Hawk (*Buteo lineatus*). Fifty-four Red-shouldered Hawks were recorded on 22 days from 16 September through 11 November (Tables 1 and 2). This represents a 74.2% increase over 1994. The two highest daily counts were 10 on 15 October and nine on 29 October. Figure 14 reflects these days as spikes at the start and end of their peak migration period. Though the timing was similar to that of 1994, Red-shoulders began to peak earlier in 1995.

Of the 54 individuals, 48 (88.9%) were aged. Of those, 38 (79.2%) were adults and 10 (20.8%) were immatures. All four Red-shoulders observed in September were immatures. The remaining six immatures passed over between October 4 and November 2.

Rough-legged Hawk (*Buteo lagopus*). Forty Rough-legged Hawks were observed on 20 days between 20 October and 26 December (17 days, standardized only; Tables 1 and 2). This more than doubled the 18 tallied in 1994. The two highest daily counts were eight on 2 November and six on 8 November. Their seasonal peak occurred during early November (Figure 15). Colder weather patterns arrived earlier in the fall/winter of 1995 compared to 1994. These conditions probably prompted an earlier Rough-leg migration resulting in a higher overall count because more (36 of the 40) were tallied in the daily standardized portion of the 1995 count. In 1994 only one Rough-leg was observed during the standardized portion.

American Kestrel (*Falco sparverius*). A total of 133 American Kestrels were tallied on 29 days from 3 September through 6 November, though all but one were observed by 20 October (Tables 1 and 2). This is a 146.3% increase over the 54 recorded in 1994. Twenty kestrels were tallied on both 1 and 14

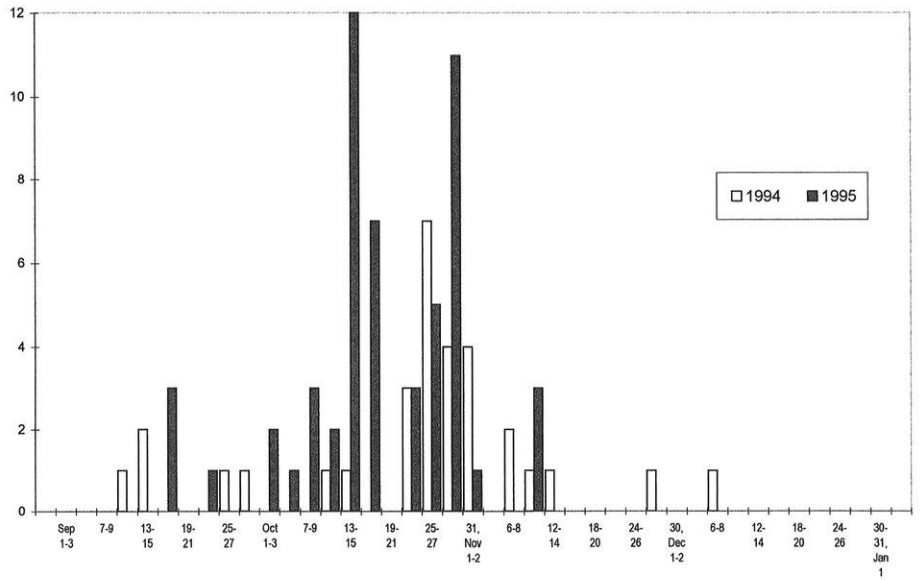

Figure 14. The seasonal migration pattern of Red-shouldered Hawk at Eagle Valley. N = 31 in 1994; N = 54 in 1995.

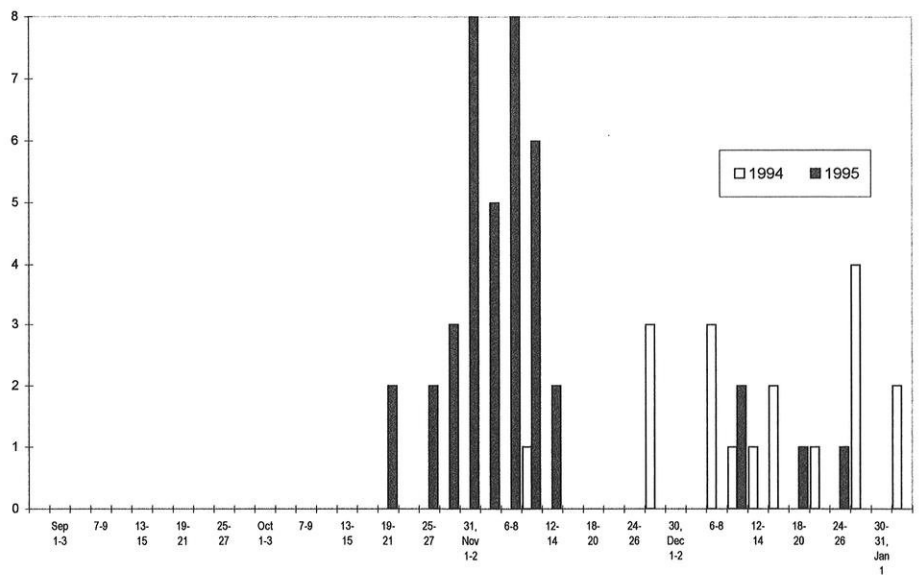

Figure 15. The seasonal migration pattern of Rough-legged Hawk at Eagle Valley. N = 18 in 1994; N = 40 in 1995.

October, and 19 were tallied on 2 October. The first half of October marked the seasonal peak for the species, followed by a sharp decline (Figure 16). Kestrels showed a later and more concentrated peak in 1995 compared to the sporadic observations and mild mid–September peak of 1994.

Sex classification was possible for 29 (21.8%) of the kestrels seen. Twenty (69% of those sexed) were males, 9 (31%) were females.

Merlin (*Falco columbarius*). Seventy-three Merlins were observed on 29 days from 5 September through 25 October (Tables 1 and 2). This total represents a 28.1% increase over 1994. The highest daily count occurred on 1 October when 10 migrants were observed. 7 and 9 October each saw five Merlins. Early October marked the 1995 seasonal peak for Merlins which compares to the third week of October as the 1994 peak (Figure 17).

Peregrine Falcon (*Falco peregrinus*). A total of 88 Peregrine Falcons were observed on 26 days from 2 September through 14 October, though all but the first were observed on or after 13 September (Tables 1 and 2). The 1995 total is a 25.7% increase over the 70 recorded in 1994. The highest daily count of 27 Peregrines occurred on 1 October, seven were tallied on 20 September, and six each on 18 and 28 September. The apex of the seasonal peak was, of course, 1 October, recording over 30% of the entire season's passage that day (Figure 18). A secondary peak occurred the latter half of September. In 1994 the primary peak was late September with a brief secondary peak in early October.

Forty-six of the 88 Peregrines (52.3%) were classified as to age and sex. Of those, 39 (85%) were adults (one female, four males, 34 of unknown sex) and seven (15%) were im-

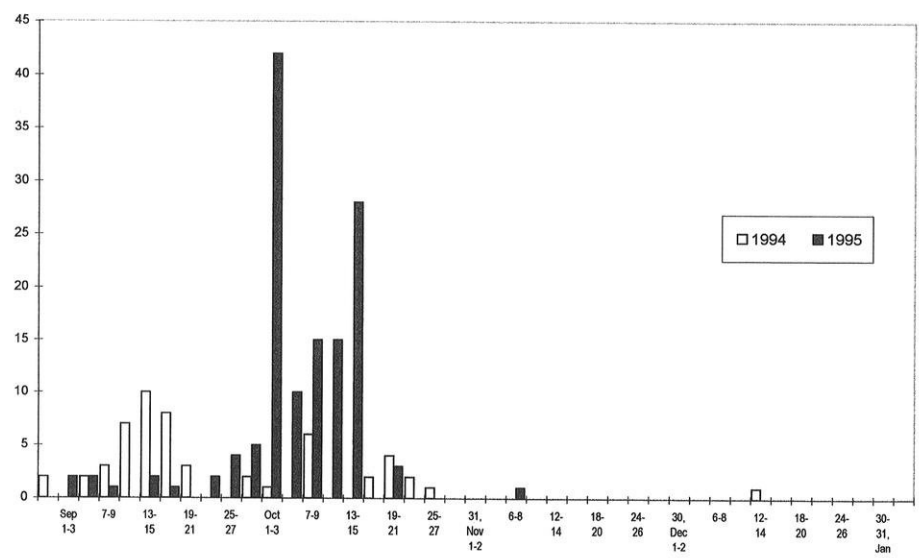

Figure 16. The seasonal migration pattern of American Kestrel at Eagle Valley. N = 54 in 1994; N = 133 in 1995.

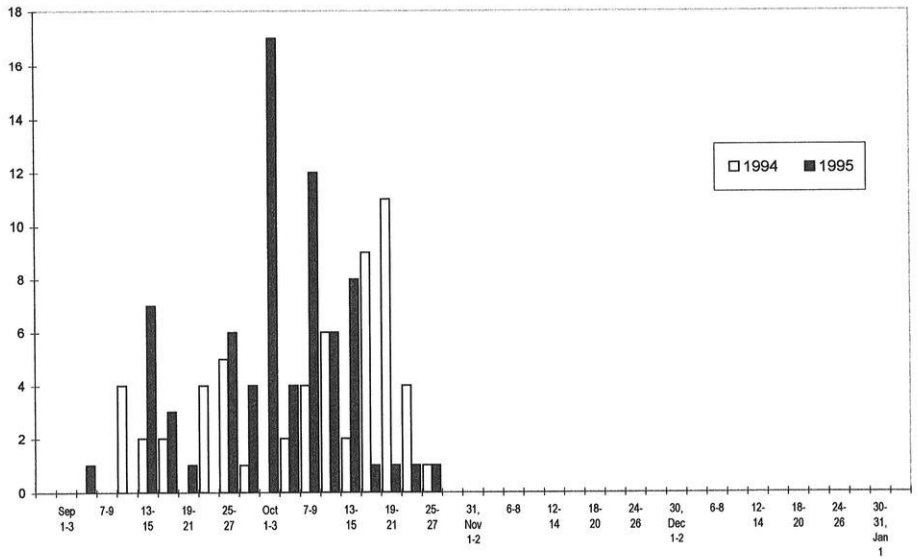

Figure 17. The seasonal migration pattern of Merlin at Eagle Valley. N = 57 in 1994; N = 73 in 1995.

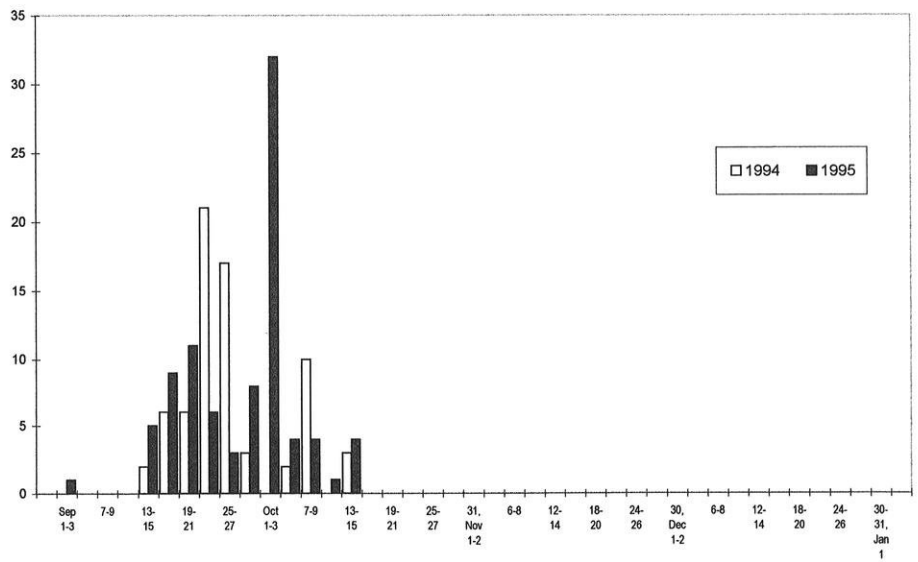

Figure 18. The seasonal migration pattern of Peregrine Falcon at Eagle Valley. N = 70 in 1994; N = 88 in 1995.

matures (one female and six of unknown sex).

Peregrines did not demonstrate a definite preference for particular weather conditions during their four heaviest migration days. Winds were

from the west/northwest, to west and west/southwest, to south, at speeds from 1 to 20 mph. Temperatures ranged from 50 to 80°F, and cloud cover was variable. No precipitation occurred on any of these days, though in previous years Peregrines have been observed moving during light rain and drizzle.

Trapping and Banding—One hundred raptors were trapped, examined, and banded in 66.5 hours of effort, yielding a rate of 1.5 captures per hour. Of those, 44 were Red-tailed Hawks, 30 were Cooper's Hawks, 25 were Sharp-shinned Hawks, and one was a Red-shouldered Hawk. The most productive trapping days were 4 October when 20 raptors were trapped/banded in 5.5 hours and 28 September when 13 were captured in less than 7.5 hours. 12 October saw seven adult male Cooper's Hawks captured in the last 1.5 hours of a three-hour session.

Capture efforts in September covered approximately 36 hours over 11 days and yielded 26 raptors: 14 sharp-shins (four hatch-year [HY] males, three HY females, one after-hatch-year [AHY] male, and six AHY females [five of which were captured on 28 September]), eight Cooper's Hawks (one HY male, six HY females, and one AHY female), and four red-tails (all HY).

October capture efforts covered 27.5 hours over nine days and yielded 71 raptors: 11 sharp-shins (five HY males, two HY females, and four AHY females), 22 Cooper's Hawks (one HY male, four HY females, 10 AHY males, and seven AHY females), 37 red-tails (31 HY and six AHY), and one HY Red-shouldered Hawk.

Three red-tails, two HY and one AHY, were captured in November and December.

The sample size of the banding operation was too small to draw significant conclusions on the migration timing of the various age and sex categories of Sharp-shinned Hawks and Cooper's Hawks. However, concurrent with our migration count aging, more immature (or HY) accipiters were captured until late September, at which time adults increased in number.

More immature red-tails were caught than adults, as the young are less wary than adults. This was also the case in the 1992 and 1993 trapping and banding efforts (Stravers et al. 1994).

A great deal of insight was gained over the course of the season on how to improve the site to attract more raptors and how to more efficiently examine and band the birds. Using these refinements, along with improving some of our equipment and expanding the number of trapping hours, we believe several hundred raptors could be captured annually at Eagle Valley. Results from this site, especially in conjunction with other trapping/banding operations in the region, would augment our understanding of migration timing, the age and sex composition of several species, rates of travel, distances traveled, and their longevity.

Comparisons with Other Midwestern Count Sites—Several other migration count sites exist within the Western Great Lakes Region, as defined by HMANA, such as Hawk Ridge, Concordia University along Lake Michigan near Milwaukee, Mt. Hoy near Chicago, and a new site in Reno, Minnesota, along the Mississippi River. Accurate comparisons with such sites are difficult because of different methods

employed at each different place, starting and ending dates, and differences in location and topography (e.g. latitude, coastal vs. inland, etc.). Despite these differences the data often show similarities and suggest some correlations. The Hawk Migration Studies journal gives an excellent account of each of its sites and discusses many such similarities. Though it was not our objective to analyze data from other sites and make comparisons, we will briefly mention some regional similarities noted during the 1995 season.

The Reno, Minnesota, site is located approximately 60 miles north of Eagle Valley on the west bank of the Mississippi River. It was monitored for 120 hours over 24 days from 29 August through 4 November. Six species had their highest daily counts on the same days at both sites: Turkey Vulture, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Kestrel, and Merlin. The peak day for the latter four species was 1 October, which was the "big day" at Reno and perhaps the most impressive at Eagle Valley. Many species were first and last observed on similar dates at both sites as well.

Bald Eagle numbers were higher at Eagle Valley than at other known count sites in the region. Hawk Ridge observed 1,953 eagles in daily coverage which extended from 14 August through 22 November; other sites reported less than 150 each (Hawk Migration Studies, in press). Because Hawk Ridge is 300 miles north/northwest of Eagle Valley, its change of season comes earlier and its migration begins and ends earlier. Eagle migration at Hawk Ridge increased in numbers until its peak in early November, then declined through the remainder of the count. In comparison, Eagle Valley saw fewer eagles through September, but tallied more in October (994 vs. 773) and November (1,834 vs. 937). Our non-standardized counts showed heavy migration through early December.

The mild, late fall and winter weather of 1994 allowed above average amounts of water to remain open north of Eagle Valley, resulting in more eagles overwintering there. This probably reduced the migration past Eagle Valley. Hawk Ridge, on the other hand, reported their highest eagle count ever.

Some excellent eagle breeding areas lie between Eagle Valley and Hawk Ridge. It is logical to assume that with the many waterways feeding into the Mississippi River between the two sites, many of the eagles residing there would migrate past Eagle Valley, but not Hawk Ridge.

Concordia University and Eagle Valley both recorded highest daily counts of Peregrines on 1 October. Concordia tallied 29 of their 50 for the season.

Management Implications/ Research Recommendations

Completing the second consecutive standardized fall migration count at Eagle Valley provided a much more thorough knowledge of the diversity, quantity, and timing of raptors using the Upper Mississippi River Valley migration corridor. The 30,690 raptors observed, the overall hourly rate of 50.14, and the consistency of flights throughout the season signify this as a particularly vital midwestern count site, one worthy of long-term monitoring. The doubling of the 1994 total, the increased counts of nearly all the individual species, and the shifts in migration timing by some species also

made us aware of the variability of the migration and the need to continue thorough, standardized counts for a minimum of three to four consecutive years. This will establish a baseline which can be used for comparison in future years. Due to the steep investment of time and money involved in this project, annual counts may not be practical after the third or fourth year. We suggest that an every-other-year or two-years-on/two-years-off schedule may be sufficient to detect population trend information. Bednarz and Kerlinger (1989) concur that continuous annual counts may not be necessary to detect statistically significant trends. They also emphasize that the timing and methods utilized must be consistent year after year if trends are to be monitored.

Eagle Valley count information should be used in conjunction with data from other sites north and south of this location to gain a more complete understanding of the migration. Ideally, all sites should use the same methodology to allow more accurate comparisons and integration of information.

This study was not a comprehensive tally of raptors, though we believe an accurate representation was obtained, especially during the standardized portion. Though the non-standardized segment did not afford us the details of late-season raptor migration, it did present us with a great deal of information for that period with a minimal investment of time. We hope to expand our non-standardized coverage in the future to clarify the timing and magnitude of the late-season migrants, such as Bald and Golden Eagles, Rough-legged Hawks, Red-tailed Hawks, and others.

In summary, continued standardized counts at Eagle Valley, especially when augmented with trapping/banding operations and data from other nearby count sites, provide an efficient means of elucidating the migration dynamics and long-term trends of regional raptor populations.

Acknowledgments

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"Fall Forage" *by N. A. Bruins*

Status and Distribution of Marsh and Sedge Meadow Birds at Horicon, Necedah, and Trempealeau National Wildlife Refuges in 1995

Baseline inventory of nongame bird communities and habitat components at wetland types is conducted within three national wildlife refuges. Estimates are made of relative abundance of bird species detected, species richness is calculated, and recommendations are made for long-term monitoring.

by Jennifer L. Graetz, Sumner W. Matteson, Jennifer Skoloda, and Christine Ribic

Population data are lacking on nongame birds that utilize marsh and sedge meadows in Wisconsin. Baseline data are essential to monitor nongame bird population changes in wetland complexes that occur within areas such as federal refuges. Since marsh and sedge meadows within federal refuges are under-represented by the federal Breeding Bird Survey (Matteson 1994), specific data on the distribution, population status, and diversity of nongame birds in these habitats are especially valuable.

This study, conducted in 1995, involved the baseline inventory of nongame bird communities and habitat components at wetland types within three national wildlife refuges (NWR) in Wisconsin: Horicon, Necedah, and Trempealeau. Primary objectives were to: (1) estimate the relative abundance of all bird species detected and determine density indices for common bird species, (2) calculate species richness and density indices for avian communities, and (3) recommend a long-term monitoring strategy for surveying and managing avian communities in well-represented wetland habitat types within each refuge. Data from this study will provide a baseline for assessing changes to marsh and sedge meadow bird populations. A secondary objective was to describe the dominant habitat characteristics at sites surveyed in each refuge for eventual bird-habitat association studies.

Study Areas

Horicon NWR encompasses the northern 8,390 ha of the 12,814 ha Horicon Marsh in Dodge and Fond Du Lac counties, Wisconsin. The majority of the marsh is open water and cattail but also includes stands of bulrush, sedge, upland grassland, and woodland. The Necedah NWR is located in Juneau County, about 32 km east of Tomah. This 17,200-ha refuge consists of oak barrens, prairie grasslands, upland and lowland forests, sedge meadows, and emergent aquatics. Trempealeau NWR, located 45 km northwest of La Crosse, consists of approximately 225 ha of open water interspersed with emergents and floating vegetation, marsh and sedge meadows, prairie, and lowland forest. The refuge is bordered on three sides by railroad dikes that separate it from the Mississippi River.

Methods

Survey Point Selection—Bird and vegetation surveys were conducted within areas of relatively uniform emergent wetland habitats at each refuge. More specifically, the following vegetation types were sampled: dense stands of cattail (*Typha* spp.) and river bulrush (*Scirpus fluviatilis*) at Horicon, sedge meadows (*Carex* spp.) at Necedah, and mixed stands of cattail, sedges, and open water at Trempealeau. With the exception of the river bulrush habitat, twenty points were initially chosen in areas accessible by road, canoe, or on foot. Ten points were then randomly selected as bird survey center points. Each point was placed between 50 and 100 meters off of refuge roads and spaced at least 200 meters apart to ensure independent sampling (Bibby et al. 1992). In the river bulrush stand at Horicon NWR, six points at least 200 meters apart were selected and surveyed by canoe during the same morning.

Bird Surveys—Birds were surveyed using the variable circular-plot method (Reynolds et al. 1980) and a call-playback technique (Manci and Rusch 1988) from each point. Points were surveyed twice each between 0600 and 1100 hr, during the third or fourth week of May, and again during the second and third week of June (except for the river bulrush points, which were surveyed only once, in June). Points were surveyed twice to increase the chance of detecting all species present. Once the center point was reached, all birds seen and heard were recorded for five minutes; approximate distances from the observer were recorded on first vocalization/sighting (Reynolds et al. 1980). Immediately after the point count survey, rails and bitterns were surveyed using the protocol established by Manci and Rusch (1988); playing a tape recording of songs and/or calls in the following order: Sora, Virginia Rail, King Rail, Black Rail, Yellow Rail, American Bittern, and Least Bittern. A ten second interval separated the recording of each species. All birds seen or heard as well as their approximate distances from the observer were recorded during, and for two minutes after, the seven minute tape recording. Rail and bittern call-playback surveys were also conducted at three to five of the ten points during the evening between 2100 and 2400 hr; once during the third or fourth week of May, and again during the second or third week of

June. The evening surveys were conducted from each center point in May and from the refuge roads near the center points in June. For each survey, only those birds detected within designated wetland types were recorded.

Vegetation Surveys—Habitat components around each survey point were measured in all wetland habitat types except in the river bulrush stand at Horicon. The percent cover of habitat components (plant species, open water, roads, and dikes), comprising at least five % of the total cover, was estimated within a 20 m radius of the center point. The above-water plant height was measured for three individuals of each plant species and five water depth measurements were recorded. Percent cover estimates and plant height and water depth measurements were averaged over all points for each habitat type. All measurements were recorded twice, just after the bird surveys conducted in May and June.

On a larger scale, the percent cover of habitat components was estimated in circular bands 20–80 m and 80–250 m of the center points just after the bird survey conducted in May. Each habitat component was assigned a number from one to four based on the following percent cover classes: 1 = 1–25%, 2 = 26–50%, 3 = 51–75%, and 4 = 76–100%. For each habitat type, the assigned numbers were averaged and a relative percent cover calculated for each habitat component.

Data Analysis—Density indices were calculated for all birds detected at least five times during the five minute survey on any one survey date within each refuge. Density indices were determined using the analysis described in Reynolds et al (1980). In this analysis, it is necessary to determine the inflection point, defined as the distance from survey points where the number of birds detected begins to decline, before calculating a density index. Inflection points were determined for each species by grouping all individuals into ten meter concentric bands by habitat type, survey date, and refuge. The number of birds per band was then converted to a standard birds/km^2 for band to band comparisons. The density index was then determined by summing the number of individuals counted within the circle of radius x, where x = the inflection point, dividing by the area (πr^2), and converting the resulting density to a standard area (birds/km^2).

Species with small sample sizes (less than five detections) were excluded from the density analysis since an accurate inflection point could not be determined. For these species the total number of individuals detected over all points in each wetland type were summed and presented as a rough index to relative abundance (Verner 1985). Colonial and semi-colonial birds (e.g. herons, egrets, and terns), bitterns, and rails were also excluded from the density analysis since they did not satisfy two assumptions of the variable circular plot method (Reynolds et al. 1980). Colonial birds nest in groups at irregular intervals within the surveyed wetland which violated the assumption that all birds have an equal likelihood of occurring anywhere within the habitat being censused. Bitterns and rails were lured into view with tape-recorded calls. This negated the assumption that birds seen or heard occupy the same position as when the survey was initiated. Bittern

and rail detections were, however, converted to a standard birds/point to compare morning and evening surveys within the same habitat type.

Diversity indices of bird communities surveyed during the morning were calculated for each habitat type and month surveyed using the Shannon-Wiener function (Magurran 1988):

$$H' = -\Sigma p_i \ln p_i$$

where p_i is the proportion of individuals found in the ith species. Species richness was calculated by simply summing the number of species detected during the morning for each habitat type and month surveyed.

Results and Discussion

Bird Surveys—The relative abundance (total number of individuals) and the density indices (where appropriate) of bird species detected during the surveys are summarized in Table 1 by refuge, wetland habitat type, and month that the survey was conducted. A total of 55 species were detected during all morning and evening surveys: 29 in cattail stands and 15 in river bulrush stands at Horicon; 32 in the sedge meadows of Necedah and 40 in the mixed stands at Trempealeau. Forster's Terns, a state endangered species, were recorded breeding at Horicon in the cattail and bulrush stands and flying over the open water at Trempealeau. Yellow-crowned Night-Herons, a state threatened species, were recorded at Horicon. Several state "special concern" species were detected at each refuge, including Least Bitterns and Black Terns in the cattail and bulrush stands at Horicon, American Bitterns, King Rails, and Sedge Wrens in the cattail stand at Horicon, Least Bitterns and American Bitterns, Northern Harriers, King Rails, and Sedge Wrens at the sedge meadows of Necedah, and American Bitterns, Black Terns, and Sedge Wrens at the mixed stands at Trempealeau.

Density indices were determined for eight species in cattail stands and five in bulrush stands at Horicon, for 11 species in the sedge meadows at Necedah, and for 13 species in the mixed stands at Trempealeau. All inflection points, used to calculate the densities of these species, were below 100 meters from the observer. Density indices were higher in May than in June for 75% of the species at Horicon, 64% of the species at Necedah, and 85% of the species at Trempealeau. Red-winged Blackbirds were the most common species detected in all habitats except the river bulrush stand at Horicon. Additional dominants included Marsh Wrens and Swamp Sparrows in the cattail stands at Horicon, Common Gallinules, Marsh Wrens, and Yellow-headed Blackbirds in the bulrush stand at Horicon, Sedge Wrens and Swamp Sparrows at Necedah, and Common Yellowthroats and Swamp Sparrows at Trempealeau.

The results of the morning and evening call-playback surveys are summarized in Table 2. A total of six species were recorded including Common Gallinules, which appeared to respond even though their calls were not present on the tape. In the Horicon cattail stand, almost the same number of species were recorded during the morning as during the evening surveys. An American Bittern, however, was only detected during the morning survey and King Rails only during the evening survey in May. In general, the greatest

Table 1. Relative abundance (total number of individuals) and density indices (birds/km²) in parentheses of each bird species detected using ten point count surveys in predominant habitat types at Horicon, Necedah, and Trempealeau National Wildlife refuges, May–June, 1995.

	Horicon (cattail)		Horicon (bulrush)[1]	Necedah (sedge)		Trempealeau (mixed)[2]	
Species	May	June	June	May	June	May	June
Pied-billed Grebe	1	0	3	0	7 (212)	1	1
Double-crested Cormorant[3]	0	0	0	0	0	15	12
Great Blue Heron[3]	0	1	0	0	1	2	8
Great Egret[3]	0	0	1	0	0	1	13
Yellow-crownedNight-Heron[3]	2	0	0	0	0	0	0
Least Bittern[4]	4	4	2	0	2	0	0
American Bittern[4]	2	0	0	1	0	1	0
Canada Goose	0	0	0	0	0	5 (40)	0
Mallard	2	0	0	0	6 (9)	0	1
Gadwall	2	0	0	0	0	0	0
Blue-winged Teal	6 (80)	4 (71)	0	3	0	5 (16)	0
Wood Duck	0	0	0	0	0	0	1
Ruddy Duck	0	0	1	0	0	0	0
Northern Harrier	0	0	0	1	1	0	0
Sandhill Crane	0	0	0	0	2	0	0
King Rail[4]	0	0	0	0	1	0	0
Virginia Rail[4]	19	10	0	8	7	13	4
Sora[4]	19	5	2	8	2	1	0
Common Gallinule	7 (106)	6 (13)	15 (472)	0	0	3	0
American Coot	0	0	16 (232)	0	0	0	0
Killdeer	0	1	0	0	0	0	0
Common Snipe	0	0	0	8 (6)	1 (1)	0	0
Herring Gull	0	0	0	0	0	5 (16)	0
Forster's Tern[3]	0	1	10	0	0	0	1
Black Tern[3]	4	11	52	0	0	5	32
Mourning Dove	0	0	0	0	3 (6)	1	0
Common Flicker	0	0	0	0	0	0	1
Downy Woodpecker	0	0	0	0	0	0	1
Eastern Kingbird	0	0	0	0	0	0	1
Great-crested Flycatcher	0	0	0	0	2	0	3
Willow Flycatcher	2	1	1	0	1	4	4
Alder Flycatcher	0	0	0	0	0	1	0
Least Flycatcher	0	0	0	0	1	0	0
Tree Swallow	0	0	0	0	0	1 (319)	6 (212)
House Wren	0	0	0	0	0	0	2
Marsh Wren	49 (814)	34 (531)	26 (319)	1	1	12 (248)	9 (159)
Sedge Wren	1	1	0	24 (602)	21 (557)	14 (557)	2 (26)
Gray Catbird	1	0	0	3	3	1	1
Brown Thrasher	0	0	0	1	4	0	0
Blue-gray Gnatcatcher	0	0	0	0	0	0	1
Warbling Vireo	2	0	0	7 (35)	5 (7)	3	4
Yellow Warbler	7 (26)	4 (38)	0	3 (60)	9 (22)	16 (637)	8 (80)
Chestnut-sided Warbler	2	0	0	2	1	0	2
Northern Waterthrush	0	0	0	0	0	1	0
Common Yellowthroat	20 (102)	15 (115)	2	22 (177)	19 (51)	26 (168)	27 (1274)
Bobolink	0	1	0	0	3	0	0
Yellow-headed Blackbird	22 (115)	10 (100)	21 (354)	0	0	0	0
Red-winged Blackbird	47 (796)	63 (849)	31 (191)	40 (637)	50 (420)	73 (3503)	69 (920)
Northern Oriole	0	0	0	0	1	2	1

(continued)

Table 1. *Continued*

Species	Horicon (cattail)		Horicon (bulrush)[1]	Necedah (sedge)		Trempealeau (mixed)[2]	
	May	June	June	May	June	May	June
Common Grackle	0	0	0	0	0	5 (319)	0
Brown-headed Cowbird	1	1	0	1	0	5 (100)	2 (6)
American Goldfinch	0	0	0	1	0	0	1
Rufous-sided Towhee	0	0	0	1	1	0	0
Swamp Sparrow	38 (708)	45 (531)	4	20 (319)	21 (219)	31 (2866)	38 (438)
Song Sparrow	3	1	0	13 (119)	9 (30)	3 (26)	5 (35)

[1]Six point count surveys conducted (instead of ten)
[2]Cattail, sedges, and open water
[3]Colonial species, density index not determined (see Methods)
[4]Surveyed with a call-playback technique, density index not determined (see Methods)

Table 2. Comparison of rail and bittern detections from morning and evening call-playback and surveys at Horicon, Necedah, and Trempealeau National Wildlife refuges. The data have been standardized to the number of individuals/point.

	Horicon				Necedah				Trempealeau			
	May		June		May		June		May		June	
Species	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.[1]	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Least Bittern	0.4	0.6	0.4	0.4	0	0	0.2	0.4	0	0	0	0
American Bittern	0.2	0	0	0	0.1	0	0	0	0.1	0	0	0
King Rail	0	0.4	0	0	0	0	0.1	0	0	0	0	0
Sora	1.9	2.2	0.5	1.0	0.8	0.7	0.2	0	0.1	0.8	0	0
Virginia Rail	1.9	5.0	1.0	4.0	0.8	0.3	0.7	2.2	1.3	1.6	0.4	1.0
Common Gallinule	0.7	0.2	0.6	0	0	0	0	0	0.3	0	0	0

[1]Three point count surveys conducted (instead of five)

number of Sora and Virginia Rails per point were recorded in May during the evening surveys. The number of Virginia Rails detected per point was 2.5 and 5 times greater during the evening than during morning surveys in May and June, respectively. In the Necedah sedge meadows, the number of rails and bitterns detected per point were generally fewer than in the Horicon cattails. Least Bitterns and a King Rail were only recorded during the surveys in June and an American Bittern only in May. Differences between morning and evening surveys were not as evident at Necedah as they were at Horicon. The number of Soras detected per point was nearly equal for the morning and evening surveys in May and only detected during the morning survey in June. Virginia Rails were detected more often during the morning than during the evening survey in May; the opposite trend occurred in June. In the mixed stands at Trempealeau, three of the four species were only detected during the May survey. Greater numbers of Virginia Rails were detected during the evening in both May and June.

The species richness and Shannon-Wiener diversity indices of avian com-

munities at each refuge by wetland type and month surveyed are summarized in Table 3. The highest species richness was recorded at Trempealeau, and the fewest species recorded in the river bulrush stand at Horicon. Trends in species richness between months surveyed were different for each refuge with more species detected in the cattail stands at Horicon in May, similar numbers detected at Trempealeau in May and June, and more species detected in June at Necedah. Diversity indices, which take species richness and evenness into account, were similar among all wetland types and months surveyed.

Vegetation Surveys—Small scale habitat components with an average percent cover of at least 5% are summarized in Table 4 by refuge, wetland habitat type, and month surveyed. As would be expected, the marsh habitat type at Horicon was dominated by cattails (*Typha* spp.) and to a lesser extent by open water. Necedah's sedge meadows were dominated by sedges (*Carex* spp.), grasses (family Poaceae), and open water. The mixed wetland type at Trempealeau was dominated almost equally by cattails, sedges, and open water and to a lesser extent by grasses, river bulrush (*Scirpus fluviatilis*), and willows (*Salix* spp.). Overall, the average percent cover of habitat variables was similar and average plant heights increased from May to June. From May to June, the average cattail height at Horicon increased by 46%, the sedges and grasses at Necedah by 31% and 98% respectively, and at Trempealeau, the cattail, sedge, grasses, bulrush, and willow increased by 101%, 44%, 82%, 3%, and 47% respectively. Water depths were similar from May to June in the Horicon cattail habitat type, decreased by 41% at Necedah sedge meadows, and decreased by 43% at the mixed wetlands of Trempealeau.

Results of the large scale habitat measurements are illustrated in Figures 1–3. The habitat surrounding the sample points on a large scale was similar to the small scale habitat at each NWR. Although 12 habitat components were detected within 250 meters of the points in the cattail marsh at Horicon, only four (scattered trees, road/dike, open water, and cattails) had relative abundances greater than 5%. As with the dominant small scale habitat components, cattails and open water comprised the majority of the large scale habitat at Horicon. At Necedah, sedge meadow points consisted

Table 3. Species richness and Shannon-Wiener diversity (H′) indices of avian communities at Horicon, Necedah, and Trempealeau National Wildlife refuges by wetland habitat type and month. Diversity indices calculated using the total number of individuals recorded for each species, as listed in Table 1.

Refuge	Habitat Type	Month	Species Richness	Diversity (H′)
Horicon	Cattail	May	24	2.5
		June	20	2.2
	River Bulrush	June	15	2.1
Necedah	Sedge Meadow	May	20	2.4
		June	28	2.6
Trempealeau	Mixed	May	29	2.6
		June	30	2.5

Table 4. Average percent cover and height (or depth) of habitat variables with an average percent cover of ≥5 at Horicon, Necedah, and Trempealeau National Wildlife refuges. Habitat variables measured within 20 meters of each bird survey point (ten per wetland type); once in May and again in June, 1995.

			Ave. % cover		Ave. height[2] or depth[3] (cm)	
Refuge	Habitat type	Habitat variables[1]	May	June	May	June
Horicon	Cattail	*Typha* spp.	87 (4)	85 (4)	92 (5)	134 (6)
		Open Water	9 (4)	12 (4)	28 (4)	26 (4)
Necedah	Sedge Meadow	*Carex* spp.	81 (5)	78 (6)	54 (3)	71 (3)
		Poaceae	13 (5)	15 (6)	59 (4)	117 (6)
		Open Water	6 (3)	4 (3)	17 (4)	10 (3)
Trempealeau	Mixed	*Typha* spp.	24 (5)	21 (5)	71 (5)	143 (5)
		Carex spp.	30 (6)	27 (6)	52 (3)	75 (5)
		Poaceae	8 (4)	13 (5)	55 (3)	100 (7)
		Scirpus fluviatilis	8 (5)	5 (4)	94 (5)	97 (2)
		Salix spp.	5 (4)	4 (4)	145 (9)	213 (6)
		Open Water	23 (5)	25 (5)	23 (5)	13 (4)

[1]Standard error in parentheses
[2]Above water height of the vegetation variables
[3]Open water only

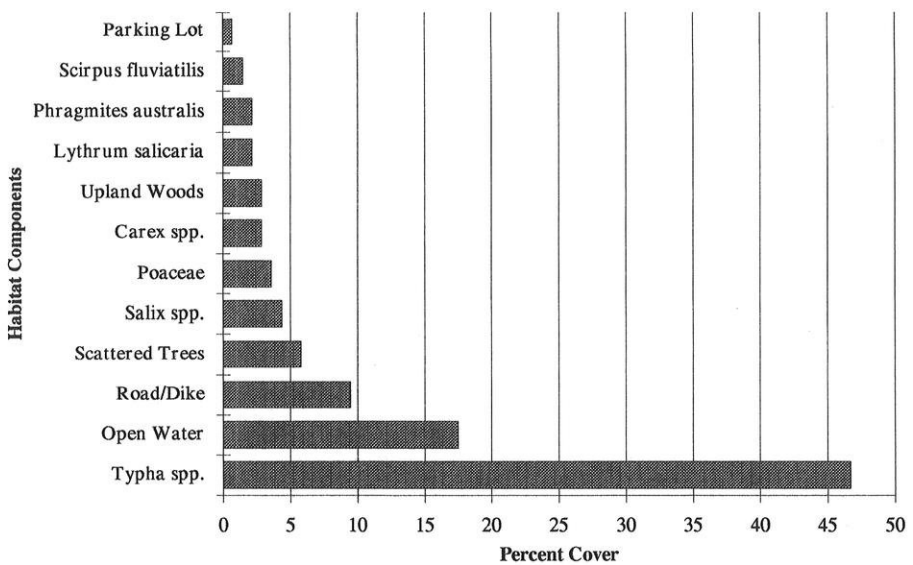

Figure 1. Relative percent cover of cattail marsh habitat components within 250 m of bird survey points at Horicon NWR.

of eleven habitat components; eight of which occurred at a relative abundance greater than 5%. The most common habitat component at Necedah's sedge meadows were sedges and willows. The mixed stands at Trempealeau were comprised of 13 large scale habitat components of which six oc-

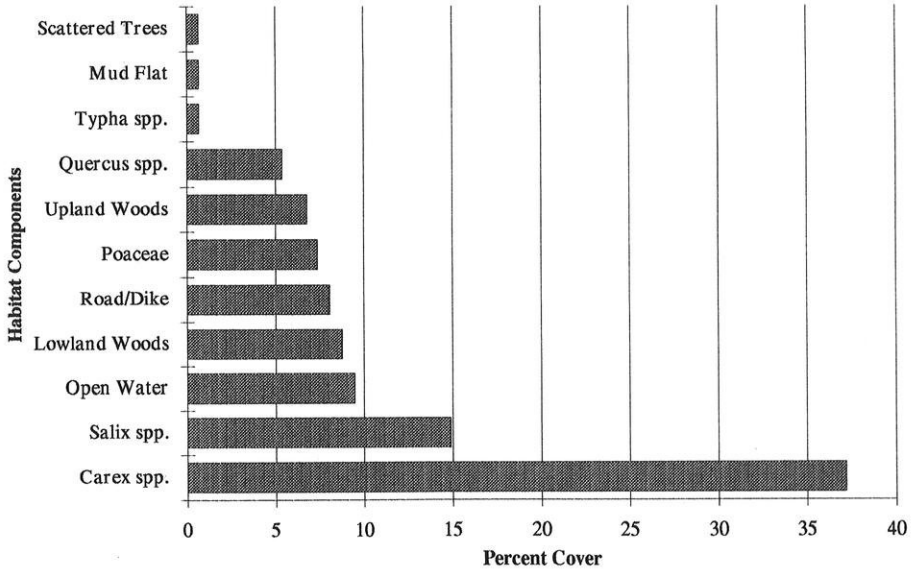

Figure 2. Relative percent cover of sedge meadow habitat components within 250 m of bird survey points at Necedah NWR.

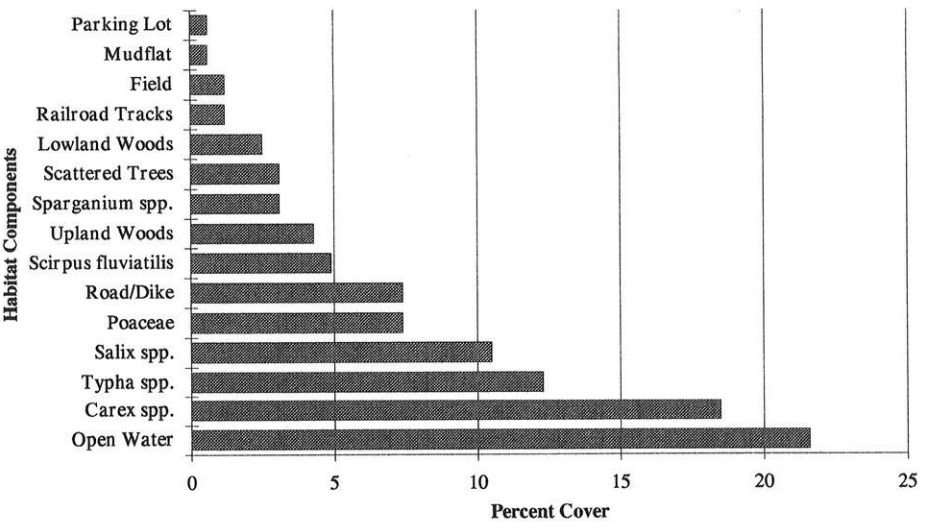

Figure 3. Relative percent cover of mixed wetland habitat components within 250 m of bird survey points at Trempealeau NWR.

curred at relative abundances greater than 5%. Dominant habitat components included open water, edges, cattails, and willows.

Monitoring Recommendations—Although this survey established baseline data on the density, diversity, and species richness of avian communities, a

monitoring program, implemented on a routine basis, could be used to detect changes in wetland bird species abundance and composition. For example, the eventual succession of sedge meadows to a shrub carr community in the absence of fire (Curtis 1957) at some areas within the refuge boundaries at Necedah, may result in declines of Sedge Wrens (a Wisconsin state species of "special concern") and increases in Common Yellowthroats. Extrinsic factors, such as habitat destruction on wintering grounds (Hecht and Cockburn 1990; Wilson 1988) and herbicide and pesticide runoff from surrounding land (Peek 1986) may be factors in declines in long-distance migrant and resident bird species (Terborgh 1992) that use refuge grounds. Monitoring of habitat variables along with abundance indices would help distinguish between these two possibilities.

Improvements can be made to this baseline survey. Most importantly, time spent walking to points within wetlands could better be spent surveying more points from refuge roads (Ralph et al. 1992). This would result in greater numbers of detections per species, and hence more accurate density indices (Verner 1985), density indices determined for more species, and an increased chance of detecting an uncommon or rare species. Models describing bird-habitat relationships would also be stronger (less variance) if sample sizes were increased (Morrison et al. 1992). Points could also be surveyed just once in early June. May surveys were most likely an overestimate of several bird densities since late migrants were probably recorded. In later June, densities were probably under-estimated since bird vocalizations decline later in the breeding season. Finally, distance estimations only need to be recorded for individuals within the "inflection point" range, which was well below 100 meters from the observer in this study.

Changes could also be made to improve the accuracy of this baseline survey for routine monitoring of several species. Abundance indices of colonial or loosely colonial species such as Great Egrets, Black-crowned Night-Herons, Yellow-crowned Night-Herons, Great Blue Herons, and Black and Forster's Terns would be more accurate if several or all colonies were surveyed. Egrets and herons were most-likely underestimated since they were recorded only on their feeding grounds, not on their nesting sites. Secretive species such as American and Least Bitterns, which were detected at very low numbers using tape-recorded calls, could be censused by walking or canoeing line transects and recording the number of birds flushed (Bibby et al. 1992).

A summary of key points in monitoring marsh and sedge meadow birds on federal refuge is presented below:

(1) Choose 40 points at least 250 m apart along secondary or tertiary roads in each wetland habitat type within refuges. Randomly select 20 of the points and survey bird communities and habitat components once in early June during the morning according to methods outlined in this paper. If wetlands can be accessed with a canoe, survey 20 points that were previously selected at random and marked. Points should be 250 meters apart.

(2) To survey rails, conduct a call-playback survey during the morning in early June after point counts according to methods outlined in

this paper. Include additional variations of both rail songs and calls, however, and omit the American Bittern and Least Bittern vocalizations.

(3) To survey bitterns, conduct 20 transects, once in early June in 20 areas, 250 m apart in each wetland habitat type. Surveys should be conducted in the morning.

(4) To survey Great Blue Herons and Great Egrets, count the number of nests at known colonies once during late incubation, between mid May and early June (Bibby et al. 1992).

(5) To survey Black Terns and Forster's Terns, count the number of individuals in the air when a colony is approached once during the incubation period during the first three weeks of June (Bibby et al. 1992). If time permits, count the number of active nests during the same time period.

The number of points and transects, transect length, and colonies surveyed may increase or decrease depending on the wetland size, the amount of time, and the number of people available to conduct surveys. Methods used should also be consistent from year to year if bird species and community trends are to be documented. If distances to each bird cannot be estimated, bird detections could be combined into two or more bands for each point count (Bibby et al. 1992) and transect (Emlen 1977, Järvinen and Väisänen 1975). The total number of each species detected could also be used, but only as a rough index to relative abundance (Verner 1985).

Acknowledgments

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50 Years Ago in *The Passenger Pigeon*

In addition to pictures of Dr. H.H.T. Jackson addressing the Society prior to the unveiling of the Passenger Pigeon plaque at Wyalusing and of the plaque itself, there is a picture of the attendees at the 9th Annual Convention in Madison. This is a good opportunity to see how folks like Mary Donald, Ed Peartree, Jack Kasper, Fran Hamerstrom, Bob Adams, Harold Kruse, and others looked like 50 years ago.

The lead article was on the Dickcissel in Wisconsin. As today, author Richard Taber noted that "Dickcissel distribution within the state varied considerably from one summer to the next, so that observers commonly speak of a certain year as a 'high' or 'low' one for these birds." Taber notes that in low years, the birds only reach the counties of Milwaukee, Racine, Kenosha, Walworth, Rock, and the southeastern corner of Green. In high years they reach the counties of Sheboygan in the east, Waupaca in the north, and Crawford in the west. He lists the "average" southern Wisconsin nesting chronology as May 25—males arrive, June 2—female joins the male, June 7—nest is begun, June 14—first egg is laid, and June 27—eggs hatch with young leaving the nest on July 6. One major difference between 1947 and 1997 is that the first cutting of hay did not occur until mid–June to the first week of July, which is substantially later than what is practiced today. (Excerpts from Volume 9, 1947)

The Fall Season: 1996

by Mark S. Peterson

The fall of 1996 will not be remembered by the weather, because there really was nothing very remarkable about the weather. Several things do come to mind and these memories should linger for a long time. The first of these were the many rarities that turned up in the state. Some of these actually stayed for more than a day or two. For those who happened to be in Fond du Lac in mid to late October, who will forget the beautiful and cooperative Sabine's Gull that lingered for over two weeks? There was also a Rufous Hummingbird that continued to come to a feeder in Walworth County for over a month, a Black Vulture near Cedar Grove in southern Sheboygan and northern Ozaukee County for almost 2 weeks, and a Purple Sandpiper in Sheboygan for almost 2 weeks. There were others like a Prairie Falcon in Grant County, a Black-legged Kittiwake in Kenosha County, and a Scissor-tailed Flycatcher in Dane County that left almost as quickly as they were found.

August was an unremarkable month in terms of changeable weather. A state high of 99 was reached early in the month, while a low of 38 was recorded during the last week. Precipitation was above normal, but not excessive.

September was a drier month, with near normal precipitation. A high of 91 was recorded in the state during the first week and a low of 25 was recorded during the last week. Frost was first reported in Door County on the 13th and in Caroline on the 19th. Berner reported 16 species of warblers in Portage County in the 5th with a lull in warbler migration from the 9th to the 27th. Ashman found 17 species of warblers in Madison on the 9th.

October was dry early, with more precipitation at the end of the month. A high of 83 was reached during the first week, and a low of 8 was recorded during the last week of the month. Berner still found 10 species of warblers in Portage County on the 1st. Flurries were reported in the north on the 11th, in Oconto County on the 23rd, and in Door, Oconto, and Shawano Counties on the 31st. The Lukes reported a barometric pressure of 28.90 on the 30th.

November became winterlike rather quickly. A high of 63 was reached dur-

ing the first week and it was downhill after that. 35″ of snow fell on Hurley around the 11th with 5″ in La Crosse on the 20th, 4″ in Lake Mills on the 20th and 21st, and 3″ in Door, Oconto, and Shawano Counties on the 23rd. Most of the snow on the 23rd remained for the rest of the winter. There was 3″ of ice on the Marion pond by the 24th, and Ashman reported that Lake Wingra and Monona Bay in Dane County were frozen over by Thanksgiving. The Lukes reported a barometric pressure of 30.72 on the 14th. Lows of −8 in Phillips on the 26th and −5 in Caroline on the 27th were also reported.

The fall of 1996 was one of the best ever with 300 species being reported. Many rarities were found during the period including the following: Red-throated Loons in Milwaukee, Ozaukee, and Racine Counties, Red-necked Grebes in Columbia, Dane, and Winnebago Counties, Eared Grebes in Dane and Sheboygan Counties, Western Grebes in Dane, Milwaukee, and Ozaukee Counties, White Pelicans in Brown, Dodge, Door, La Crosse, Milwaukee, Oconto, and Trempeleau Counties, Snowy Egrets in Brown, Fond du Lac, and Milwaukee Counties, Little Blue Herons in Fond du Lac County, Tricolored Herons in Fond du Lac County, Yellow-crowned Night-Herons in Dane and Milwaukee Counties, Plegadis Ibis in Sheboygan County, Trumpeter Swans in Burnett, Dane, and Dodge Counties, Greater White-fronted Geese in Ozaukee County, Ross' Geese in Columbia and Dane Counties, Harlequin Ducks in Manitowoc, Milwaukee, and Ozaukee Counties, Barrow's Goldeneye in Ozaukee County, Black Vulture in Ozaukee and Sheboygan Counties, Swainson's Hawks in Outagamie and Ozaukee Counties, Golden Eagles in Monroe, Oconto, Ozaukee, and Sheboygan Counties, Prairie Falcon in Grant County, King Rails in Winnebago County, Piping Plover in Outagamie County, American Avocets in Dunn and Milwaukee Counties, Willets in Kewaunee, Manitowoc, Milwaukee, and Outagamie Counties, Whimbrels in Manitowoc, Marinette, and Milwaukee Counties, Hudsonian Godwits in Dodge, Fond du Lac, and Kewaunee Counties, Marbled Godwits in Dodge, Manitowoc, and Outagamie Counties, Western Sandpipers in Ashland, Dodge, Fond du Lac, Manitowoc, Milwaukee, and Outagamie Counties, Purple Sandpipers in Kewaunee, Manitowoc, and Sheboygan Counties, Buff-breasted Sandpipers in Bayfield, Dane, Dodge, Fond du Lac, Milwaukee, and Racine Counties, Red-necked Phalaropes in Dodge County, Pomarine Jaeger in Pepin County, Parasitic Jaegers in Douglas County, Long-tailed Jaeger in Sheboygan County, Laughing Gulls in Manitowoc and Milwaukee Counties, Little Gull in Manitowoc County, Thayer's Gull in Manitowoc, Ozaukee, and Sheboygan Counties, Iceland Gulls in Douglas and Sheboygan Counties, Lesser Black-backed Gulls in Dane and Manitowoc Counties, Great Black-backed Gulls in Brown, Door, Kenosha, Kewaunee, Manitowoc, Milwaukee, Oconto, Ozaukee, and Sheboygan Counties, Black-legged Kittiwake in Kenosha County, Sabine's Gulls in Fond du Lac, Kenosha, Ozaukee, and Sheboygan Counties, Great Gray Owls in Bayfield and Douglas Counties, Boreal Owls in Oconto, Outagamie, Portage, and Sheboygan Counties, Rufous Hummingbirds in Lincoln and Walworth Counties, Black-backed Woodpeckers in Douglas and Forest Coun-

ties, Western Wood-Pewee in Oconto County, Dusky Flycatcher in Oconto County, Scissor-tailed Flycatcher in Dane County, Townsend's Solitaire in Price County, Loggerhead Shrike in Outagamie County, Bell's Vireos in Buffalo and Dunn Counties, White-eyed Vireo in Iowa County, Kentucky Warbler in Winnebago County, Hooded Warblers in Outagamie and Ozaukee Counties, Henslow's Sparrows in Dane, Marathon, and Monroe Counties, Nelson's Sharp-tailed Sparrows in Milwaukee and Monroe Counties, and Harris' Sparrows in Douglas and Price Counties.

Reports (1 August–30 November 1996)

Red-throated Loon.—Reported by Uttech in Ozaukee County on October 28, by Schultz and C. Wood in Racine County on November 19, and by Gustafson in Milwaukee County on November 28.

Common Loon.—Found at the beginning of the period south to Barron and Marathon Counties. Verch found 13 in Ashland and Bayfield Counties on November 5. Reported at the end of the period in Dane County by Ashman and Burcar.

Pied-billed Grebe.—Reported in scattered areas throughout the state at the beginning of the period. Robbins found 25 in Dane County on November 2. Reported at the end of the period in Dane and Winnebago Counties.

Horned Grebe.—Reported at the beginning of the period in Door County by Regan. Bontly found over 100 in Milwaukee County on October 24. Last reported by Verch in Ashland and Bayfield Counties on November 21.

Red-necked Grebe.—Reported by Ziebell in Winnebago County from the beginning of the period to September 21, by Robbins in Columbia County on August 31, and by Ashman in Dane County on November 10.

Eared Grebe.—Reported by Stover in Door County on September 11, and by T. Wood in Sheboygan County on October 20.

Western Grebe.—First reported by Bontly in Milwaukee County on October 20. Last reported in Dane County by Burcar on November 3. Was also reported in Ozaukee County.

White Pelican.—Reported at the beginning of the period in Brown County by the Baumans. W. Mueller found 275 in Trempeleau County on August 21. Last reported by Domagalski in Milwaukee County on October 20.

Double-crested Cormorant.—Found in scattered areas throughout the state at the beginning of the period. The Baumans found over 5000 in Brown County. A partial albino, with white wings, and white spots on the head and neck was seen by Boldt in Door County on August 22. Last reported by the Brassers in Sheboygan County on November 23.

American Bittern.—Found at the beginning of the period in Brown, Burnett, Clark, Douglas, Marathon, Price, and Winnebago Counties. Decker found 35 in Clark County on August 30. Last reported on November 3 in Brown County by the Baumans.

Least Bittern.—Reported at the beginning of the period in Winnebago County by Ziebell. Last reported by Ziebell in Winnebago County on September 21. Also reported from Brown, Dodge, Langlade, and Sheboygan Counties.

Great Blue Heron.—Found throughout the state at the beginning of the period. Korducki found 85 in Milwaukee County on August 18. Found at the end of the period in Manitowoc County by Sontag.

Great Egret.—Found at the beginning of the period in Dodge, Fond du Lac, Milwaukee, Washington, and Winnebago Counties. Ziebell found 100 in Winnebago County on September 28. Last reported by Diehl in Dodge County on November 4.

Snowy Egret.—Reported at the beginning of the period in Brown and Fond du Lac Counties. Regan found 4 in Brown County on September 13. Last reported by Regan in Brown County on September 24.

Little Blue Heron.—First reported by Tessen in Fond du Lac County on August 2. Last reported by T. Wood in Fond du Lac County on August 18.

Tricolored Heron.—Reported by Robbins in Fond du Lac County on August 2 and September 7.

Cattle Egret.—Found at the beginning of the period in Brown, Dodge, Milwaukee, and Winnebago Counties. Robbins found 42 in Dodge County on September 7. Last reported by Uttech in Ozaukee County on November 5.

Green Heron.—Found throughout the state at the beginning of the period. Gamache found 6 in Dunn County on August 21. Last reported by Schimmels in Langlade County on October 15.

Black-crowned Night-Heron.—Reported at the beginning of the period north to Manitowoc, Brown, and Winnebago Counties. Ziebell found 130 in Winnebago County on September 28. Last reported by Regan in Brown County on November 25.

Yellow-crowned Night-Heron.—Reported at the beginning of the period in Milwaukee County by Korducki where he found 3 on August 15. Last reported by Robbins in Dane County on September 9.

Plegadis Ibis.—One was seen flying over Cedar Grove Ornithological Station in Sheboygan County on October 18. See "By the Wayside."

Tundra Swan.—One that summered over on a pond northwest of Green Bay in Brown County was seen by Tessen on August 25. Nelson reported 8985 on Pool 7 near Onalaska on the Mississippi River on November 4. Found at the end of the period in Columbia and Dane Counties.

Trumpeter Swan.—Reported throughout the period in Burnett County by Hoefler. Tessen found 3 in Dodge County on October 18. Also reported during the period in Dane County.

Mute Swan.—Found at the beginning of the period in Ashland, Bayfield, Dane, Door, Portage, and Washington Counties. The Lukes found 20 in Door County on October 26. Reported at the end of the period in Dane, Fond du Lac, and Washington Counties.

Greater White-fronted Goose.—Tessen found 2 in Ozaukee County on November 2.

Snow Goose.—First reported by Tessen in Brown County on August 25. Tessen found over 175 in Dodge County on October 25. Reported at the end of the period in Brown County by the Baumans.

Ross' Goose.—Reported by Burcar in Columbia County on October 24, by Ashman in Columbia County on November 16, and by Curson in Dane County on November 18. See "By the Wayside."

Canada Goose.—Reported at the beginning of the period throughout the state. The Lukes found 5000 in Door County on October 3 and the Baumans found over 5000 in Brown County on October 15. Found throughout the state at the end of the period.

Wood Duck.—Found throughout the state at the beginning of the period. Belter found over 250 in Marathon County on September 5. Reported at the end of the period in Brown County by the Baumans.

Green-winged Teal.—Reported at the beginning of the period in Barron, Brown, Burnett, Dane, Marathon, Milwaukee, and Ozaukee Counties. Lesher found 150 in La Crosse County on October 20. Last reported by Gustafson in Milwaukee County on November 23.

American Black Duck.—Found in scattered areas throughout the state at the beginning of the period. The Baumans found over 400 in Brown County on November 1. Reported in scattered areas throughout the state at the end of the period.

Mallard.—Found throughout the state during the period. Nelson reported 5100 at pool 7 on November 4 and 5400 on pool 9 on the Mississippi River on November 7.

Northern Pintail.—Reported at the beginning of the period in Washurn County by Cahow. Nelson reported 170 on pool 7 at Onalaska on November 4. Last reported by the Baumans in Brown County on November 20.

Blue-winged Teal.—Found throughout the state at the beginning of the period. Belter found over 300 in Marathon County on September 5. Last reported by Tessen in Pepin County on November 12.

Northern Shoveler.—Reported at the beginning of the period in Barron, Marathon, and Winnebago Counties. Ashman found 85 in Dane County on October 21. Found at the end of the period in Dane and Ozaukee Counties.

Gadwall.—Reported at the beginning of the period in Dane County by Ashman. Nelson reported 175 on Pool 6 in Trempeleau County on November 4. Found at the end of the period in Dane and Milwaukee Counties.

American Wigeon.—Found at the beginning of the period in Burnett and Milwaukee Counties. Nelson reported 350 on pool 9 on the Mississippi River on November 7. Reported at the end of the period in Dane and Milwaukee Counties.

American Wigeon-Gadwall Hybrid.—Reported by C. Wood in Dane County on November 27.

Canvasback.—First reported by Hess in Rock County on August 27. Nelson reported 75055 on the closed area of pool 9 on the Mississippi River on November 7. Found at the end of the period in Dane, Milwaukee, Ozaukee, and Washington Counties.

Redhead.—Found at the beginning of the period in Dane, Manitowoc, and Winnebago Counties. Ziebell found 14 in Winnebago County on September 21. Reported at the end of the period in Milwaukee and Ozaukee Counties.

Ring-necked Duck.—Reported at the beginning of the period in Barron, Burnett, Douglas, Vilas, and Washburn Counties. Nelson reported 2480 at pool 7 near Onalaska on November 7. Found at the end of the period in Dane and Douglas Counties.

Greater Scaup.—Reported at the beginning of the period in Manitowoc and Milwaukee Counties. Sontag found over 3000 in Manitowoc County on October 13. Found at the end of the period in Door, Manitowoc, Milwaukee, and Ozaukee Counties.

Lesser Scaup.—Found at the beginning of the period in Brown, Manitowoc, and Milwaukee Counties. Belter found 16 in Marathon County on November 2. Reported at the end of the period in Brown, Dane, Milwaukee, Ozaukee, and Washington Counties.

Scaup Species.—Nelson reported 37,000 on pool 9 Sugar Creek on the Mississippi River on November 7.

Harlequin Duck.—First reported by Boldt and Korducki in Milwaukee County on September 15 where 4 were seen. Last reported by Sontag in Manitowoc County on November 17.

Oldsquaw.—First reported by Tessen in Door County on October 12. C. Wood found 100 in Racine County on November 19. Found at the end of the period in Milwaukee and Ozaukee Counties.

Black Scoter.—First reported on October 12 in Ashland, Bayfield, and Door Counties. Tessen found 10 in Door County on October 12 and Verch found 10 in Ashland and Bayfield Counties on October 22. Last reported by Robbins in Ozaukee County on November 21.

Surf Scoter.—First reported by Regan in Kewaunee County on October 4. Tessen found 20 in Fond du Lac County on October 14. Last reported by T. Wood in Milwaukee County on November 30.

White-winged Scoter.—First reported by Tessen in Door County on October 12 where 3 were present. Verch also found 3 in Ashland and Bayfield Counties on October 25. Last reported by Regan in Kewaunee County on November 7.

Common Goldeneye.—Reported at the beginning of the period in Ashland, Bayfield, and Door Counties. Nelson reported 730 in Pool 7 at Onalaska on November 11. Found at the end of the period north to Door and Dunn Counties.

Barrow's Goldeneye.—From Virmond Park in Ozaukee County a male was first seen by Uttech on November 7. It was seen at the end of the period at the same place by T. Wood and Uttech. See "By the Wayside."

Bufflehead.—First reported by Parsons in Walworth County on September 29. Nelson reported 1495 at pool 7 near Onalaska on Novem-

ber 11. Found at the end of the period north to Door and Oconto Counties.

Hooded Merganser.—Found in scattered areas throughout the state at the beginning of the period. Robbins found 120 in Dane County on November 1. Reported at the end of the period in Dane, Milwaukee, Ozaukee, and Winnebago Counties.

Common Merganser.—Reported at the beginning of the period in Vilas and Washburn Counties. Verch found 156 in Ashland and Bayfield Counties on November 19. Found at the end of the period north to Door and Oconto Counties.

Red-breasted Merganser.—Found at the beginning of the period in Ashland, Bayfield, Door, and Vilas Counties. Tessen found 800 in Sheboygan County on November 8. Reported at the end of the period north to Door County.

Ruddy Duck.—Found at the beginning of the period in Dane, Dunn, and Winnebago Counties. Parsons found 200 in Walworth County on November 2. Reported at the end of the period in Dane, Milwaukee, Waukesha, and Winnebago Counties.

Black Vulture.—One was first seen at Cedar Grove Ornithological Station in Sheboygan County on November 13. This bird was last reported on November 22 in Ozaukee County by Polk and Uttech. See "By the Wayside."

Turkey Vulture.—Found throughout the state at the beginning of the period. 32 were seen at Little Suamico Ornithological Station on September 29. Reported at the end of the period in Monroe and Sheboygan Counties.

Osprey.—Reported at the beginning of the period south to Portage County. 10 were seen at Little Suamico Ornithological Station on September 11. Last reported on October 31 in Ozaukee County by Frank, Tessen, and Uttech.

Bald Eagle.—Found at the beginning of the period south to Pierce and Winnebago Counties. Gamache found 10 in Dunn County on November 9. Reported at the end of the period south to Dane County.

Northern Harrier.—Found throughout the state at the beginning of the period. Frank found 16 in Ozaukee County on October 31. Reported at the end of the period in Dodge and Winnebago Counties.

Sharp-shinned Hawk.—Found in scattered areas throughout the state at the beginning of the period. 175 were found at Little Suamico Ornithological Station on September 29. Reported at the end of the period in Barron, Door, Dunn, and Marathon Counties.

Cooper's Hawk.—Reported throughout the state at the beginning of the period. 10 were found at Little Suamico Ornithological Station on September 29. Found at the end of the period north to Clark, Marathon, and Door Counties.

Northern Goshawk.—Reported at the beginning of the period in Door County by the Lukes. 3 were found at Little Suamico Ornithological Station on October 31. Found at the end of the period in Door County by the Lukes.

Red-shouldered Hawk.—Reported at the beginning of the period in Dunn, Outagamie, Portage, and Vilas Counties. 20 were found at Little Suamico Ornithological Station on November 1. Found at the end of the period in Iowa County by Burcar.

Broad-winged Hawk.—Reported at the beginning of the period south to Portage County. Frank found 800 in Ozaukee County on September 29. Last reported by Bruce in Winnebago County on October 24.

Swainson's Hawk.—Found by Tessen in Outagamie County on October 7 and by Uttech in Ozaukee County on November 1.

Red-tailed Hawk.—Found throughout the state at the beginning of the period. Tessen found 229 in Ozaukee County on November 2. Reported at the end of the period north to Douglas and Door Counties.

Rough-legged Hawk.—First reported on September 28 at Little Suamico Ornithological Station. Tessen found 10 in Ozaukee County on October 31. Found throughout the state at the end of the period.

Golden Eagle.—First reported on October 18 in Oconto and Ozaukee Counties. 4 were seen at Little Suamico Ornithological Station on No-

vember 1. Reported at the end of the period in Monroe County by Kuecherer.

American Kestrel.—Found throughout the state at the beginning of the period. 13 were seen at Little Suamico Ornithological Station on September 24 and Frank found 13 in Ozaukee County on September 29. Reported at the end of the period north to Burnett, Oconto, and Door Counties.

Merlin.—Reported at the beginning of the period in Ashland, Bayfield, Door, and Douglas Counties. Frank found 16 in Ozaukee County on September 29. Last reported by the La Valleys in Douglas County on November 8.

Peregrine Falcon.—Reported at the beginning of the period in Milwaukee County by Korducki. Frank found 4 in Ozaukee County on September 29. Found at the end of the period in Brown and Milwaukee Counties.

Prairie Falcon.—Dankert found one at Eagle Valley Nature Preserve in Grant County on October 12. See "By the Wayside."

Ring-necked Pheasant.—Found during the period north to Burnett, Washburn, Oconto, and Door Counties. Gamache found 10 in Dunn County on October 15.

Ruffed Grouse.—Reported during the period south to Richland, Dane, and Sheboygan Counties. The La Valleys found 18 in Douglas County on November 23.

Greater Prairie-Chicken.—Reported during the period in Clark, Marathon, and Portage Counties. Belter found 23 in Portage County on November 13.

Sharp-tailed Grouse.—Reported during the period in Burnett, Price, and Oneida Counties. The Baumans found 3 in Oneida County on August 22.

Wild Turkey.—Reported during the period north to Burnett, Florence, and Door Counties. Richter found 28 in Monroe County on October 9.

Bobwhite.—Found during the period in Dane and Richland Counties. Duerksen found 7 in Richland County on November 17.

King Rail.—Found in Winnebago County by Peterson on August 9 and by Tessen on August 25.

Virginia Rail.—Reported at the beginning of the period in Dane, Dodge, Washurn, and Winnebago Counties. Last reported by Diehl in Milwaukee County where one was brought to the Wisconsin Humane Society on November 19.

Sora.—Found at the beginning of the period in scattered areas throughout the state. Ziebell found 50 in Winnebago County on September 29. Last reported by Ashman in Dane County on October 5.

Common Moorhen.—Reported at the beginning of the period in Dane, Dodge, and Winnebago Counties. Ziebell found 6 in Winnebago County on September 21 and Tessen found 5 in Dodge County on October 1. Last reported by Tessen in Dodge County on October 13.

American Coot.—Found in scattered areas throughout the state at the beginning of the period. Hoefler found 6000 in Burnett County on October 21. Reported at the end of the period north to Manitowoc County.

Sandhill Crane.—Reported throughout the state at the beginning of the period. Williams found over 6000 in Wood County on October 13. Last reported by Hale in Jefferson County on November 24.

Black-bellied Plover.—First reported by Korducki in Milwaukee County on August 10. Tessen found 15 in Dodge County on October 13. Last reported by Gamache in Dunn County on November 17.

American Golden Plover.—First reported by Tessen in Racine County on August 17. Robbins found 42 in Dane County on October 12. Last reported by Peterson in Dodge County on November 6.

Semipalmated Plover.—Found at the beginning of the period in Dane, Dodge, Milwaukee, Ozaukee, and Portage Counties. Boldt found 20 in Horicon Marsh on August 12. Last reported by Tessen in Dodge County on October 17.

Piping Plover.—Tessen found one of these rare little plovers in Outagamie County on August 16.

Killdeer.—Found throughout the state at the beginning of the period. Mead found over 2000 in Brown County on August 17. Last reported by Burcar in Dane County on November 16.

American Avocet.—First reported by Frank in Milwaukee County on August 15. Gamache found 6 in Dunn County on September 23. Last reported by Korducki in Milwaukee County on September 18.

Greater Yellowlegs.—Found at the beginning of the period in Dane, Dodge, and Ozaukee Counties. Boldt found 19 in Horicon Marsh on September 5 and also on September 19. Last reported by the Smiths in Oconto County on November 8.

Lesser Yellowlegs.—Reported at the beginning of the period in Dane, Dodge, Milwaukee, Ozaukee, and Washington Counties. Tessen found 200 in Dodge County on September 21. Last reported by Frank in Ozaukee County on October 31.

Solitary Sandpiper.—Found at the beginning of the period in Barron, Dane, Dodge, Ozaukee, and Washington Counties. Ashman found 33 in Dane County on August 12. Last reported by Ziebell in Winnebago County on September 21.

Willet.—First reported by Regan in Kewaunee County on August 6. Last reported by Boldt in Milwaukee County on September 13.

Spotted Sandpiper.—Found throughout the state at the beginning of the period. Ashman found 20 in Dane County on August 12. Boldt found a nearly full albino, except for light tan on the upper wing in Door County on August 22. Last reported by Gamache in Dunn County on November 8.

Upland Sandpiper.—Reported from the beginning of the period to August 4 in Burnett County by Hoefler and from the beginning of the period to August 18 in Dane County by Ashman.

Whimbrel.—First reported by Sontag in Manitowoc County on August 29. Several observers found as many as 4 in Milwaukee County between September 3 and 16. Last reported by Korducki in Milwaukee County on October 4.

Hudsonian Godwit.—First reported by Burcar in Dodge County on September 27. Several observers reported as many as 3 in Dodge County between September 28 and October 5. Last reported by Boldt in Horicon Marsh on October 28.

Marbled Godwit.—First reported by Sontag in Manitowoc County on August 13. Last reported by Belter in Dodge County on October 5.

Ruddy Turnstone.—Reported at the beginning of the period in Dane County by Burcar. Last reported by Sontag in Manitowoc County on September 28.

Red Knot.—First reported by T. Wood in Milwaukee County on August 25. In Milwaukee County Frank found 4 on August 27 and Boldt found 4 on August 28. Last reported by Tessen in Dodge County on October 1.

Sanderling.—First reported by Burcar in Dodge County on August 3. Tessen found 25 in Manitowoc County on October 12. Last reported by the Brassers in Sheboygan County on November 9.

Semipalmated Sandpiper.—Reported at the beginning of the period in Dane, Milwaukee, Ozaukee, Portage, and Washington Counties. Boldt found 117 in Horicon Marsh on September 5. Last reported by Tessen in Dodge County on November 7.

Western Sandpiper.—First reported by Tessen in Outagamie County on August 13. Last reported by Tessen in Dodge County on September 21. Also reported from Ashland, Fond du Lac, Manitowoc, and Milwaukee Counties.

Least Sandpiper.—Found at the beginning of the period in Dane, Milwaukee, Ozaukee, and Washington Counties. Boldt found 174 in Horicon Marsh on September 5. Last reported by Gustafson in Dodge County on October 24.

White-rumped Sandpiper.—Reported at the beginning of the period in Dane and Fond du Lac Counties. Tessen found over 50 in Dodge County on October 18. Last reported by Tessen in Dodge County on November 7.

Baird's Sandpiper.—Found at the beginning of the period in Dane and Fond du Lac

Counties. Berner found 20 in Portage County on August 27. Last reported by Ashman in Dane County on November 9.

Pectoral Sandpiper.—Reported at the beginning of the period in Dane and Washington Counties. Boldt found 123 in Horicon Marsh on September 19. Last reported by Burcar in Dane County on November 11.

Purple Sandpiper.—Reported by Barbarich in Kewaunee County on November 17, by Peterson in Manitowoc County on November 20, and by several observers in Sheboygan County from November 20 to the end of the period. See "By the Wayside."

Dunlin.—First reported by Sontag in Manitowoc County on September 14. Boldt found 151 in Horicon Marsh on October 28. Last reported by Regan in Kewaunee County on November 24.

Stilt Sandpiper.—Reported at the beginning of the period in Dane and Fond du Lac Counties. Tessen found 110 in Dodge County on September 21. Last reported by Tessen in Dodge County on October 18.

Buff-breasted Sandpiper.—First reported by Burcar in Dodge County on August 3. T. Wood found 20 in Racine County on August 25. Last reported by Tessen in Dodge County on October 4. Also reported from Bayfield, Dane, Fond du Lac, and Milwaukee Counties.

Short-billed Dowitcher.—Reported at the beginning of the period in Dane, Dodge, Fond du Lac, and Milwaukee Counties. Tessen found 55 in Fond du Lac County on August 2. Last reported by Tessen in Dodge County on October 4.

Long-billed Dowitcher.—First reported by Tessen in Fond du lac County on August 2. Boldt found 147 in Horicon Marsh on October 9. Last reported by Burcar in Dane County on November 4.

Common Snipe.—Reported at the beginning of the period in scattered areas throughout the state. Ziebell found 30 in Winnebago County on September 29. Last reported by Burcar in Dane County on November 11.

American Woodcock.—Found at the beginning of the period south to Ozaukee County. Last reported by Stover in Door County on November 11.

Wilson's Phalarope.—First reported by Burcar in Dodge County on August 1. Last reported by Robbins in Dodge County on October 3.

Red-necked Phalarope.—First reported by Peterson and Tessen in Dodge County on August 17. T. Wood found 9 in Dodge County on August 18. Last reported by Tessen in Dodge County on September 21.

Pomerine Jaeger.—Reported at Lake Pepin in Pepin County on November 12 by Tessen and on November 16 by Domagalski and Gustafson. See "By the Wayside."

Parasitic Jaeger.—Tessen found 2 in Douglas County on September 28.

Long-tailed Jaeger.—One was found dead along a road in Sheboygan County on September 5. See "By the Wayside."

Laughing Gull.—Reported by Robbins in Manitowoc County on August 4, and by several observers at the Milwaukee Coast Guard Impoundment between August 9 and September 5. See "By the Wayside."

Franklin's Gull.—Reported at the beginning of the period in Dane, Manitowoc, Milwaukee, and Ozaukee Counties. Gamache found 160 in Dunn County on September 25. Last reported by Domagalski in Ozaukee County on October 30.

Little Gull.—Reported in Manitowoc County from the beginning of the period to November 16 by Sontag and on September 1 by Peterson.

Bonaparte's Gull.—Reported at the beginning of the period in Manitowoc, Milwaukee, Ozaukee, and Sheboygan Counties. Verch found 147 in Ashland and Bayfield Counties on October 12. Found at the end of the period in Milwaukee and Sheboygan Counties.

Ring-billed Gull.—Found throughout the state during the period. The Baumans found 10,000 in Brown County on August 15.

Herring Gull.—Reported throughout the state during the period. Sontag found 383 in Manitowoc County on October 24.

Thayer's Gull.—First reported by Tessen in Ozaukee County on October 13. Tessen found 3 in Sheboygan County on November 8. Last reported on November 29 in Sheboygan County by Tessen and T. Wood.

Iceland Gull.—Reported on November 8 and 29 in Sheboygan County by Tessen and in Douglas County on November 24 by Svingen. See "By the Wayside."

Lesser Black-backed Gull.—Reported in Dane County on September 12 and October 8 by Robbins and on November 19 by Burcar and in Manitowoc County on October 12 by Tessen. See "By the Wayside."

Glaucous Gull.—First reported by Regan in Kewaunee County on October 22. The La Valleys found in Douglas County on October 22. Found at the end of the period in Douglas, Kewaunee, and Manitowoc Counties.

Great Black-backed Gull.—First reported on August 4 in Door County by Regan. Peterson found 3 in Manitowoc County on November 20. Found at the end of the period in Door and Kewaunee Counties. Also reported from Brown, Kenosha, Milwaukee, Oconto, Ozaukee, and Sheboygan Counties.

Black-legged Kittiwake.—O'Brien found on in Kenosha County on November 24. See "By the Wayside."

Sabine's Gull.—The most memorable bird of the fall season was originally found by Josh Knuth on October 11 at the south end of the Lake Winnebago near the mouth of the Fond du Lac River. By the time this cooperative bird left over 2 weeks later, many birders had the opportunity to see it at close range. Other immature individuals were seen by Frank at Port Washington Harbor on November 16, by O'Brien in Kenosha County on November 24, and by Domagalski in Sheboygan County on November 29. See "By the Wayside."

Caspian Tern.—Reported at the beginning of the period in Ashland, Bayfield, Brown, Dane, Manitowoc, Milwaukee, and Ozaukee Counties. Frank found 146 in Milwaukee County on August 18. Last reported by Uttech in Ozaukee County on October 13.

Common Tern.—Found at the beginning of the period in Ashland, Bayfield, Douglas, Manitowoc, Milwaukee, and Washburn Counties. Sontag found 19 in Manitowoc County on August 17. Last reported by the Brassers in Sheboygan County on October 27.

Forster's Tern.—Reported at the beginning of the period in Brown, Manitowoc, Milwaukee, and Winnebago Counties. Ziebell found 8 in Winnebago County on August 24. Last reported by Sontag in Manitowoc County on November 16.

Black Tern.—Found in scattered areas throughout the state at the beginning of the period. Gamache found 12 in Dunn County on August 26. Last reported by Bruce in Winnebago County on September 13.

Rock Dove.—Found throughout the state during the period. Belter found over 350 in Marathon County on November 10.

Mourning Dove.—Reported throughout the state during the period. Ziebell found 160 in Winnebago County on September 6.

Black-billed Cuckoo.—Found at the beginning of the period in Barron, Dane, Douglas, Dunn, Shawano, and Washburn Counties. Last reported by Goff in Barron County on October 7.

Yellow-billed Cuckoo.—Reported at the beginning of the period in Douglas and Monroe Counties. Last reported by Domagalski in Milwaukee County on September 21.

Eastern Screech-Owl.—Reported during the period north to Door and Shawano Counties.

Great Horned Owl.—Found throughout the state during the period. Zehner found 3 in Milwaukee County on September 1.

Snowy Owl.—First reported by Lesher in La Crosse County on October 18. Regan found 5 in Kewaunee County on November 17. Found in scattered areas throughout the state at the end of the period. The large invasion of this species was reported from 18 counties.

Barred Owl.—Found throughout the state during the period.

Great Gray Owl.—Reported by Johnson in Douglas County on August 9 and by Verch in Bayfield County on November 20. See "By the Wayside."

Long-eared Owl.—First reported on October 18 by Diehl in Milwaukee County when one was brought to the Wisconsin Humane Society. 8 were reported at Cedar Grove Ornithological Station on November 8. Last reported by the Drings in Vilas County on November 25.

Short-eared Owl.—First reported by Boldt in Milwaukee County on September 9. Reported at the end of the period in Milwaukee County by Boldt.

Boreal Owl.—First reported by Jacobs at Linwood Springs Research Station in Portage County on November 9. A maximum of 3 were found there on November 19. Other birds were banded in Oconto and Outagamie Counties. See "By the Wayside."

Northern Saw-whet Owl.—First reported on September 19 at Little Suamico Ornithological Station. 48 were found at Little Suamico Ornithological Station on October 18. Last reported by the La Valleys in Douglas County on November 24.

Common Nighthawk.—Found throughout the state at the beginning of the period. Lesher found 1500 in La Cross County on September 6. Last reported on October 7 at Little Suamico Ornithological Station.

Whip-poor-will.—Reported at the beginning of the period in Burnett, Langlade, and Washurn Counties. Belter found 3 in Marathon County on September 2. Last reported on October 28 by Diehl in Milwaukee County when one was rescued from a warehouse and brought to the Wisconsin Humane Society.

Chimney Swift.—Found throughout the state at the beginning of the period. Gamache found 226 in Dunn County on September 8. Last reported by Ashman in Dane County on October 6.

Ruby-throated Hummingbird.—Reported throughout the state at the beginning of the period. 9 were found at Little Suamico Ornithological Station on September 18. Last reported by Parsons in Walworth County on October 1.

Rufous Hummingbird.—Reported from October 4 to November 7 at the Gleason home near Lake Geneva in Walworth County and from October 22 to November 8 at the Krahn home near Tomahawk in Lincoln County. See "By the Wayside."

Belted Kingfisher.—Found throughout the state at the beginning of the period. Sontag found 3 in Manitowoc County on August 21 and Belter found 3 in Marathon County on September 18. Reported at the end of the period in Monroe, Pierce, and Portage Counties.

Red-headed Woodpecker.—Reported at the beginning of the period north to Burnett and Washburn Counties. Berner found 8 in Portage County on August 31. Found at the end of the period in Milwaukee, Monroe, and Portage Counties.

Red-bellied Woodpecker.—Reported during the period north to Burnett, Washurn, Oconto, and Door Counties. The Baumans found 5 in Brown County on August 15.

Yellow-bellied Sapsucker.—Found at the beginning of the period south to Portage County. Last reported by Ashman in Dane County on November 18.

Downy Woodpecker.—Found throughout the state during the period. Ziebell found 7 in Winnebago County on September 21, Gamache found 7 in Dunn County on October 6, and Belter found 7 in Marathon County on October 16.

Hairy Woodpecker.—Reported throughout the state during the period. Berner found 7 in Portage County on September 15 and Belter found 7 in Marathon County on September 18.

Black-backed Woodpecker.—Reported by the Baumans in Douglas County on August 25, by Reardon in Forest County on August 31, and by Tessen in Douglas County on September 28.

Northern Flicker.—Found throughout the state at the beginning of the period. Parsons found 25 in Walworth County on October 13. Reported at the end of the period in Monroe County by Kuecherer.

Pileated Woodpecker.—Reported during the period south to Grant, Iowa, Dane, and Washington Counties.

Olive-sided Flycatcher.—First reported by Gamache in Dunn County on August 17, where he also found 3 on September 4. Last reported by Bontly in Milwaukee County on September 15.

Eastern Wood-Pewee.—Found throughout the state at the beginning of the period. Belter found 23 in Marathon County on August 21. Last reported by Ashman in Dane County on October 7.

Western Wood-Pewee.—One was trapped at Little Suamico Ornithological Station in Oconto County by Erdman on September 17. See "By the Wayside."

Dusky Flycatcher.—Erdman reported that one was trapped at Little Suamico Ornithological Station in Oconto County on October 8. See "By the Wayside."

Yellow-bellied Flycatcher.—First reported on August 20 by Gamache in Dunn County and by Ott in Marathon County. The UW-Milwaukee Field Station Staff found 4 in Ozaukee County on August 24. Last reported by Richter in Monroe County on October 7.

Acadian Flycatcher.—Reported in Dane County by Burcar from the beginning of the period to August 3 and by Robbins on August 3 and 19, and at Little Suamico Ornithological Station on August 13.

Alder Flycatcher.—Found at the beginning of the period in Douglas, Dunn, Ozaukee, Portage, and Washburn Counties. The Smiths found 3 in Oconto County on August 13. Last reported by Tessen in Douglas County on September 28.

Willow Flycatcher.—Reported at the beginning of the period in Dane, Ozaukee, and Richland Counties. Ashman found 3 in Dane County on August 10. Last reported by Burcar in Dane County on September 30.

Least Flycatcher.—Reported at the beginning of the period in Barron, Douglas, Dunn, Portage, Price, and Washburn Counties. Berner found 6 in Portage County on August 21. Last reported by Bruce in Winnebago County on October 11.

Eastern Phoebe.—Found throughout the state at the beginning of the period. Belter found 5 in Marathon County on September 18 and Gamache found 5 in Dunn County on September 25. Last reported by Strelka in Waukesha County on November 7.

Great Crested Flycatcher.—Reported throughout the state at the beginning of the period. Belter found 4 in Marathon County on August 29 and Gamache found 4 in Dunn County on September 4. Last reported by Ott in Marathon County on September 17.

Eastern Kingbird.—Found throughout the state at the beginning of the period. Berner found 19 in Portage County on August 3. Last reported on September 21 in Dane County by Burcar and in Manitowoc County by Tessen.

Scissor-tailed Flycatcher.—One was found by Michelsen and Parnell at Cherokee Marsh in Madison on September 21. See "By the Wayside."

Horned Lark.—Found at scattered areas throughout the state at the beginning of the period. Robbins found 80 in Dane County on August 23. Found at the end of the period north to Burnett County.

Purple Martin.—Reported throughout the state at the beginning of the period. Sontag found 460 in Manitowoc County on September 2. Last reported by Sontag in Manitowoc County on September 23.

Tree Swallow.—Found throughout the state at the beginning of the period. Ziebell found 1600 in Winnebago County on August 30. Last reported by Robbins in Columbia County on October 12.

Northern Rough-winged Swallow.—Found in scattered areas throughout the state at the beginning of the period. Gamache found 6 in Dunn County on August 10. Last reported by the Brassers in Sheboygan County on September 28.

Bank Swallow.—Reported in scattered areas throughout the state at the beginning of the period. Ashman found 15 in Dane County on August 3. Last reported by the Brassers in Sheboygan County on September 28.

Cliff Swallow.—Found throughout the state at the beginning of the period. Belter found over 200 in Marathon County on August 21. Last reported by Domagalski in Ozaukee County on September 28.

Barn Swallow.—Reported throughout the state at the beginning of the period. Parsons found 215 in Walworth County on August 21. Last reported by Ashman in Dane County on October 26.

Gray Jay.—Found during the period in Florence, Forest, Langlade, Price, and Vilas Counties.

Blue Jay.—Found throughout the state during the period. 155 were found at Little Suamico Ornithological Station on September 22.

American Crow.—Reported throughout the state during the period. Carlsen found 300 in Pierce County on September 28 and Duerksen found over 300 in Richland County on November 22.

Common Raven.—Found during the period south to Jackson and Outagamie Counties. 17 were found at Little Suamico Ornithological Station on October 18.

Black-capped Chickadee.—Reported throughout the state during the period. Belter found over 70 in Marathon County on November 22.

Boreal Chickadee.—Reported by the Baumans in Forest County on August 22.

Tufted Titmouse.—Found during the period in Buffalo, Dane, Dunn, and Jefferson Counties. Gamache found 6 in Dunn County on September 9.

Red-breasted Nuthatch.—Found at the beginning of the period south to Milwaukee County. Berner found 9 in Portage County on September 18 and Belter found 9 in Marathon County on November 22. Found in scattered areas throughout the state at the end of the period.

White-breasted Nuthatch.—Reported throughout the state at the end of the period. Gamache found 10 in Dunn County on September 29.

Brown Creeper.—Found in scattered areas throughout the state at the beginning of the period. Kuecherer found 13 in Monroe County on November 2. Reported throughout the state at the end of the period.

House Wren.—Found throughout the state at the beginning of the period. Ziebell found 10 in Winnebago County on August 24. Last reported by the Smiths in Oconto County on October 27.

Winter Wren.—Reported at the beginning of the period in Portage and Washburn Counties. Ashman found 5 in Dane County on October 28. Last reported at Little Suamico Ornithological Station on November 24.

Sedge Wren.—Found in scattered areas throughout the state at the beginning of the period. Ashman found 8 in Dane County on August 10 and the Smiths found 8 in Oconto County on August 18. Last reported by the Smiths in Oconto County on October 13.

Marsh Wren.—Reported in scattered areas throughout the state at the beginning of the period. Ziebell found 18 in Winnebago County on September 21. Last reported on October 27 in Dane County by Ashman and in Winnebago County by Ziebell.

Golden-crowned Kinglet.—Reported at the beginning of the period in Douglas County by Johnson. The Smiths found 19 in Oconto County on October 24. Reported at the end of the period north to Marathon and Oconto Counties.

Ruby-crowned Kinglet.—First reported by the Baumans in Brown County on September 15. Gamache found 13 in Dunn County on October 6. Last reported on November 3 in Dane County by Ashman and in Ozaukee County by Uttech.

Blue-gray Gnatcatcher.—Reported at the beginning of the period north to Washburn County. Bontly found 5 in Milwaukee County on August 1 and Gamache found 5 in Dunn County on August 17. Last reported by Ziebell in Winnebago County on September 21.

Eastern Bluebird.—Found throughout the state at the beginning of the period. 205 were found at Little Suamico Ornithological Station on October 26. Last reported on November 11 at Little Suamico Ornithological Station and in Ozaukee County by Uttech.

Townsend's Solitaire.—Reported by Nichols in Price County on October 2 and 3. See "By the Wayside."

Veery.—Reported at the beginning of the period in Clark, Douglas, Dunn, Portage, Shawano, and Washburn Counties. 3 were found at Little Suamico Ornithological Station on August 25. Last reported by Wierzbicki in Brown County on October 11.

Gray-cheeked Thrush.—First reported by Tessen in Brown County on August 28. 3 were found at Little Suamico Ornithological Station on September 11. Last reported on October 13 in Ozaukee County by Domagalski and Uttech.

Swainson's Thrush.—Reported at the beginning of the period in Milwaukee County by Bontly and Zehner. Ashman found 11 in Dane County on September 9. Last reported by Diehl in Milwaukee County on October 9.

Hermit Thrush.—Found at the beginning of the period south to Portage County. Berner found 15 in Portage County on October 16. Last reported by Ashman in Dane County on November 28.

Wood Thrush.—Reported at the beginning of the period north to Washburn and Oconto Counties. Parsons found 3 in Walworth County on August 4. Last reported on October 7 at Little Suamico Ornithological Station.

American Robin.—Found throughout the state at the beginning of the period. 600 were found at Little Suamico Ornithological Station on October 27. Found in scattered areas throughout the state at the end of the period.

Gray Catbird.—Reported throughout the state at the beginning of the period. Ashman found 12 in Dane County on September 3. Last reported on November 14 at Cedar Grove Ornithological Station.

Brown Thrasher.—Found throughout the state at the beginning of the period. Berner found 5 in Portage County in September 8. Last reported by Mead in Brown County on November 30.

American Pipit.—First reported by Johnson in Douglas County on September 8. Belter found 22 in Marathon County on September 19. Last reported by Tessen in Dodge County on November 7.

Bohemian Waxwing.—Reported by Belter in Marathon County on November 10 and by Johnson in Douglas County in November.

Cedar Waxwing.—Found throughout the state at the beginning of the period. 281 were found at Little Suamico Ornithological Station on October 27. Reported at the end of the period north to Langlade County.

Northern Shrike.—First reported by Ott in Marathon County on September 23. Reported at the end of the period in scattered areas throughout the state.

Loggerhead Shrike.—One was heard singing by Brandel and E. Meyer at Bubolz Nature Preserve in Outagamie County on October 28.

European Starling.—Found throughout the state during the period. Parsons found 800 in Walworth County on October 13.

White-eyed Vireo.—Burcar found one in Iowa County on August 21.

Bell's Vireo.—Reported by Gamache in Dunn County from the beginning of the period to August 11 and by Mueller in Buffalo County on August 20.

Solitary Vireo.—Reported by Verch in Ashland and Bayfield Counties at the beginning of the period. Berner found 3 in Portage County on September 29. Last reported by Burcar in Dane County on October 15.

Yellow-throated Vireo.—Reported at the beginning of the period in Dane, Dunn, Monroe, Richland, Walworth, and Washburn Counties. Gamache found 9 in Dunn County on September 4. Last reported by Bontly in Milwaukee County on October 4.

Warbling Vireo.—Found at the beginning of the period north to Washburn County. Belter found 9 in Marathon County on August 1. Last reported by Tessen in Winnebago County on September 24.

Philadelphia Vireo.—First reported on August 24 at Little Suamico Ornithological Station. Belter found 3 in Marathon County on September 9. Last reported by Sontag in Manitowoc County on October 7.

Red-eyed Vireo.—Found throughout the state at the beginning of the period. Belter found 17 in Marathon County on August 21. Last reported by Tessen in Winnebago County on October 22.

Blue-winged Warbler.—Reported at the beginning of the period in Barron, Dane, Dunn, and Portage Counties. Berner found 9 in Portage County on August 9. Last reported by Domagalski in Milwaukee County on September 14.

Golden-winged Warbler.—Reported at the beginning of the period in Ashland, Bayfield, Douglas, and Washburn Counties. Last reported by Bontly in Milwaukee County on September 25.

Lawrence's Warbler.—This hybrid was reported by Berner in Portage County on August 6 and 29 and September 3, by Mead in Brown County on August 25, and by Ashman in Dane County on August 26.

Tennessee Warbler.—First reported by Berner in Portage County on August 8. Berner found 50 in Portage County on September 9. Last reported in Ozaukee County on October 19 by the UW-Milwaukee Field Station Staff.

Orange-crowned Warbler.—First reported by Richter in Juneau County on August 28. Tessen found 5 in Winnebago County on October 2. Last reported on October 24 at Little Suamico Ornithological Station.

Nashville Warbler.—Reported at the beginning of the period south to Portage County. Cahow found 20 in Washburn County on August 28. Last reported by Uttech in Ozaukee County on November 6.

Northern Parula.—Reported at the beginning of the period in Door and Washburn Counties. Berner found 6 in Portage County on September 8. Last reported by Sontag in Manitowoc County on October 10.

Yellow Warbler.—Found throughout the state at the beginning of the period. Gamache found 12 in Dunn County on August 18. Last reported by Mead in Brown County on October 4.

Chestnut-sided Warbler.—Reported at the beginning of the period south to Dane County. Berner found 14 in Portage County on September 1. Last reported on October 3 at Little Suamico Ornithological Station.

Magnolia Warbler.—Reported by Verch at the beginning of the period in Ashland and Bayfield Counties. Belter found 13 in Marathon County on September 9. Last reported by Bontly in Milwaukee County on October 12.

Cape May Warbler.—First reported by Tessen in Brown County on August 25. Berner found 5 in Portage County on September 1. Last reported at Little Suamico Ornithological Station on October 24.

Black-throated Blue Warbler.—First reported on August 18 in Shawano County by Peterson when 7 were seen. Panetti reported that one was coming to a feeder in Ozaukee County at the end of the period.

Yellow-rumped Warbler.—Found at the beginning of the period south to Portage County. Tessen found over 100 in Winnebago County on October 2. Reported at the end of the period in Milwaukee County by Bontly.

Audubon's Warbler.—This subspecies of the Yellow-rumped Warbler was seen at Little Suamico Ornithological Station on October 2 and 13.

Black-throated Green Warbler.—Reported at the beginning of the period south to Portage County. Tessen found 12 in Winnebago County on September 24. Last reported on October 13 at Little Suamico Ornithological Station and in Ozaukee County by several observers.

Blackburnian Warbler.—Found at the beginning of the period in Ashland, Bayfield, and Vilas Counties. Berner found 6 in Portage County on September 1. Last reported by Tessen in Winnebago County on October 2.

Pine Warbler.—Reported at the beginning of the period south to Portage County. Richter found 6 in Monroe County on September 5. Last reported by Stover in Door County on October 19.

Palm Warbler.—Reported at the beginning of the period in Douglas County by Johnson. The La Valleys found 52 in Douglas County on October 3. Last reported by Bontly in Milwaukee County on October 28.

Bay-breasted Warbler.—First reported by Tessen in Outagamie County on August 13. Berner found 10 in Portage County o September 1 and Tessen found 10 in Winnebago County on September 24. Last reported by Domagalski in Milwaukee County on October 19.

Blackpoll Warbler.—First reported by Tessen in Brown County on August 25. 13 were found at Little Suamico Ornithological Station on September 27. Last reported by Bontly in Milwaukee County on October 24.

Black-and-white Warbler.—Found at the beginning of the period south to Portage County. Berner found 9 in Portage County on September 1. Last reported on October 24 at Little Suamico Ornithological Station.

American Redstart.—Reported throughout the state at the beginning of the period. Belter found 23 in Marathon County on September 9. Last reported on October 24 at Little Suamico Ornithological Station.

Ovenbird.—Reported at the beginning of the period south to Dane County. Gamache found 7 in Dunn County on September 7. Last reported on October 5 in Milwaukee County by Bontly and in Ozaukee County by the UW-Milwaukee Field Station Staff.

Northern Waterthrush.—Reported at the beginning of the period in Ashland, Bayfield, Milwaukee, Portage, and Washburn Counties. The Smiths found 3 in Oconto County on August 10 and Belter found 3 in Marathon County on September 18. Last reported on October 13 in Brown County by the Baumans.

Kentucky Warbler.—Tessen found one in Winnebago County on September 24.

Connecticut Warbler.—First reported by Peterson in Shawano County on August 27. Last reported on October 2 at Little Suamico Ornithological Station.

Mourning Warbler.—Reported at the beginning of the period south to Dane County. Berner found 7 in Portage County on August 29. Last reported by Tessen in Winnebago County on October 2.

Common Yellowthroat.—Found throughout the state at the beginning of the period. Belter found over 60 in Marathon County on September 9. Last reported by Ashman in Dane County on November 23.

Hooded Warbler.—Reported by Tessen in Outagamie County on August 31 and by T. Wood in Ozaukee County on October 20.

Wilson's Warbler.—First reported in Manitowoc County by Sontag on August 22. Berner found 3 in Portage County on August 25 and Gamache found 3 in Dunn County on August 30. Last reported by Tessen in Winnebago County on October 2.

Canada Warbler.—Reported at the beginning of the period in Ashland, Bayfield, and Vilas Counties. 3 were found at Little Suamico Ornithological Station on August 24. Last reported on September 25 at Little Suamico Ornithological Station.

Scarlet Tanager.—Found at the beginning of the period south to Dane, Washington, and

Ozaukee Counties. Last reported by Bontly in Milwaukee County on October 2.

Northern Cardinal.—Found throughout the state at the beginning of the period. Belter found 17 in Marathon County on November 5.

Rose-breasted Grosbeak.—Reported throughout the state at the beginning of the period. Berner found 19 in Portage County on September 20. Last reported by Ashman in Dane County on November 18.

Indigo Bunting.—Found throughout the state at the beginning of the period. Gamache found 14 in Dunn County on August 17. Last reported by Tessen in Dodge County on October 18.

Dickcissel.—Reported on August 1 in Dane County by Robbins, from the beginning of the period to October 5 in Ozaukee County by Uttech, and on August 29 in Winnebago County by Ziebell.

Eastern Towhee.—Found throughout the state at the beginning of the period. Berner found 5 in Portage County on August 2. Last reported at Little Suamico Ornithological Station on November 10.

American Tree Sparrow.—First reported by Hoefler in Burnett County on October 4. Carsen found 50 in Pierce County on November 20. Found throughout the state at the end of the period.

Chipping Sparrow.—Found throughout the state at the beginning of the period. Berner found 50 in Portage County on October 4. Last reported by Ashman in Dane County on November 10.

Clay-colored Sparrow.—Reported at the beginning of the period south to Portage County. Berner found 6 in Portage County on August 2. Last reported by Ashman in Dane County on October 7.

Field Sparrow.—Found at the beginning of the period north to Burnett and Door Counties. Berner found 13 in Portage County on August 24. Last reported on October 27 in Dane County by Ashman and in Portage County by Berner.

Vesper Sparrow.—Reported throughout the state at the beginning of the period. Berner found 8 in Portage County on August 24. Last reported by Berner in Portage County on October 14.

Savannah Sparrow.—Found throughout the state at the beginning of the period. Ziebell found 40 in Winnebago County on August 24. Last reported by Uttech in Ozaukee County on October 28.

Grasshopper Sparrow.—Found at the beginning of the period in Door and Shawano Counties. Last reported by Tessen in Outagamie County on August 11.

Henslow's Sparrow.—Reported by Ashman in Dane County at the beginning of the period where he found 3 on August 16. Belter found 3 in Marathon County on August 21 and Kuecherer found 2 in Monroe County on September 24.

LeConte's Sparrow.—Reported at the beginning of the period in Burnett, Douglas, and Marathon Counties. Belter found 5 in Marathon County on August 21. Last reported by Berner in St. Croix County on October 8.

Nelson's Sharp-tailed Sparrow.—First reported on September 11 in Milwaukee County by Boldt and Korducki. Kuecherer found 3 in Monroe County on September 20 and Boldt found 3 in Milwaukee County on September 22. Last reported by Korducki in Milwaukee County on October 1.

Fox Sparrow.—First reported by Tessen in Outagamie County on September 25. Berner found 10 in Portage County on October 24. Last reported on November 9 by Robbins in Dane County and by Berner in Portage County.

Song Sparrow.—Found throughout the state at the beginning of the period. Berner found 110 in St. Croix County on October 8. Reported at the end of the period in Dane, Manitowoc, and Washington Counties.

Lincoln's Sparrow.—Reported at the beginning of the period in Ashland, Bayfield, Brown, and Douglas Counties. Berner found 11 in St. Croix County on October 8. Last reported on October 25 in Manitowoc County by Sontag

and in Outagamie County by Anderson and Petznick.

Swamp Sparrow.—Found throughout the state at the beginning of the period. Berner found 43 in St. Croix County on October 8. Reported at the end of the period in Dane County by Ashman.

White-throated Sparrow.—Reported at the beginning of the period south to Milwaukee County. Ashman found 75 in Dane County on October 5. Found at the end of the period in Dane, Milwaukee, Ozaukee, and Richland Counties.

White-crowned Sparrow.—First reported by the Smiths in Oconto County on September 18. The Smiths found 5 in Oconto County on October 1. Last reported by Uttech in Ozaukee County on November 2.

Harris' Sparrow.—Reported by Johnson in Douglas County from September 28 to October 6 and by Hardy in Price County on November 12.

Dark-eyed Junco.—Found at the beginning of the period by Verch in Ashland and Bayfield Counties. Berner found 250 in Portage County on October 19. Reported throughout the state at the end of the period.

Lapland Longspur.—First reported by Tessen in Douglas County on September 28. Berner found 100 in Portage County on October 13. Reported at the end of the period in Winnebago County by Ziebell.

Snow Bunting.—First reported by Verch in Ashland and Bayfield Counties on October 15. Plant found over 2000 in Clark County on November 23. Reported at the end of the period south to La Crosse, Columbia, and Racine Counties.

Bobolink.—Found throughout the state at the beginning of the period. Ashman found 53 in Columbia County on August 11. Last reported by Uttech in Ozaukee County on October 10.

Red-winged Blackbird.—Found throughout the state at the beginning of the period. Berner found over 10,000 in Portage County on October 7. Reported at the end of the period in Barron, Dane, Dodge, and Door Counties.

Eastern Meadowlark.—Reported throughout the state at the beginning of the period. The Lukes found 35 in Door County on October 8. Last reported by Duerksen in Richland County on November 11.

Western Meadowlark.—Reported at the beginning of the period in Dane and Portage Counties. Berner found 11 in Portage County on October 5. Last reported by Robbins in Dane County on October 19.

Yellow-headed Blackbird.—Reported at the beginning of the period in scattered areas throughout the state. Gamache found 9 in Dun County on August 7. Last reported on September 27 in Brown County by the Baumans and in Dodge County by Tessen.

Rusty Blackbird.—First reported by the Lukes in Door County on September 10. Decker found 150 in Clark County on November 2. Found at the end of the period in Dunn County by Gamache.

Brewer's Blackbird.—Reported at the beginning of the period south to Brown and Portage Counties. Domagalski found 120 in Washington County on November 4. Last reported by Ott in Marathon County on November 17.

Common Grackle.—Found throughout the state at the beginning of the period. Belter found over 500 in Marathon County on September 18. Reported at the end of the period in Price County by Hardy.

Brown-headed Cowbird.—Reported throughout the state at the beginning of the period. Parsons found 150 in Walworth County on October 13. Found at the end of the period in Brown, Dane, and Dodge Counties.

Baltimore Oriole.—Found throughout the state at the beginning of the period. The Baumans found 16 in Brown County on August 1. Last reported by Robbins in Dane County on September 9.

Pine Grosbeak.—Reported by the La Valleys in Douglas County from November 9 to the end of the period.

Purple Finch.—Found at the beginning of the period south to Portage County. 300 were found at Little Suamico Ornithological Station on October 27. Reported throughout the state at the end of the period.

House Finch.—Found throughout the state during the period. Ashman found 80 in Dane County on November 28.

Red Crossbill.—First reported on August 1 in Portage County by Berner. 25 were seen at Cedar Grove Ornithological Station on November 5. Found at the end of the period in Ashland, Bayfield, and Douglas Counties.

White-winged Crossbill.—First reported by Reardon in Vilas County on September 28. Verch found 6 in Ashland and Bayfield Counties on November 27. Reported at the end of the period in Ashland and Bayfield Counties.

Common Redpoll.—First reported by Gustafson in Ozaukee County on November 9. Reported at the end of the period in Washurn County by Cahow.

Pine Siskin.—Reported at the beginning of the period in Ashland, Bayfield, Douglas, Price, and Vilas Counties. Tessen found 90 in Ozaukee County on October 13. Reported at the end of the period in Ashland, Bayfield, Door, Douglas, and Price Counties.

American Goldfinch.—Found throughout the state during the period. Berner found 60 in Portage County on October 26.

Evening Grosbeak.—Reported at the beginning of the period in Ashland, Bayfield, Price, and Vilas Counties. Verch found 16 in Ashland and Bayfield Counties on November 3. Reported at the end of the period in Ashland, Bayfield, and Price Counties.

House Sparrow.—Found throughout the state during the period. Duerksen found 71 in Richland County on October 24.

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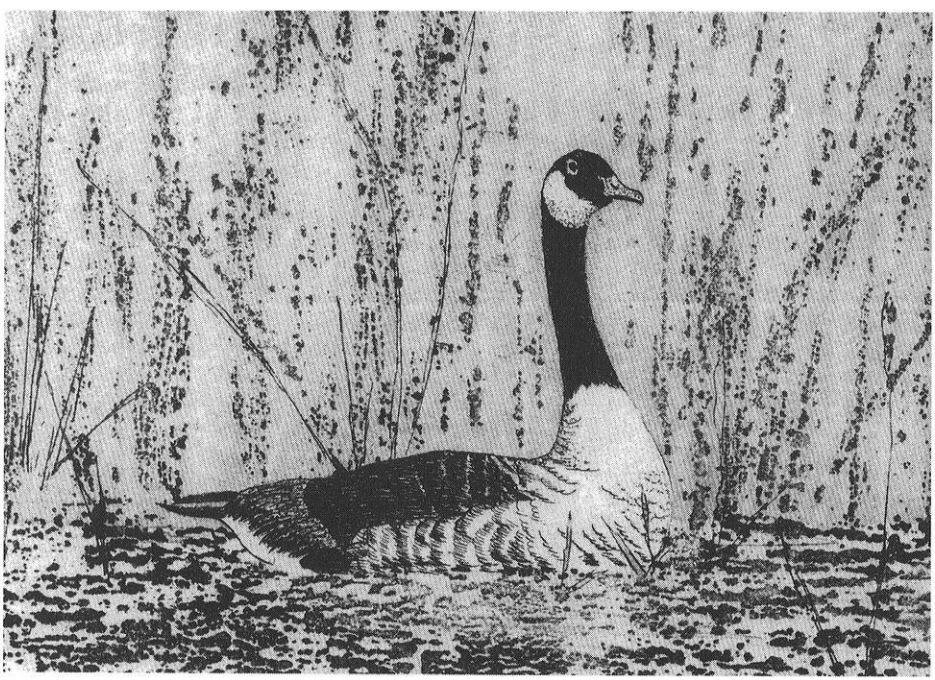


"The Sentinel" *by N. A. Burns*

"By the Wayside"

Rare species documentations include Plegadis Ibis, Ross' Goose, Barrow's Goldeneye, Black Vulture, Prairie Falcon, Purple Sandpiper, Pomarine Jaeger, Long-tailed Jaeger, Laughing Gull, Iceland Gull, Lesser Black-backed Gull, Black-legged Kittiwake, Sabine's Gull, Great Grey Owl, Boreal Owl, Rufous Hummingbird, Western Wood-Pewee, Dusky Flycatcher, Scissor-tailed Flycatcher, and Townsend's Solitaire.

PLEGADIS IBIS (*Plegadis* spp.)

18 October 1996, Cedar Grove, Sheboygan County—We were observing and trapping hawks from our blind about 1.5 miles east of Cedar Grove, Wisconsin, in the early afternoon of October 18, 1996 when an immature *Plegadis* ibis (white-faced or glossy) flew by at a height of about 100 feet and a distance of less than 300 feet. The sky was cloudless at the time. The bird was observed with various binoculars, 7× to 12×. The long, decurved beak, the long legs projecting behind the tail and light brown undersides were obvious. The bird flew with the several rapid wing beats and a glide typical of the species. We have all seen Glossy and White-faced Ibises before.—*Helmut C. Mueller, Daniel D. Berger, John L. Kaspar, Cathy B. Kaspar.*

ROSS' GOOSE (*Chen rossii*)

16 November 1996, Goose Pond, Columbia County—While scanning the flock of Canada Geese, I found a small group of white-phase Snow Geese. One of these birds was about 3/4 the size of the adjacent birds, so I watched for awhile. It has the same all white plumage on the head, neck, breast, underparts, back and tail; and black primaries. It had a smaller, rounder head with a small pink bill lacking a black "grinning patch." During the observation it flew closer toward me and landed among another group of Snow Geese. The differences between the bills of the two species was even more apparent at the closer distance. It also was adjacent to a few mallards at this new location and size-wise it was only marginally larger, but with a longer neck and typical goose posture.—*Philip Ashman, Madison, Wisconsin 53703.*

BARROW'S GOLDENEYE (*Bucephala islandica*)

7 November 1996, Virmond Park, Ozaukee County—At 2 P.M. I stopped at

Virmond Park to look for this bird and things like Pacific Loons. I looked from the picnic table just north of the lake side parking lot with my spotting scope. I started at the right end of a flock of goldeneyes straight out from me and at a close-moderate distance. Almost the first bird I saw was the Barrow's Goldeneye. It was sleeping, head tucked back in, tail elevated. I could, however, clearly see the black back with rows of white spots and the small black notch which extended from the black back down into the white flank near the shoulders. It eventually woke, showing the abruptly rising forehead, short bill, and crescent-shaped white spot below the eye. It fed actively, moving around in the flock and becoming nearly impossible to find. If I didn't know it was there, I would never have suspected its presence and therefore not looked at the flock for as long a time. I did see it several times while feeding. Eventually I discovered it sleeping again. It turned on the feeding very fast and evidently returned to sleeping equally as fast. My experience with this bird is almost always similar to this description. Either I find it right away, or not at all. When I do find it, it can disappear suddenly and absolutely not be relocated.—*Tom Uttech, Saukville, Wisconsin 53080.*

Black Vulture (*Coragyps atratus*)

19 November 1996, Sauk Trail Road, southern Sheboygan County—After stopping next to Brian Boldt's car and talking for a minute or so, I asked Brian if he had seen the Black Vulture. With a mischievous grin, he said "Oh, it's sitting right over there on that pole." After thanking Brian for stringing me along like that, I was able to note the following characteristics: an all black vulture with pale legs and a gray-black head. The vulture had its head tucked under most of the time, but when it did lift its head, it looked bulkier than a Turkey Vulture's head (probably because the neck feathering didn't seem to end so abruptly at the base og the neck, as it does on Turkey Vultures, giving them the appearance of a very small head). The tail seemed very short, and this was verified later, when the vulture stood up. Most importantly, when the vulture stretched its wings later, large white patches were visible, only on the primaries. Turkey Vultures flight feathers may appear silvery, but not whitish, and not just on the primaries. The wing was large, but noticeably less than the much larger Turkey Vulture wing with its 6′ wingspread. No direct comparison, admittedly, but I have seen sunning Turkey Vultures numerous times with outspread wings and they look huge! This vulture was more compact looking. It seemed to favor one leg, when it stood up. Maybe an injury explains why it was still hanging around.—*Dennis Gustafson, New Berlin, Wisconsin 53151.*

22 November 1996, west of Sunny Ridge Road and 1/2 mile south of Cedar Beach Road, Ozaukee County—After searching for an hour or so and not finding the bird in the Cedar Grove area where it had been reported, on a hunch I decided to check further south around Harrington Beach State Park. When I was just south of the park I noticed a large dark bird, about the right size and shape for a Black Vulture, flying about half a mile to the southwest. By the time I arrived at the spot, along Sunny Ridge Road, the bird had disappeared. After driving around for a

little while I returned to the same spot and saw the vulture, trailed by crows, soaring over a woodlot west of the road. It was big and black and displayed a pronounced dihedral, close to that of a Turkey Vulture, though Black Vultures usually soar with flatter wings, but it didn't teeter like a Turkey Vulture. It seemed smaller than a Turkey Vulture and was quite a bit large than the crows. Compared to a Turkey Vulture, the wings looked short and broad, and the tail was extremely short, so short that the feet, which dangled in flight, sometimes appeared to extend slightly beyond it. The outer primaries were whitish above and below, especially toward the base of the feathers. The vulture flew for several minutes and then landed in a plowed field between the road and the woodlot. It spent the next half hour standing on the bare ground and occasionally flying from place to place in the field, followed by the ever present crows. Sometimes, while flying, it demonstrated the flight pattern of "stiff glides interspersed with rapid flapping" described as characteristic of this species. At one point it landed about 200 feet from the road and allowed me to photograph and study it at length. The skin on the bird's head, or more accurately, face was bare, rough, and gray. The bill was gray on the basal half and pale on the outer half and the legs were gray. One leg appeared to be somewhat abraded in front. The black feathering on the neck extended all the way to the crown of the head, forming a sort of hood, and was bordered by a pale ring of skin similar in color to the end of the bill. Contrary to some reports, the bird appeared to be in good health and flew strongly.—*Janine Polk, Eau Claire, Wisconsin 54701.*

PRAIRIE FALCON (*Falco mexicanus*)

12 October 1996, Eagle Valley Nature Preserve in Grant County—I saw the bird just to my northwest, in a soar. I immediately saw the well-defined, dark underwing coverts, contrasting with the paler flight feathers. I alerted my partner, and we observed and recorded these additional notes: medium-brown upper parts; light, indistinct facial sideburn; belly streaking distinct and dense on light, buff background; fairly blunt wings for falcon; black wing linings from pits to wrist; very light tail, contrasting with darker brown back; head and face light and pale, with an eyeline above the eye; and the bird was the size of a Peregrine Falcon.—*Jeff Dankert, La Crosse, Wisconsin 54601–8020.*

PURPLE SANDPIPER (*Calidris maritima*)

21 November 1996, Sheboygan Harbor—Having noted an algae clump on the beach as I drove north to North Point, I stopped on the southward trip to scan from the road. One sandpiper was noted among the gulls. Walking down to the breakwater and sneaking up on it, I peeked over the breakwater to see a plump gray sandpiper with bright orange legs and a bright orange bill that faded to dark gray or black in the distal 1/2. I never cease to be surprised at the width of the body of this bird, much wider than tall! The head, neck, upper breast were relatively uniform gray streaking into light-edged feathered on the back, scapulars, and coverts and gray flecks extending down to the white breast and belly. The primaries were dark gray. A faint white eyering was also noted. The bill was

Figure 1. Purple Sandpiper, 17 November 1996, Kewaunee. *Photo by John Van Der Brandt.*

longer than the head—long for most shorebirds, but not quite as disproportionately long as a Dunlin. The overall body size was similar to a turnstone. It briefly took flight, showing a white wing stripe, broad dark area up the rump, flanked by a bit of white—an overall "ordinary" shorebird pattern.—*Jim Frank, Mequon, Wisconsin 53092.*

17 November 1996, Kewaunee County—The first thing I noticed about the bird was the smokey-purple coloration of the head, back, and upper breast. The second identifying feature I noticed were the orange-colored legs. The third identifying feature was the bi-colored bill—the base of the bill being orange and the tip of the bill dark. The flanks were streaked with gray. The body shape was shorebird-like and about the same size as a Dunlin.—*Sylvia Barbarich, Appleton, Wisconsin 54914.*

20 November 1996, Two Rivers, Manitowoc County—I stopped at the base of the south breakwall in Two Rivers and quickly found another plump Dunlin-sized shorebird feeding on the partially frozen debris on the beach. This bird was similar in appearance to the one I had seen in Sheboygan a couple hours earlier. The bill was about the same length as the distance from the base of the bill to the back of the head. It had a slight droop. The distal 70–80% was dark gray. The proximal 20–30% was a dull orange color. The legs and feet were yellow-orange colored. The head and neck were a sooty-gray color. There was a faint white eye ring. The upper breast was gray-colored. The lower breast and belly were white-col-

ored. There were gray streaks on the flanks. The back was a scaly gray. This bird fed actively while I was there, but did not fly.—*Mark Peterson, Caroline, Wisconsin 54928.*

POMARINE JAEGER
(*Stercorarius pomarinus*)

16 November 1996, near Stockholm in Pepin County—When first sighted, the jaeger was gliding nearly overhead and was above a congestion of feeding gulls and mergansers near the shore of Lake Pepin. Having an excellent view of the underside of the bird, I concentrated most on the tail feathers. The slight projection of the two central rectrices from the other tail feathers was immediately evident. These central rectrices were broad and blunt and their edges rounded. Several times over the next minute, I looked back at these rectrices and each time my first observation was confirmed. I then concentrated on the undersides of the wings. Two features stood out on the underwings. First was the long line of paleness along the base of the primary feathers. Second was an equally pale-colored crescent in the outer wing linings, just above the primaries. This crescent, while not large in size, was quite bright and even bold, so that when looking at the underwings, one's eyes were immediately drawn to it. As the bird continued to soar overhead, or nearly so, I next attempted to make some judgement as to the width of the wing at its base in proportion to other body parts. My impression was that the width of the wing at its base took over 40 percent of the length of the bird, with the head that extended beyond the wing and the tail that extended beyond the wing being of no special extension. In this respect, I concentrated most on the tail, which seemed to have no notable length and which gave no impression of narrowness. As the bird soared north, it suddenly banked and turned east. During this banking, I had looks at the upper wings. The line of white shafts on the outer primaries were easily seen. Because of the distance and brevity of the look, I could not count the exact number of white shafts, but the number could not be less than five or six. As the jaeger was gliding above the gulls and ducks on the lake, there were no close birds with which to make a size comparison until the jaeger was out on the lake and flying to the Wisconsin shore. At this time, it approached a Herring Gull. The jaeger was smaller than the Herring Gull. Having spent most of the day looking at a mix of Herring and Ring-billed Gulls, and having a good grasp as to the size difference between the two gulls, I would say the jaeger was the size of a Ring-billed Gull.—*Robert Domagalski, Menomonee Falls, Wisconsin 53051.*

LONG-TAILED JAEGER
(*Stercorarius longicaudus*)

6 September 1996, along roadside in Sheboygan County—This bird, an apparent road kill, was found at 9:30 A.M. on 6 September 1996 by Myron LaPean at the intersection of C.T.H. O and Sunrise Lane. This is 1.4 miles east of state highway 57 northeast of Plymouth in Sheboygan County.

Myron brought the bird to our house where we examined, measured, and photographed the bird. My measurements were 15″ tip of bill to tip of tail, and 35″ wingspread. The head, back, upperwings, and tail were gray-

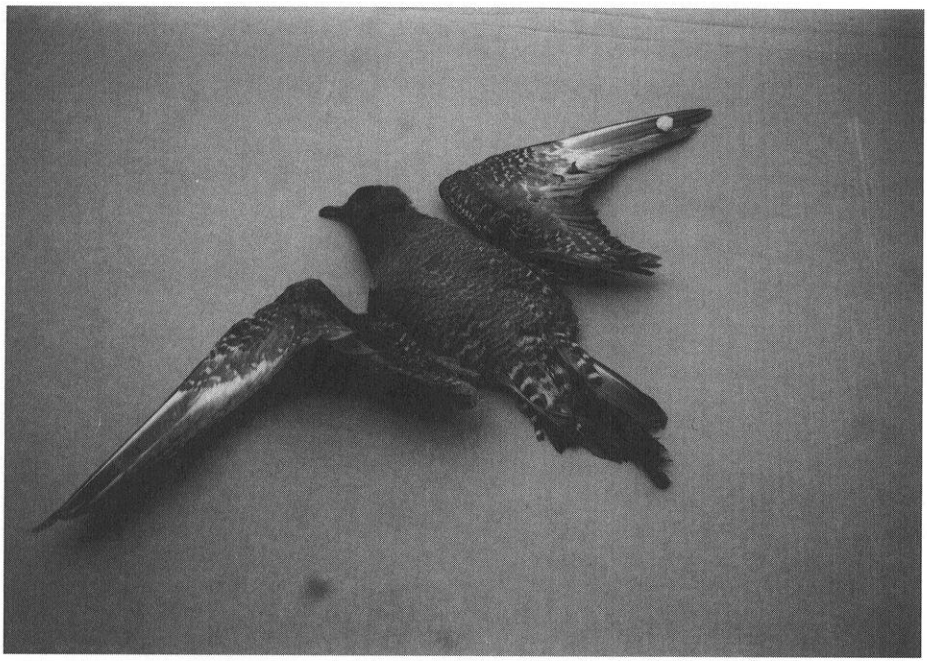


Figure 2. Long-tailed Jaeger, 6 September 1996, Plymouth. *Photo by Bob Triebensee.*

ish-brown. The back was finely barred and uppertail coverts more heavily barred with a buff color. The breast was finely barred, also, and the undertail coverts were heavily barred black and white. The black bars were much wider (40 to 50%) than the white. The neck and head darker brown, and the bill was blackish with a hooked upper mandible. The legs were black and feet webbed black with flesh-colored toes. The underwings were also finely barred and had a whitish area at the base of the primaries. The first two primary feathers had white shafts and #3, 4, and 5 had some whitish shafts, also. The top of the tail had no barring. The two central tail feathers were approximately 3/4" longer. These were entangled with intestines, which we didn't see until we pulled them apart.

We called Tom Schultz and described the bird and when I mentioned the two white shafts on the primaries, he suggested the Long-tailed Jaeger. After checking the field guides and Seabirds by Peter Harrison, we decided it was an immature dark-morph Long-tailed Jaeger. Myron's neighbor, Al Nysse, reported that he had observed a very dark gull flying with the gulls several days prior to finding this bird.—*Bob Triebensee.*

Laughing Gull (*Larus atricilla*)

9–11 August 1996, Milwaukee Coast Guard Impoundment—This bird was initially seen sitting on the ground among a large flock of Caspian Terns. It caught my eye because it appeared darker brown than most of the Ring-billed Gulls in the area. The breast and flanks did not appear mottled, but

were of a uniform brown. The belly and undertail covert appeared dull white or cream-colored. The head and neck were also a uniform brown, a bit darker behind the eye and a bit lighter on the throat. The bill appeared to be solid black. In flight, the primaries and primary coverts were all a solid dark brown, forming a large dark triangle on the outer half of the wing. This dark color continued onto the secondaries, forming a dark secondary bar. There was no separation between these dark regions, that is to say no indication of the lighter-colored "window" present on most Ring-billed Gulls in the area of the inner primaries and inner primary coverts. The secondaries showed a prominent white trailing edge, made more so by the overall darkness of the bird. The remainder of the inner wing and mantle were a lighter, mottled brown. The greater secondary coverts showed white dots or edges at their tips. Overall, the bird appeared to me much neater than young Ring-billed or Herring Gulls. The tail showed a broad back terminal band, perhaps a bit wider than in a Ring-billed Gull, and more neatly defined. The band continued onto the outermost tail feathers. The basal area of the tail was a dull gray-brown, which though light was noticeable because it set off the white rump fairly well. I saw this bird again the next day, at which time it flew quite close to me. I was able to get a good look at the bill, and noticed the drooped-tip characteristic of a Laughing Gull. In general, I found this gull to be more similar to Ring-billed Gulls of similar age than to Franklin's Gulls. Although not as bulky, the bird stood nearly as tall as a Ring-billed Gull, and side by side flight comparisons appeared almost as close in wingspan. On many of the occasions I observed this gull there was also a 2nd year Franklin's Gull nearby for comparison. On August 25, I again observed the Laughing Gull, and noticed that the forehead appeared to be lightening, presumably due to its post-juvenile molt.

Finally, I would pose a question as to the origins of this bird; it is probably most likely that it wandered here after fledging further east. Yet, in the past, I have seen adult Laughing Gulls engaged in vigorous courtship behavior (alternating bill-thrusting, mirror flying, and excited calling) at this same location, followed by the appearance of 3 juveniles in late summer; I have also heard that adult Laughing Gulls have occasionally pair-bonded with adult Ring-billed Gulls in recent years in the Green Bay area (pers. comm. Tom Erdman). Perhaps confirmation of nesting in-state for this species is not far off. Also, observers should maybe be alert for laughing × ring-billed hybrids, which have occurred further east.—*Brian Boldt, Waukesha, Wisconsin 53186.*

Iceland Gull (*Larus glaucoides*)

24 November 1996, Superior Landfill in Douglas County—This bird had uniform pale tan plumage overall. The primary tips were slightly paler than the tertials, not darker brown as in a Thayer's Gull. The tertials were the same shade as the wing coverts and showed numerous internal markings, not a solid color as in the Thayer's. The size was less than the average Herring Gull—there were no Thayer's for comparison. Two first winter Glaucous Gulls present were obviously larger than the average Herring Gulls present. The wing tips extended more than 1 bill length beyond the tail

tip, not about equal to 1/2 bill length as in first winter Glaucous Gulls. The legs were pale pink; the bill was black, except basal 1/2 of the lower mandible irregularly pink; irises dark. The bill is all black in a first winter Thayer's Gull and the entire bill is pink, except for the black tip on a first winter Glaucous Gull. In flight there was no tail band and the upper tail coverts and tail feathers were smoothly speckled pale tan and did not contrast with the rest of the plumage. The Thayer's in first winter plumage shows a tail band in flight, primary tips whitish, and paler than the rest of the upperwing, no secondary bar, and no "dark-light-dark".—*Peder Svingen.*

Lesser Black-backed Gull (*Larus fuscus*)

12 October 1996, Two Rivers along the Lake Michigan Shoreline—Scanning the gulls on the beach at Two Rivers a darker-backed gull stood out immediately. Originally it was sitting on the beach, but in moving closer, I forced it to stand. After about 1/2 hour of observation it flushed, landing on the lake, when people walked by it. The back and wings were gray/black, lighter than the adult Great Black-backed Gulls. The head was speckled with the tail white. The eye was light. The legs were yellow-green colored. The bill had a red/black spot. In flight, the black primaries and white along the black edge of the wing were seen. While sitting and especially standing the overall size was noticeably smaller than the adjacent Herring Gulls, but bigger than Ring-billed Gulls.—*Daryl Tessen, Appleton, Wisconsin 54911.*

Black-legged Kittiwake (*Rissa tridactyla*)

24 November 1996, at the mouth of the inlet in Kenosha—When I first found the kittiwake, it was sitting on the beach among the Ring-billed Gulls, facing towards me and to the right. It was mostly concealed, only its head and neck being visible, but was readily identifiable from that view. It was markedly smaller than any of the Ring-billed Gulls, standing no more than 2/3 as tall. It had a black bill that was somewhat thicker than that of a Bonaparte's or Little Gull. Most obvious, though, was the presence of a black slash across the back of the neck, while the head, neck, and breast were otherwise basically white. There was also a less obvious dusky ear mark behind the eye.

Shortly after I found the bird, within a minute or two, it flew from the beach and headed south across the inlet, past me, and on over the marina (over land most of the time, and always to the west of me). At this time, I was able to see the wing and tail pattern clearly. The outer primaries were black, as were parts of the greater primary coverts and alula, forming a complete black forewing. A clean, black carpal bar joined the black outer wing. The remainder of the upper surfaces were very pale gray, almost white. The wings were narrower than those of a Ring-billed Gull, and were held somewhat bent at the wrist as it flew. The white tail was slightly notched, and was narrowly tipped with black.—*John O'Brien, Chicago, Illinois 60615.*

Sabine's Gull (*Xema sabini*)

29 November 1996, flying south past North Point in Sheboygan.—While stand-

ing at North Point in Sheboygan, I noticed a gull flying south and already past North Point. The wing patten of the gull was striking and I immediately recognized it as similar to the pattern of the adult Sabine's Gull seen recently in Fond du Lac, the one difference being that the mantle and coverts of this gull were a much darker color than the gray seen on the adult. This darker mantle and covert color gave the wings an even more striking look than on the adult. In other respects, the wing colors were those of an adult. The outer primaries and the alula were black, while the inner primaries and the secondaries were white. The tail was white with a black terminal band. I did not have a good look at the head. What I did see was a pale smudged color through which a darker eye and a hint of a darker ear patch could be noticed.—*Robert Domagalski, Menomonee Falls, Wisconsin 53051.*

19 October 1996, Lakeside Park in Fond du Lac.—After being alerted by the WSO hotline, we decided to go to the park to look for the bird ourselves. Within minutes of our arrival at the small parking lot by the river, the bird flew past, coming upriver and along the lakeshore. The bird landed next to the shoreline rocks in the shallow water of the lake. After bathing briefly, it joined a flock of 50 Ring-billed Gulls, preening and resting on the grass of the soccer field for 45 minutes. Something scared the birds, and they all took off and flew over the lake. They soon returned to their former site, and we watched the bird for 45 more minutes.

As the bird initially flew past us, we noted its dark head and striking wing pattern. The wing was divided into triangles: black on the outer primaries, then a white triangle at midwing, and then a gray triangle from the midwing to the body. We were concentrating so much on the pattern of the wings and head that we paid little attention to the shape of the tail, noting only that it was pure white.

When the gull landed next to the Ring-billed Gulls on the soccer field, we could determine that it was smaller than the Ring-billed Gulls. It was approximately the size of a Bonaparte's Gull, with which we are very familiar. We also got good looks at the head and bill. The head had a slate-gray hood, to black like Bonaparte's or Franklin's Gulls; that was just beginning to lose some of its gray color at the base of the beak. At the bottom of the gray hood, separating the gray hood from the white neck, was a thin black line of feathers. The bill was black with a yellow tip (about 1/3 of the bill was yellow). The eye was dark, with no white crescents around it as in other black-headed gulls. The back and folded wings were slightly darker than the Ring-billed Gulls next to it. The legs were dark. The underparts were pure white.—*David and Margaret Brasser, Sheboygan, Wisconsin 53083.*

16 November 1996, Port Washington Harbor—While watching one of 15–20 Bonaparte's Gulls swimming and taking to the air for short periods, if waves crashed too hard over the breakwater, a strikingly different bird fluttered up next to the Bonaparte's Gulls. In contrast to the gray mantle and upper wing with white triangle on the primary edge, the Sabine's Gull had a black triangle where the Bonaparte's was white. The mantle and scapular region was darker, dirtier gray than the Bona-

parte's. By "dirtier" I mean the dark gray lacked uniformity or clean coloration. Individual feathers were almost discernable on the back. The mid-caudal portion of the wing had a white triangle extending from the carpus and fanning back to encompass the inner primaries and adjacent secondaries. The overall size of the bird was like that of the Bonaparte's Gulls. It was easily picked out in the Bonaparte's flock because of the darker, dingier gray color of the wings, back, and back of head. The folded primaries were black and they were separated from the rest of the wing by a sliver of white. The dark gray went up the back of the head, but dissipated across the side of the face—fading to white on the side and front of the face. The beak was black—similar in size to the Bonaparte's Gulls. The eye blackness seemed too large for an eye. I assume this was a periocular smudging of black.—*Jim Frank, Mequon, Wisconsin 53092.*

14 October 1996, Lake Winnebago—I received a phone message about this bird from Rockne Knuth on the evening of October 13, and I was there at dawn the next morning. I first spotted the bird at 7:15 A.M., flying out from the mouth of the river, and it came out and landed near the point, not far from my location on the east side. It swam in toward the shore, and began feeding just off the rocks. It spent most of the next two hours picking small things off the surface of the water, within 5–10 feet of the rocky shore—mostly along a 150 meter stretch of shoreline, east of the river. It would get up and fly on occasion, moving to different spots, and a couple of times went well down the shore west of the river. On two occasions, it landed on the grass and preened briefly, but it appeared to remain somewhat segregated from the flock of Ring-billed Gulls that were also present.

This bird was very striking in appearance, in its full adult plumage, with a dark gray hood that was bordered on the bottom by a black collar about 3/8 to 1/2 inch wide. The neck and breast were white. The mantle was medium to dark gray. The black folded wingtips (primaries) were narrowly tipped by white, which appeared somewhat worn. The eyes were dark brown, and the bill was mostly black, with the outer 1/3 yellow.

In flight it showed the typical, striking wing pattern of a Sabine's Gull, with the gray of the mantle extending onto the inner wing, mostly upperwing coverts. The outer wing showed a black triangular patch, which included most of the outer primaries, and there was a big white triangle on the middle wing, forming a wedge between the gray innerwing and the black outerwing. The white portion consisted of the inner primaries and most of the secondaries. The underwing was mostly pale.

There were a few white feathers coming in on the forehead and crown in the otherwise gray hood—apparently part of a molt into winter plumage. I could not detect the red orbital ring of a breeding Sabine's Gull. The legs appeared to be dark.

I took a number of photos of the bird, both in flight and at rest—some at very close range, since the bird appeared relatively undisturbed by human presence. Others who saw it that morning included Daryl Tessen, Bettie Harriman, Bill Cowart, Mary Donald, and Jeff Baughman.

I saw this bird again at sunset on Friday, October 18, again at the river

mouth, however this time it was amidst a flock of Ring-billed Gulls. The birds were being attracted by someone throwing them some pieces of old bread.

According to Rockne Knuth, this bird was first seen on October 11, initially by his son, Josh, and I heard continuing reports which indicated that it was probably present here about 2 weeks!—*Thomas Schultz, Green Lake, Wisconsin.*

24 November 1996, Kenosha Water Filtration Plant—I came to the water filtration plant at the south end of Kenosha at about 7:30 in the morning. Before getting out of the car, I saw the Sabine's Gull flying out over the lake. At that time it flew out over the lake and disappeared, but reappeared 20 minutes later, at which time I saw it flying over the parking lot about 25 feet over my head. From then on, I had several views of the bird flying overhead and over the lake about 50 feet from shore. The Sabine's Gull was with Bonaparte's Gulls the entire time. It was very similar in size to the Bonaparte's, but was distinctly broader-winged. The outer wings were fairly sharply tapered, giving the wing a pointed look. The wing pattern was distinctive. The outer primaries were black with white borders near the tips of the inner webs. The inner primaries were white, as were the secondaries. The entire inner half of the forewing was grayish-brown, the same color as the back. The brown color encompassed the greater and lesser secondary coverts, the protagium, and the tertails. The brown portions of the wings and back were mostly unmarked. The overall effect was of a small, darkish gull with a black wedge in the outer wing and a bold white wedge in the trailing portion of the wing. The tail was mostly white and very slightly notched. It had a narrow black trailing edge. The forehead and underparts were whitish, but the back of the neck to the top of the head was brownish-gray. The bill was dark and had more curvature and a more prominent gonys than did the Bonaparte's Gulls.— *John O'Brien, Chicago, Illinois 60615.*

Great Gray Owl (*Strix nebulosa*)

9 August 1996, south of Oliver, Douglas County—I was 3/4 of the way around a wetland mitigation site on my weekly 3 hour bird survey, walking slowly to avoid stepping on frogs. It was relatively calm with no noise from the wind or other sources when I heard a series of 5 low evenly-spaced hoots. I stopped, stunned to let what I had heard sink in. It was five hoots all on the same pitch, about the same pitch as the last two notes of a Great Horned Owl call. The first and last were softer. They had a muffled, quiet sound. The only time I have ever heard this voice is on my bird tape following a voice saying "Great Gray Owl" and one time when I held a Great Gray that Larry Semo had caught for banding. That was not a docile bird. She kept calling while raising my arm with powerful attempts to fly off. Even in your face the hoot is a muffled whoo, unlike the clear notes of a Barred Owl and not as deep as one would expect. There are no houses near that side of the ponds and although muffled, the calls were from close by—not the distant barking of a dog. I have listened to the various hoots and other odd sounds made by Barred Owls and Great Horned Owls all my life. This was a different voice

and as far as I know, no other owl gives several evenly-spaced notes all on the same pitch, except a Saw-whet Owl, which is so high, clear, and bell-like that it was never considered.

I waited for a while, debating whether or not to go look for it but decided I was too tired to fight my way through waist-deep grass and clinging weed seed heads to the edge of the ravine where the calls came from. I never saw the bird, or heard it again.—*Robbye Johnson, Superior, Wisconsin 54880.*

Boreal Owl (*Aegolius funereus*)

20–21 November 1996, Bubolz Nature Center in Outagamie County—The small owl was in the "net" in the center.

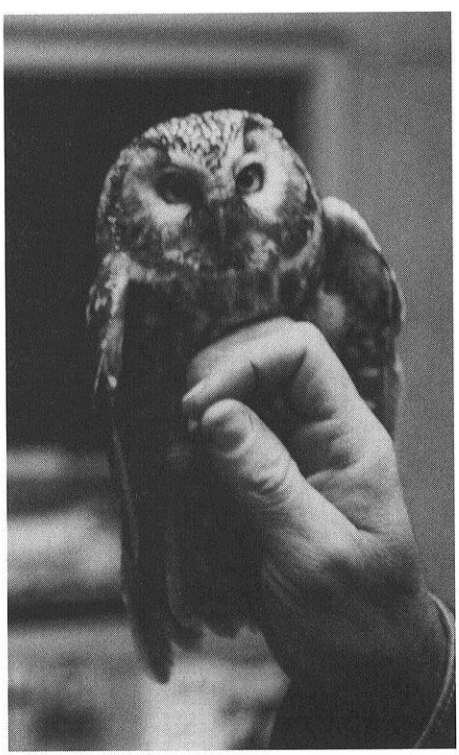


Figure 3. Boreal Owl.

Brought out the following A.M. for others to see. It was released on the evening of November 21 due to the presence of Cooper's Hawks in the area.

Unmistakable, this small, earless owl with a pale light bill, had a facial disk that was a "dirty" white framed in black. The forehead had numerous white spots. The breast was lightly spotted brown, with the body a somewhat darker brown, with spots.—*Daryl Tessen, Appleton, Wisconsin 54911.*

Rufous Hummingbird (*Selasphorus rufus*)

4 October 1996, Lake Geneva, Walworth County—When Daryl called, it was only a matter of minutes (5 or 6) to get across town to Mr. Gleason's house. Daryl and I walked out into the north yard—we were on the high side and the yard sloped away from us. The deck was actually on the first floor, but the house was built into a hill, so the deck out back was high. We were standing there only a few minutes when the hummingbird appeared on the top of a bush and then flew up to the feeder on the deck. What a cooperative bird! It sat on the feeder while I marvelled at the beautiful rusty brown of its back and its buffy rusty flanks. The dark wings looked almost taped on much like the wings of a Scarlet Tanager are set off by the scarlet color of the back and body. The Rufous Hummingbird was in the shade, so the throat appeared dark with a white band below it dividing the throat from the buffy flanks. It swooped off the feeder and darted into the bushes below. Minutes later it flew up to the TV antenna in the sun—just showing off, I'm sure. From there it dropped down to the

feeder and sat for a while feeding, then swooped back into the bushes again—same place as before. We watched it go through the same act again. Watched it for about 15 minutes. What a thrill—a life bird—no waiting!! That kind of cooperation doesn't just happen every day.—*Patricia Parsons, Lake Geneva, Wisconsin 53147.*

6 November 1996 near Tomahawk, Lincoln County.—I arrived at the residence at around 1:30 P.M., just 1 hour after finding out about this bird. I noticed that someone was home, so I knocked on the door. A woman, Mary Krahn, answered the door, and I asked her some questions about the Rufous Hummingbird. She told me that the bird was coming to the feeder, on the front porch, all morning. We started searching the spruce trees in front of the porch and we found a small hummingbird sitting on a dead twig about 6 feet off the ground and only 15 feet from me. I immediately noticed, while looking through binoculars, that this hummingbird had an overall brownish body. The gorget was just a solid dark area. This meant that this bird was an adult male. Every so often it would move its head around and I saw a glimpse of red along the edges of its throat. Even under overcast skies I saw this. The crown was a darkish gray, but not brownish like the rest of the back and flanks. The wings looked dark.

Twice he flew up to feed at the hummingbird feeder and each time I saw that his tail was an overall brownish color with dark tips. Also, I could hear a whistling-type sound as it flew back and forth at the feeder. After comparing hummingbirds in my field guides, I confirmed this bird to be an adult male Rufous Hummingbird.—*Dan Belter, Wausau, Wisconsin 54403.*

Western Wood-Pewee (*Contopus sordidulus*)

17 September 1996, Little Suamico Ornithological Station, Oconto County.—A small, dark, juvenile wood pewee was netted on 17 September. The lower mandible was about 95% black (much greater than 3.5 mm, Pyle et al. 1987). The undertail covert had large dark, distinct center. The lower back coverts had cinnamon edging. The wing bars had cinnamon/cream color, with the lower bar wider than the upper. The distance between the longest tip of the undertail coverts and the tip of the tail equalled 25 mm. The longest primary minus the longest secondary equalled 23 mm. Individual Eastern Wood-Pewees may have a dark lower mandible, or cinnamon feather edgings, or dark, distinct centers on the undertail coverts, but not all three!

Pyle et al. 1987, found that most pewees could be separated by the length between the undertail coverts and the tip of the tail with a cutoff of 32.5 mm. Those longer being eastern and the shorter, western. This individual had a length of 25 mm. More recent work by Pyle in 1996 had found that the distance between the tip of the longest secondary (LS) and longest primary (LP) was significantly longer in the Western Wood-Pewee. By using the formula $(TL - UTC) - (LP - LS)$, 97.5% of his sample birds were correctly identified. The cutoff of 6.5 mm was used. Higher values were Eastern Pewees, lower were western. For our bird this formula yields $25 - 23 = 2$ mm. This specimen passes all morphological and

plumage criteria for a Western Wood-Pewee.

I obtained two dozen Western and Eastern Wood-Pewees from the Field Museum in Chicago to check out these plumage and measurement criteria. I'm satisfied that they work in most cases. There is no plumage or measurement criteria to call this bird an Eastern Pewee. This specimen is in the Richter Museum of Natural History at University of Wisconsin-Green Bay.—*Thomas Erdman, Green Bay, Wisconsin 54311–7001.*

Dusky Flycatcher (*Empidonax oberholseri*)

8 October 1996, Little Suamico Ornithological Station, Oconto County—The Dusky Flycatcher was the last passerine netted on October 8. On first approach, I assumed the bird would be another Yellow-rumped Warbler due to the poor light and the fact that it was caught in the bottom deck (ground level) of the net. We had caught mainly myrtles on this day, which, because of the weather conditions, were very low in the nets. As I reached the bird the familiar bill-snapping of a flycatcher told me I had a late *Empidonax*. Even before handling the bird I knew it was something unusual because of the large white eye ring, white lores and the distinct whitish edging of the outer vanes on the outer rectrices. I knew we had either a Gray or Dusky Flycatcher. The bird was held overnight, properly identified and collected the next morning, October 9. After reviewing the literature at hand—I did not believe that a "sight record" would be acceptable. Separating Dusky and Gray Flycatchers in the field without the benefit of songs is very difficult, if not impossible. I've enclosed the unique wing formula keys of this species which separates it from all other Empidonax. I've also enclosed a photocopy of this individual's wing. It was compared to a Gray Flycatcher specimen in the collection. This specimen will be placed in the Richter Museum of Natural History at the University of Wisconsin-Green Bay.—*Thomas Erdman, Green Bay, Wisconsin 54311- 7001.*

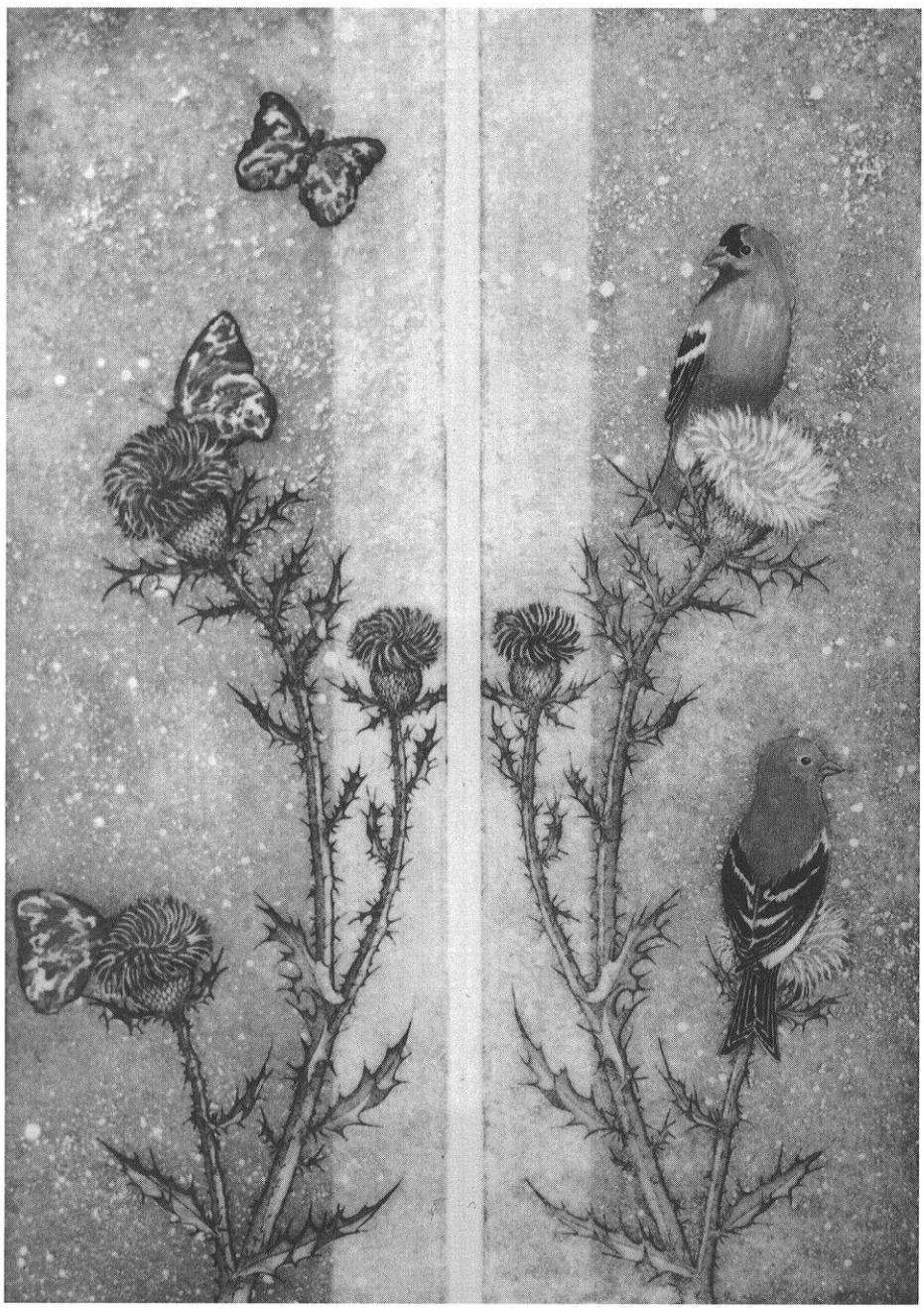
Scissor-tailed Flycatcher (*Tyrannus caudifasciatus*)

21 September 1996, Cherokee Marsh in Dane County—While hiking downhill along the trail, we noticed motion in the branches above and in front of us and stopped to investigate. The most striking aspect of this bird was the length of its tail. The length of the tail and the length of the tailless body were nearly equivalent. A tailless Blue Jay is about the same size as this bird's tailless body. The bird was a light to medium gray on top and white or pale creamy white underneath. The folded wings and tail were a darker gray. There was no streaking anywhere on the bird. The bill was completely black. The upper mandible was about twice as thick as the lower mandible, in vertical measurement. The lower mandible was straight or had a uniform taper; the upper mandible was straight with a distinct curve or taper at the terminal fifth, much like a vireo or flycatcher. The lore, extending from the base of the bill to just through the large dark eye, was distinctly darker, almost black underneath/at base of feathers. There was a small partial eyering—whitish in color. The head was rounded, not flat

and not hemispherical like a Gray Jay. Progressing forehead to nape, the color went from light gray to medium gray—a buffy undertone may have been present. There was no crest, no eyebrow. The chin, throat, breast, belly, and flank of this bird were a light creamy white with no streaking. The undertail coverts were fluffy and whiter. The rump and uppertail coverts were gray like the color of the back. The folded wings were gray, darker in color than the upper body and back. No wingbars were noted. No pink color was noted at the shoulder because the bird did not spread its wings. The long tail was as dark as the folded wings. The legs were not long and spindly, nor exceedingly short. The bird did not fly, nor spread its tail, nor pursue insects; it merely hopped from branch to branch. It made a noise that can only be described as a soft, slightly musical gurgle that did not change much in pitch; this was repeated about every 45 seconds. Our conclusion, based especially on the long tail, light gray upper parts, pale buffy/white underparts, medium gray tail and wings, dark eye, and gray lore, is that this bird is an immature Scissor-tailed Flycatcher.—*Larry Parnell, Madison, Wisconsin; Teresa Michelsen, Seattle, Washington.*

TOWNSEND'S SOLITAIRE
(*Myadestes townsendi*)

2–3 October 1996, Fifield, Price County—I was looking out the window of our house when I saw a grayish, robin-sized bird fly from a shrub to catch an insect in the grass. It was hunting insects by flying from shrubs and bluebird boxes in and adjacent to open fields. While in flight I noticed white outer tail feathers. I immediately thought it was a Townsend's Solitaire as I saw several of them in Colorado and had banded a few of them there. I immediately got my binoculars and saw the distinguishing buff wing patches and white eyering when the bird was perched. It was an adult bird with a grayish back and breast, lacking the checkered plumage of a juvenile bird. The bird was not as "fat" as a robin; it was more slender. My wife and I observed the bird for at least 15 minutes on October 2. Wildlife biologist Larry Gregg and I observed the bird for about 1 hour on October 3. Both times we saw it catch insects many times by flying from a shrub, tree, or bluebird box to the ground, pick up an insect, and fly back to its perch. We did not hear it make any sounds.—*Thomas Nicholls, Roseville, Minnesota 55113–5345.*



American Goldfinches *by N. A. Bruins*

WSO Records Committee Report—Fall 1996

by Jim Frank

The WSO Records Committee reviewed 62 records of 25 species for the Fall 1996 season. Of these, 52 were accepted. All contributors of records were notified by postcard in the case of accepted records and by personal letter in the case of records not accepted.

Accepted

Plegadis (Ibis species?)—

#96–082 *Sheboygan Co.,* 18 October 1996, Mueller, Berger, J. Kaspar, C. Kaspar.

This individual flew over the banding station at a height of 100 feet and a distance of 300 feet. The long, decurved bill, leg extension beyond the tail and overall light brown underside coloration were noted. A flight pattern of rapid flaps interspersed with glides was reported.

Ross' Goose—

#96–083 *Columbia Co.,* 16 November 1996, Ashman.

#96–112 *Dane Co.,* 18 November 1996, Curson.

Reported was a small white goose with black primaries. It was slightly larger than a Mallard, but smaller than the adjacent Snow Geese. The stubby, pink bill lacked the black "grin patch" of the Snow Geese. In addition, the head profile was rounder than that of the Snow Geese. The Dane Co. bird had a slight grayish suffusion to the back of the head and on the mantle suggesting an immature bird.

Barrow's Goldeneye—

#96–111 *Ozaukee Co.,* 19 November 1996, Uttech.

Noted was the extension of black from the back farther down the flanks on the Barrow's Goldeneye compared to the Common Goldeneye. Only white dots were left on the scapulars of this bird, instead of broad white patches. The black also cut deeply between the white breast and white flanks.

With further observation, the crescent-shaped, white facial spot was noted. Also reported was the shorter, stubbier, black bill of the Barrow's Goldeneye relative to the Common Goldeneyes surrounding it.

(This is the third consecutive late

fall/early winter report from this location.)

Black Vulture—

#96–084 *Sheboygan Co.,* 13, 14, 18, 19 November 1996, Mueller, Berger, Mueller; *Sheboygan Co.,* 19 November 1996, Boldt, Gustafson; *Ozaukee Co.,* 19 November 1996, Uttech; *Sheboygan Co.,* 20 November 1996, Bontly, Strelka; *Ozaukee Co.,* 22 November 1996, Polk (photo).

Seen perched at close range on telephone poles, on the ground, and in flight, this bird was generally described as larger than a Crow, but seemingly smaller than a Turkey Vulture. The all black plumage was only broken by the white patch noted on the underside of the primaries. The featherless dark gray head had a dark gray beak, grading to a lighter coloration on the distal half, and terminating in a slight hook on the tip. The tail was shorter than that of a Turkey Vulture both at rest and in flight. The legs were lighter gray and relatively long. A flight pattern of several flaps followed by a glide was noted.

Prairie Falcon—

#96–086 *Grant Co.,* 12 October 1996, Dankert.

A Peregrine-sized falcon was seen in flight. Brown upperparts contrasted with buffy underparts. A light malar streak on a light head and face was noted, as was noticeable belly streaking. The tail was lighter brown than the back. Most apparent however, were the dark underwing coverts that extended from the axillary region out toward the "wrist."

(This species remains on the state's hypothetical list for lack of a specimen, photograph, or multiple observer documentations. Two other confirmed records of this species in the state were of possible falconry origin.)

Purple Sandpiper—

#96–087 *Kewaunee Co.,* 17 November 1996, Barbarich, Van Der Brandt (photo).

#96–088 *Manitowoc Co.,* 20 November 1996, Peterson.

#96–089 *Sheboygan Co.,* 20, 29 November 1996, Tessen.

#96–089 *Sheboygan Co.,* 20 November, Peterson; 21 November 1996, Frank.

The long "two-toned bill"—orange at the base, dark at the tip—was noted, as were the yellow-orange legs. Size descriptions for the birds ranged from Dunlin to Ruddy Turnstone-sized, but with a noticeably wide, squat body. The bird was generally dark gray/purple in color with a fair amount of lighter streaking on the breast. A faint eyering was discernible. (A Purple Sandpiper has been seen at the Sheboygan harbor location in 6 of the past 7 fall seasons.)

Pomarine Jaeger—

#96–092 *Pepin Co.,* 16 November 1996, Domagalski, Gustafson.

This dark brown bird was Ring-billed Gull-sized, but had a disproportionately bulky build. There was a prominent pale patch in the underwing coverts, though this can be seen to varying degrees in Parasitic and Long-tailed Jaegers too. Visible from the upper side of the wing were at least 5–6 white primary shafts. This field mark can be misleading. If the wing is not seen fully extended some of these primary shafts may not be exposed from underneath the coverts. An underestimation of the

number of white shafts is thus possible. The deciding factor in the identification of this individual as a juvenile Pomarine was the broad, blunt middle 2 rectrices, as opposed to the longer, narrow rectrices of the Long-tailed and short, pointed rectrices of the Parasitic. (This bird was also seen on the Minnesota side of the Mississippi River.)

Long-tailed Jaeger—

#96–093 *Sheboygan Co.,* 5 September 1996, Triebensee (photo); 6 September 1996, Schultz (photo).

This bird was found dead on a beach. An overall dark plumage is evident in the photos, as is a finely barred breast and belly. The uppersides of the wings show the outer two primary shafts to be white with a paleness to the third shaft as well. The white crescent on the underwing at the base of the primaries and into the coverts is apparent, but this is not restricted to any one of the 3 jaeger species. There is a striking barring to the upper and lower tail coverts, wavy as anticipated in a Long-tailed or Parasitic, not straight as in a Pomarine. Additionally, the color of this barring is black and white, consistent with the Long-tailed. The Parasitic would have cinnamon and buff barring. The beak profile demonstrates the "nail" of the upper mandible to be equal in length to the rest of the beak instead of very short in comparison to the rest of the beak as would be anticipated in Pomarines and Parasitics. In addition, the inapparent gonydeal angle is set quite proximally, at about the halfway point on the beak, instead of toward the distal end. Finally, and perhaps most field apparent, would be the long extension of the two central rectrices. They are narrow and protrude one inch beyond the rest of the tail feathers. On close inspection, there are white tips to these rectrices, a characteristic lacking in Pomarine and Parasitic Jaegers.

Laughing Gull—

#96–094 *Milwaukee Co.,* 9–11 August 1996, Boldt.

This Ring-bill-sized gull was overall brownish in color on the head, neck, back, and breast. This coloration lightened on the throat and forehead. The black bill was relatively long and drooped toward the tip. The primaries were black and there was a darker brown "secondary bar." The white rump and upper tail gave way to a black terminal tail band. This juvenile plumaged bird gives rise to interesting speculation as to its origin. At such an early date, local or at least regional nesting is a possibility.

Iceland Gull—

#96–095 *Douglas Co.,* 24 November 1996, Svingen.

This pale tan gull was slightly smaller than adjacent Herring Gulls. The primaries and terminal tail band were similarly light (as opposed to darker tan as in a Thayer's Gull). The bill was dark in color with the exception of the proximal half of the lower mandible, which was light in color. The folded wings extended well beyond the tail.

Lesser Black-backed Gull—

#96–096 *Manitowoc Co.,* 12 October 1996, Tessen; 13 October 1996, Bauer (photo).

This gull was larger and stockier than nearby Ring-billed Gulls, but smaller than the Herring Gulls. An otherwise white plumage was sharply contrasted by the dark gray-black mantle.

This mantle color contrasted with the still darker black primaries. The legs were yellow-green.

Black-legged Kittiwake—

#96–098 *Kenosha Co.,* 24 November 1996, O'Brien.

Seen at close range, this gull was smaller than adjacent Ring-billed Gulls, with a black bill thicker than that of Bonaparte's or Little Gulls. A black mark was noted across the base of the neck and behind the eye. The head, neck, and breast were white. The outer primaries were black as was a stripe across the upper primary coverts and the carpal bar. A slightly notched white tail had a black terminal stripe. (This individual was reportedly present on November 23 as well.)

Sabine's Gull—

#96–099 *Fond du Lac Co.,* 14, 18 October 1996, Tessen, Schultz; 15 October 1996, Frank; 17, 23, 27 October 1996, Peterson; 19 October 1996, Brasser, Brasser; 20 October 1996, Bruce, Diehl; 21 October 1996, Bontly, Strelka; 24 October 1996, Gustafson.

This adult plumaged bird was slightly smaller than adjacent Ring-billed Gulls, similar in size to an adjacent Franklin's Gull. The prominent dark gray-black head lacked any white spectacles. This dark gray was separated from the white lower neck and breast by a black necklace. The bill was dark, but the distal one-third was yellow. Two observers were able to discern the red periorbital ring. In flight, the darker gray mantle extended out into the upper wing coverts. The black triangle over the outer primaries was separated from the mantle gray by a striking white triangle that started at the carpus and fanned out caudally to encompass the inner primaries and the secondaries. The tail was white, the legs black.

#96–100 *Ozaukee Co.,* 16 November 1996, Frank.

#96–101 *Kenosha Co.,* 24 November 1996, O'Brien.

#96–102 *Sheboygan Co.,* 29 November 1996, Domagalski.

These three sightings were of juvenile plumaged birds along the Lake Michigan shoreline. The wing pattern described above was reported, with the distinction that the gray was a dirtier gray-brown color. The mantle and coverts showed a bit of a scalloping effect due to some lighter tipped feathers. This gray-brown mantle color extended up the back of the head giving way to a whitish face and forehead. The bill and periorbital area were black. A white, slightly notched tail exhibited a black terminal band. Wisconsin had only six prior sightings of Sabine's Gulls, a number almost doubled in the course of just six weeks.

Great Gray Owl—

#96–113 *Douglas Co.,* 9 August 1996, Johnson.

This report is of a "heard only" individual. Five evenly spaced, muffled hoo's were heard at fairly close range. The call lacked the loudness and the cadence of Great Horned or Barred Owl calls.

Boreal Owl—

#96–114 *Outagamie Co.,* 20, 21 November 1996, Tessen.

A netted individual was described as small and earless with a dark brown body, light brown spotting to the breast, white forehead spots, but most

importantly, light facial disks framed by a black band.

Rufous Hummingbird—

#96–104 *Walworth Co.,* 4 October 1996, Tessen, Parsons; 9 October 1996, Peterson; 7 November 1996, Diehl (photo)

#96–105 *Lincoln Co.,* 6 November 1996, Belter (photo); ? November 1996, Raymond (photo).

These birds were Ruby-throated Hummingbird-sized with green wings and crown, but a bronze or orange-brown nape, back, tail and flanks. The throat gorget was orange-red instead of red. Both birds were captured by rehabilitators in early November. The Lincoln Co. bird died the day after capture.

Western Wood-Pewee—

#96–107 *Oconto Co.,* 8 October 1996, Erdman.

This individual was netted and collected for the deposition in the Richter Museum of Natural History at the University of Wisconsin-Green Bay. Overall this was a small brownish flycatcher lacking any greenish tone to the coloration. It exhibited two cinnamon/cream wingbars, the lower being wider than the upper, as well as cinnamon edges to the lower back coverts. Second, the lower mandible was 95% black, instead of the black being restricted to an area of less than the distal 3.5mm of the mandible tip. Third, the undertail coverts had distinct dark centers instead of faint centers.

Distinguishing measurements indicating that this was a Western Wood-Pewee instead of an Eastern Wood-Pewee involved demonstrating the relatively long-winged, short-tailed appearance of Western. When measuring the distance from the tip of the uppertail coverts to the tip of the tail, Westerns range from 24.9–33.9mm, with Easterns ranging from 31.4–40.1mm. This bird measured 2mm. Measuring the longest primary and subtracting the longest secondary yields ranges of 22.3–29.7mm for Westerns and 17.3–26.4mm for Easterns. This individual had a difference of 23mm. Researchers have then used the formula of "tail covert to tail tip distance minus the longest primary minus the longest secondary distance" to find a range in Western Wood-Pewees of −1.2 to 7.0, while Eastern Wood-Pewees demonstrate a range of 7.0 to 19.9. This specimen fell well into the Western range with 2.0.

Without hands-on measurements and photos, identifications such as these obviously will not be possible. Banders should take note, as the banders involved feel this may be the second individual of this species they have netted in the past two years.

This would be a new addition to the Wisconsin state list. Given that this type of identification falls into a category outside of "field ornithology," it is hoped that the specimen can be examined by other "museum experts" for final confirmation.

Dusky Flycatcher—

#96–108 *Oconto Co.,* 8 October 1996, Erdman.

An Empidonax flycatcher was netted that exhibited a striking white eyering and white lores that would only be characteristic of a Gray or Dusky Flycatcher. The outer vanes on the outer rectrices were also distinctly white. Measurements of the primary feathers suggested a Dusky Flycatcher based on the extremely short 9th and 10th pri-

maries relative to the 4th and 5th primaries. The cream color of the base of the lower mandible is limited in extent, with the majority of the distal mandible "dusky." A Gray Flycatcher's lower mandible would have extensive light color to the proximal lower mandible, and a limited dark tip.

This would also be a new bird for the state list. Again, given the identification is beyond the realm of "field ornithology," it is hoped that this specimen can also be examined by other "museum experts" for final confirmation.

Scissor-tailed Flycatcher—
#96–109 *Dane Co.*, 21 September 1996, Parnell.

This juvenile bird was Blue Jay-sized through the body, but had a tail as long again as the body. The head, back and rump were light gray, with a whitish breast and belly. The folded wings and tail were black as was the bill. The bill was thick, described as vireo-like or flycatcher-like. The lores were black and there was a whitish eyering. The pink area at the shoulders was not evident as the bird was not seen in flight.

Townsend's Solitaire—
#96–110 *Price Co.*, 2, 3 October 1996, Nicholls.

A robin-sized, but more slender gray bird was seen. A prominent white eyering, white outer tail feathers, and buff-brown wing patches were described.

Not Accepted

Black Vulture—
#96–084 *Sheboygan Co.*, 20 November 1996.

Though there is little doubt this was the Black Vulture, the observation was limited to a perched view only. Immature Turkey Vultures would also have dark heads and feet, so for this documentation to stand by itself, evidence of the white patches in the base of the primaries and the shorter tail would need to be seen.

Gyrfalcon—
#96–085 *Ozaukee Co.*, 2 November 1996.

Two separate reports of a large, dark, hawk with pointed wings and a long, tapered tail were submitted. Neither report indicated the usual notation of the bulky nature of the bird with the tail almost being a wide extension of the body. The tail should seem to narrow from body to tip. One of the reports even suggested the tail was narrower than a goshawk's tail, instead of wider. This bird was seen as uniformly dark, with no discernible markings. It flew with short, shallow wing beats and a glide. The second bird was gray, with spots on the breast. Neither report indicated the underwing linings to be darker, contrasting with the lighter flight feathers. In addition, the wings of a gyrfalcon aren't strikingly pointed as they are in other falcons. Other large hawks in power glides can have rather pointed looking wings to offer some confusion in identification. Though there is strong probability at this time of year that these were gyrfalcons, the descriptions were not complete enough to eliminate goshawks and young peregrines.

Curlew Sandpiper—
#96–090 *Dodge Co.*, 8 October 1996.

A gray shorebird "slightly larger" and "taller" than adjacent Dunlin was noted. The bill was long and decurved. The suggestion of a white rump was

seen only during preening, not in flight. In fall plumage, a Curlew Sandpiper might be confused with the similar sized, but slightly longer-legged? Stilt Sandpiper. Neither the greenish leg color of a Stilt nor the black leg color of the Curlew Sandpiper was described, unfortunately. The beak shape is suggestive, but the incomplete look at the rump and the lack of a leg color leave a small doubt about the identification. Even reliance on the bill length and shape can be a problem since there is variation within Dunlin in this characteristic.

Reeve—

#96–091 *Dodge Co.,* 20 October 1996.

This shorebird was slightly larger than adjacent Pectoral Sandpipers and exhibited a noticeably two-toned bill, the base being yellow-orange, the distal portion unspecified. The overall length of the bill was slightly longer than those of the Pectorals. No indication was made of the back markings, a lighter area of feathering at the base of the bill, nor an unmaked face. Generally the head of a Reeve is disproportionately small for its body. The legs were yellow-green, the unmarked breast brown. While preening, white feathering was noted at the base of the tail. It was not seen in flight. Without a more complete description, the identification is considered probable.

Pomarine Jaeger—

#96–092 *Pepin Co.,* 14 November 1996.

A dark brown, gull-like bird pursuing a Ring-billed Gull was described. It was similar in length, but noticeably bulkier. White patches were noted at the base of the under surface of the primaries. Unfortunately, the central tail feathers were not seen at the distance involved in this observation. Though this was undoubtedly "the bird," this documentation only can indicate a Jaeger species.

Lesser Black-backed Gull—

#96–097 *Milwaukee Co.,* 14 November 1996.

Seen only in a sitting position, this dark mantled gull was darker mantled and slightly less bulky than surrounding Herring Gulls. The bill was not as heavy as a Western Gull's bill. All indications are of a Lesser Black-backed, but leg color is needed for a positive identification.

Chuck-will's-widow—

#96–103 *Oconto Co.,* 30 August 1996.

As is often the case with "heard only" birds, the description of the "observation" is very minimal. As has been suggested before with this species, describing the song as "chuck-will's-widow" rather than "whip-poor-will" isn't descriptive enough. The number of notes, the rising and/or falling of the notes, shortness or length of notes, and accents on various syllables should be described to achieve a "lasting description" of this ornithological find. The identification is not questioned, but "documentation" isn't present for this to be officially accepted.

Williamson's Sapsucker—

#96–106 *Price Co.,* 12 November 1996.

This individual was seen at a 75 foot distance for about 2 minutes hanging upside down on a cluster of mountain ash berries, and then briefly flying. The lower breast was yellow-green with black barring on the sides. The black head had two narrow white stripes, in unspecified positions. In flight a black back was noted contrasting with white

shoulders and a less clear white rump. The position of the bird would not allow a look at the throat for the anticipated red color, nor the beak for a description of the size and shape. A Yellow-bellied Sapsucker would of course have a barred back, and pale yellow on the breast. The lower of the white stripes on the face of a Yellow-bellied Sapsucker, should connect with the white of the upper breast, whereas the narrow stripe on a Williamson's should dissipate in the broadly black upper breast. Given the brevity of the observation and an incomplete look at the head, the committee was reluctant to accept this as the state's first hypothetical record. In all likelihood this is an accurate identification, however.

Jim Frank
WSO Records Committee Chair

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James S. Anderson has directed the operation of Mosquito Hill Nature Center in New London for nearly two and one half decades. Birds and habitat preservation play essential roles in his environmental teachings. When away from his 430-acre office and "The Hill," Jim enjoys birding, hiking, nature photography, canoeing and other outdoor endeavors.

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Northern Saw-whet Owl *by N. A. Bruins*

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