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THE PASSENGER PIGEON

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

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Past, Present, and Future

As we prepare to celebrate our 50th anniversary, it is a good time to reflect on where WSO has been, where we are now, and what we should pursue in the future. Editor Stan Temple has an exciting Spring, 1989, issue planned which will review the past 50 years of Wisconsin ornithology. The future falls in the domain of the Board of Directors who have produced a "Planning Document" that summarizes thoughts for the future of our major committees; it can be obtained by sending me a self-addressed stamped envelope. Our present status is my responsibility. Here are a few items that describe how WSO is doing at the present time.

Let's start with our present membership. Although not always showing a steady climb since 1939, our membership has now increased to an all-time high of nearly 1500 members (including family memberships). Our regular (single) and family memberships are significantly increasing, possibly because of the appeal of the new "Pigeon," the exposure provided by our travelling displays, and publicity provided by our very successful field trips. We hope for more increases in memberships in 1989 as we begin a new advertising campaign. Becky Isenring of Sauk City has volunteered to be an advertising assistant to our editor; she will help businesses develop advertising for the "Pigeon" and will help us place some of our own ads in other bird-related publications. We've also constructed 25 displays for membership brochures that can be placed in stores selling bird seed and related merchandise. If you know of such a store in your area or would like to have one for a fair or a nature center, please write our membership chair, Alex Kailing.

Financially, we are in very good shape. Even though we substantially increased the size and quality of the "Pigeon" in 1988, the use of more efficient publishing procedures allowed our present membership dues to cover publication costs; 1989 should be even better with increased membership. Our last dues increase was in 1985, but there are no plans for an increase in the near future. Our 1988 end-of-the-year financial report will probably show a negative cash flow because we donated \$4200 from sales of *Breeding Birds of the Baraboo Hills* to the Wisconsin Chapter of The Nature Conservancy for land acquisition in the Baxter's Hollow area in Sauk County.

Our biggest expense in the near future will be the cost of printing the new edition of *Wisconsin's Favorite Bird Haunts*, now under preparation by Associate Editor Daryl Tessen. We will face this major investment in the inventory of our bookstore in early 1990. This new edition promises to be better than the 1976 edition and the supplement combined; for the first time all Wisconsin counties will be represented by at least one article.

Our endowment fund continues to cover our annual scholarships and other expenses. So far in 1988, we have added to our endowment fund nearly \$1300

from the sale of Owen Gromme's first print in the "Endangered Species Series." We thank Owen and his publisher, Stanton and Lee of Madison, for offering this plan to Wisconsin conservation organizations.

One of our major expenses each year is the tax bill and maintenance of our Honey Creek property. In 1988 it will consume nearly one-fourth of our membership dues. We need to promote the use of this property within the limits of a sensible land-use and management plan. Such a plan has been drafted and should be completed early next year. Please write to Vice-President Randy Hoffman for a copy of the draft plan; your input will be welcomed.

The coming anniversary year is also a good time to survey members' opinions on other WSO activities. A survey will be mailed in mid winter. It will solicit your ideas on the form and content of the "Birder," field trips, publications, and your wishes for our future. Watch for it in the "Birder," and please spend some time to fill it out and return it. Besides the anniversary activities already mentioned, WSO will publish a 50th anniversary print from an original painting by Tom Schultz, Green Lake artist and our Field-trip Committee chairman. The subject will not be a Passenger Pigeon, but it will be one of Wisconsin's favorite birds.

Bob Howe, Professor at UW-Green Bay has accepted an invitation to chair our Research Committee, replacing Stan Temple who has held the position for 10 years. Bob's organization of field trips into the Nicolet National Forest has already yielded interesting summer records of species thought to be found further north. As Stan Temple's Checklist Project, to which so many of you have faithfully contributed, is taken over by a non-WSO agency, we will look forward to Bob's leadership and ideas in involving WSO members in good field research.

We also welcome Janine Polk as the new chair of the Records Committee. Janine has been a Records Committee member for 2 years, and she has a keen eye in the field and a thorough knowledge of field identification problems.

I look for your letters and comments, especially during next year's reflection on our past 50 years.

A handwritten signature in cursive script, reading "John Idzkowski". The signature is written in dark ink and is positioned above the word "President".

President

Changes in Wisconsin's Common Loon Population

Wisconsin's Common Loon population seems to have been increasing between 1976-77 and 1985. Several possible explanations for this encouraging trend are discussed.

by Paul I. V. Strong

The status of Wisconsin's Common Loon (*Gavia immer*) population during the summer has not been defined since 1976-77, when its size was estimated at 1300 adults and 258 juveniles and it was considered stationary (Zimmer 1982). Since that time, Wisconsin Project Loon Watch (WPLW), a program of the Sigurd Olson Environmental Institute of Northland College, has been collecting breeding season data on Common Loons. In this paper, I compare a subset of the WPLW data with Zimmer's data, and I suggest that some changes have occurred in Wisconsin's Common Loon population.

METHODS

In 1976-77, Zimmer surveyed all lakes of over 30 acres in the 20 northernmost counties of the state for loons. Approximately one-half were surveyed each year, and 236 were surveyed both years. Lakes were visited 1-3 times for 30 minutes to several hours from May through August (Zimmer 1979). In 1985, WPLW selected a random sample of lakes from

the 28 northernmost counties and surveyed them for loons. The sample was cross-stratified by lake size and county to ensure adequate geographic and lake-size sampling. Volunteer cooperators, many of whom had been collecting data on loons for several years, counted loons on the sample lakes on 6 July 1985 from 0500 to 1000; see Olson (1986) for more details on methods. I compared the number of adult and young Common Loons on the lakes surveyed during both studies.

RESULTS

One hundred seventy-three lakes were surveyed in both studies. Adult loons were seen on 44 (25%) of the lakes in 1976-77 and 86 (50%) of the lakes in 1985. Young of the year were seen on 13 (8%) lakes in 1976-77 and 25 (14%) of the lakes in 1985. The number of lakes with adults and young increased 95 percent and 92 percent, respectively, between the two survey periods. The total number of adults seen during the surveys increased from 79 to 176 and the

total number of young increased from 19 to 40 (Table 1).

Sixty-nine (40%) of the lakes did not have adults present in either year, and 138 (80%) did not have young in either year. Twenty-six (15%) had adults in both years, and only 3 (2%) had young in both years (Table 2). Some lakes apparently changed status between 1976-77 and 1985. Eighteen lakes that had at least one adult present in 1976-77 had no adults in 1985. Sixty of the 129 lakes that did not have any adults present in 1976-77 had at least one adult present in 1985. Ten lakes had young present in 1976-77 but not 1985; on only three of these were both adults and young absent in 1985 (Table 3). Twenty-two lakes had young in 1985 but not 1976-77; 19 had no young or adults in 1976-77 (Table 3).

DISCUSSION

Increases in the number of lakes on which adults and young were seen and in the total number of adults and young suggest an increase in the summer population. Without sampling other lakes, however, it is risky to infer the magnitude of the increase. Nonetheless, Olson (1986) calculated an estimated summer population of 2334 ± 197 adults and 491 ± 98 young from the 1985 data, in-

Table 2. Changing status of Common Loons on Northern Wisconsin lakes between 1976-77 and 1985.

Years	Lakes with adults	Lakes with chicks
1976-77 but not 1985	18	10
1985 but not 1976-77	60	22
1976-77 and 1985	26	3
Neither 1976-77 nor 1985	69	138

creases of 78 and 90 percent for adults and young, respectively.

Changes in the pattern of lake use also suggest population growth. Only three of the study lakes seemed to lose both their adults and young between 1976-77 and 1985, while 19 gained both adults and young. Again, the magnitude of population growth cannot be safely inferred from the data, but the difference between losses and gains strongly suggests population growth.

The difference in numbers of lakes with both adults and young should not be attributed to differential reproductive success between years because Common Loons reoccupy lakes each year, even when reproductive efforts fail (McIntyre 1974, Alvo 1985, Strong et al. 1987). It may be attributed to shifts in habitat preference, but one would expect nearly equal numbers of losses and gains in a stationary population.

Nationwide trends in Common Loon populations indicate both increases and decreases during the decade 1975-85. In the Northeast, extremely low populations in New Hampshire and New York increased substantially (McCoy 1988, Parker and Miller 1988), and Common Loons returned as breeding birds to Massachusetts after an absence of nearly 30 years (Blodgett and Lyons 1988). In Michigan, the Common Loon popula-

Table 1. Comparison of the occupancy of northern Wisconsin lakes by Common Loons in 1976-77 and 1985.

Parameter	Number in 1976-77	Number in 1985
Lakes with adults	44	86
Lakes with chicks	13	25
Number of adults	79	176
Number of chicks	19	40

Table 3. Changes in lakes with adult and young Common Loons present, 1985 versus 1976-77.

Lake	County	Present in 1976-77 but not in 1985	Present in 1985 but not in 1976-77
Chain	Barron		X
Bullhead	Bayfield		X
Cisco	Bayfield		X
Half Moon	Bayfield		X
Flynn	Bayfield	X	
McGraw	Burnett	X	
Deer	Douglas		X
Deer	Iron		X
Ferry	Iron		X
Spider	Iron		X
Hilbert	Marinette		X
Explosion	Oconto		X
Velvet	Oncida		X
Garfield	Polk		X
Round	Polk		X
Deer	Price		X
Summit	Sawyer		X
Chelsea	Taylor		X
Ballard	Vilas		X
Dads	Vilas	X	
Shallow	Washburn		X
Yechout	Washburn		X

tion may be stationary or slightly increasing after reaching very low numbers during the last 10 years (Robinson et al. 1988). The Common Loon is currently listed as a state threatened species in Michigan. In Minnesota, the status of the very large summer population is unknown, but a recent study suggests a decline. McIntyre (1988) found 38 lakes with lower loon use in 1986 than in 1971 and only 8 that had greater loon use in a sample of 321 lakes.

With apparent declines in both Minnesota and Michigan during the last 10 years, it is unclear why the Wisconsin loon population increased. Common Loon populations may be able to grow by at least 7% annually if overwinter mortality rates are 35-58 percent and 70 percent of the adult females nest successfully each year (Parker 1988). No data are available for these population parameters in Wisconsin.

Population growth may have resulted from increased reproductive success. Reduced disturbance by humans and an increased tolerance by loons of human activity has been illustrated in other parts of the loon's breeding range (Christenson 1981, Smith 1981, Titus and Van Druff 1981, Heimberger et al. 1983). WPLW's 10-year intensive public education efforts, designed to reduce harassment of nesting pairs and young, may have been partially responsible. Immigration from Minnesota or other areas seems unlikely due to the strong fidelity to breeding lakes and the high probability that young will return to natal areas. There are no data suggesting changes in mortality rates between the study periods, although reductions in mortality rates can not be discounted.

There are other data suggesting that the Wisconsin loon population has increased since the 1970's. Since 1981, the

Turtle-Flambeau Flowage, a 7038-ha lake in Iron County, has been surveyed annually for adult and young Common Loons during a one-day census in late June. Zimmer (1979) reported 17 adults and eight young on the flowage in 1977. In 1985, 80 adults and 20 young were counted (John Olson, unpubl. data).

Colonization of lakes along the southern fringe of the loon's breeding range in Wisconsin (Evrard and Bacon 1987, WPLW unpubl. data) also suggest an expanding population, as do increasingly frequent reports of non-breeding adult loons spending part of or the entire summer on lakes in the southern one-third of the state (WPLW, unpubl. data).

ACKNOWLEDGMENTS

Dennis Olson and Brian Suderman designed and implemented the 1985 survey. Over 200 WPLW cooperators collected the data. Gary Zimmer answered questions about the methods and results of his study.

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Nesting Red-necked Grebes in St. Croix County, Wisconsin

The second largest concentration of Red-necked Grebes in Wisconsin occurs in St. Croix County. This population has been studied since 1982, and some interesting findings have resulted.

by James O. Evrard

Wisconsin is considered to be on the periphery of the Red-necked Grebe's (*Podiceps grisegena*) breeding range (Bent 1919, Palmer 1962). Historically, the species was considered rare in Wisconsin, being found sparingly in the northern part of the state (Kumlien and Hollister 1903). The Red-necked Grebe is presently a threatened species in Wisconsin with only five known nesting sites (Blesar et al. 1986). The largest breeding population is found on Rush Lake, Winnebago County (Eichhorst 1985). The second largest population is on Oakridge Lake in St. Croix County (Blesar et al. 1986).

The first nesting record (Mossman 1983) for St. Croix County was in 1969 on Twin Lakes in the south-central part of the county. Grebes were seen there until 1977 when they disappeared for unknown reasons (Faanes 1981). Breeding Red-necked Grebes were first seen on Oakridge Lake in north-central St. Croix County in 1975 with evidence of reproduction the following year (Moss-

man 1983). In 1977, four pairs produced young on Oakridge Lake, one pair on East Twin Lake, and a sixth pair produced young on a small wetland in Polk County near Oakridge Lake (Faanes 1981). In 1982, I initiated a waterfowl research study for the Wisconsin Department of Natural Resources (WDNR) in St. Croix and southern Polk counties (Evrard and Lillie 1987). Part of the study involved systematic surveys of Oakridge Lake and nearby wetlands for breeding waterfowl. This paper summarizes the observations of Red-necked Grebes encountered during those surveys.

HABITAT

Oakridge Lake is a Class V wetland (Shaw and Fredine 1956) with an area of 72 ha and a maximum depth of 3 m. The lake is alkaline with a pH of 8.7 and a total alkalinity of 117 mg/l (Mauser 1985). Oakridge Lake has a large population of fish, including the fathead

minnow (*Pimephales promelas*), central mudminnow (*Umbra limi*), pumpkinseed (*Leopomis gibbosus*), and bluegill (*Leopomis macrochirus*). The lake is characterized by thin stands of hardstem bulrush (*Scirpus acutus*) scattered over the entire wetland with shoreline vegetation composed mainly of cattail (*Typha latifolia*) and bulrush. Extensive beds of submergent vegetation, dominated by milfoil (*Myriophyllum spicatum*), coontail (*Ceratophyllum demersum*), elodea (*Elodea canadensis*), and pondweeds (*Potamogeton* spp.), are found throughout the lake.

Oakridge Lake and surrounding uplands are managed by the WDNR as a federal Waterfowl Production Area (WPA) and are included in an area closed to waterfowl hunting. The shoreline is undeveloped and human disturbance during the Red-necked Grebe's breeding season is limited to WDNR research and management activities.

SURVEYS

The lake shoreline is surveyed by 1 or 2 persons in a canoe 4 times each year from May to July to census waterfowl. To avoid unnecessarily disturbing Red-necked Grebes and other wildlife, shoreline emergent vegetation is not searched systematically for nests nor are any known grebe nests revisited to learn their fate. Locations of grebes and their nests are recorded on a lake map. Grebe observations incidental to other research activities are also recorded.

ARTIFICIAL NEST STRUCTURES

To create storm-protected nesting sites for Red-necked Grebes, WDNR Technician Bruce Bacon constructed eight floating plywood and styrofoam plat-

forms based upon a modified design developed for Forster's Terns (*Sterna forsteri*) in Wisconsin (Linde 1983). From 1984 to 1987, platforms were anchored in the lake prior to the grebe's breeding season and were removed in the fall. Aquatic vegetation was attached to the low platforms to simulate natural nesting sites.

RESULTS AND DISCUSSION

Red-necked Grebe breeding pairs on Oakridge Lake have numbered from 3 to 6 during 1982–88 (Table 1). Breeding pair numbers appear to be the best index to the Red-necked Grebe breeding population. Numbers of nests (Eichhorst 1985) and young apparently are not reliable indices.

Bent (1919) stated that the Red-necked Grebe "is certainly one of the shyest of the water birds." The birds are rarely seen on their nests and silently slide off the nest and dive when disturbed (Baird et al. 1884), making nests difficult to find. Most birds are seen swimming in the distance, singly or in pairs, often far out in the lake (Bent 1919). Their characteristic unison calls are heard only when they are free from man's disturbance.

Red-necked Grebes build several nests before egg laying and incubation actually begins (Palmer 1962, Chamberlin 1977). One pair I observed built at least four nests, and a pair in Ontario built 7 nests (Speirs et al. 1944). Eggs are laid uncovered in flimsy nests on floating vegetation, subjecting them to substantial losses by wave action and predation (Bent 1919). Once incubation begins, the eggs are covered with nest vegetation when the adults are off the nest. After hatching, Red-necked Grebe young stay very close to their parents, even riding

Table 1. Red-necked Grebes in St. Croix and Polk counties, Wisconsin, 1982-88.

Year and lake	Number of breeding pairs	Number of nests ¹	Number of young
1982			
Oakridge Lake	3	3	2
1983			
Oakridge Lake	6	7	1
Erickson Pond	0	0	1
North Fish Lake	0	0	1
1984			
Oakridge Lake	4	3	0
1985			
Oakridge Lake	4	3	1
1986			
Oakridge Lake	4	3	1
Hanten Pond	1	0	3
1987			
Oakridge Lake	3	0	0
Hanten Pond	1	0	0
1988			
Oakridge Lake	2	1	2
Hanten Pond	1	1	1

¹12 of the 21 nests found contained eggs, with an average of 3.9 eggs/nest, range 1-6.

on their backs (Baird et al. 1884). As they grow older, they become increasingly secretive and difficult to observe, hiding in emergent vegetation until adults bring them food.

Pair counts are also recommended for a similar palearctic species, the Great Crested Grebe (Hughes 1982, Woollhead 1987), because like the Red-necked Grebe, unsuccessful pairs may build as many as five nests and successful pairs may be double brooded.

OTHER OBSERVATIONS

Red-necked Grebes have been observed on other wetlands near Oakridge Lake. On 8 May 1983, a pair was seen on the Amschler WPA building a nest in an 8-ha, Class V wetland connected to Oakridge Lake. The nest was abandoned shortly thereafter. A flightless young grebe was captured by nightlighting (Cummings and Hewitt 1964) on 27 July 1983 in a 37-ha, Class V wetland

on the Erickson WPA (Bacon 1986). On 15 August 1983, I observed another young Red-necked Grebe in the 24-ha North Fish Lake in Polk County. Both observations were of lone young with no adults seen. On 10 May 1985, Red-necked Grebes were first seen on a 9-ha, Class V wetland on the Hanten WPA, about 1 km north of Oakridge Lake where they have nested since 1986 (Table 1).

Red-necked Grebes are usually solitary nesters, but they sometimes nest in loose colonies (Bent 1919, Palmer 1962), as is the case at Oakridge Lake. Early (May) nests were spaced along the shoreline in emergent vegetation and were difficult to detect. Later nests constructed in June tended to be in more open situations and were more colonial in nature. On 2 June 1983, I observed 3 pairs simultaneously building 3 nests about 20 to 30 m apart in an open bay. Both sexes took part in nest building, carrying bits of vegetation to the nest site, usually a

clump of rooted water lily (*Nymphaea odorata*), which also served as an anchor for the floating nest. First one pair then another would vocalize in unison, using their characteristic breeding-season call, described by Palmer (1962) as a "bray" much like that of a donkey. The nearness of the pairs appeared to stimulate an abnormally high level of calling and displaying. High waves caused by a violent thunderstorm later destroyed the exposed nests. The only other known cause of nest destruction was a single instance of raccoon (*Procyon lotor*) predation.

Red-necked Grebes failed to use the artificial platforms for nesting, although they were observed many times building nests nearby. Since the platforms were originally designed for terns, this was not totally unexpected. However, several design and placement changes were made over the years in unsuccessful attempts to encourage the grebes to nest on the platforms which would offer more protection from wave action. Red-necked Grebes have nested successfully on platforms in Ontario (Speirs et al. 1944), as have Great Crested Grebes in Europe (Shuckling 1976).

Red-necked Grebes are usually passive in relation to other waterfowl in their nesting territories (Bent 1919). However, there were two observed antagonistic incidents, an attack on a young Wood Duck (*Aix sponsa*) duckling (Ev-rard 1987) and, in another incident, threatening behavior to a Pied-billed Grebe (*Podilymbus podiceps*) (Bacon 1986). The Red-necked Grebe dove under both birds, repeatedly attacking the Wood Duck from below and surfacing in front of it. Neither birds were visibly injured and swam away after the Red-necked Grebe apparently lost interest in them. Bent (1919) reported similar at-

tacks on Horned Grebes (*Podiceps auritus*).

OUTLOOK

The future of the Red-necked Grebe is uncertain. Its present habitat in St. Croix County is secure given continued federal and state acquisition and management programs. However, Red-necked Grebe populations are declining throughout North America and Europe (Tate 1981).

In a Manitoba study, De Smet (1987) reported 83% of approximately 700 eggs from 179 Red-necked Grebe clutches in Manitoba failed to hatch. About half of the losses were due to pesticides, mainly organochlorines, and the other half due to nest predators, mostly raccoons. Reproductive success was low, about 0.9 young/breeding pair. The same low success has also been observed on Oakridge Lake and Hanten Ponds in recent years. De Smet speculated that the pesticide contamination was acquired in the grebe's winter range or during migration. Wisconsin breeding Red-necked Grebes are probably also exposed to pesticides during migration and on their winter range. The raccoon's distribution and numbers in Wisconsin are much greater now than in the past. Given these threats, it is difficult to be optimistic about the future of the Red-necked Grebe in Wisconsin.

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The first Peregrine Falcons produced in the wild in Wisconsin in over 20 years. (*photo by G. A. Septon, Milwaukee Public Museum*)

A Year of Firsts and Frustrations for Milwaukee's Peregrines

A pair of Peregrine Falcons nested on the First Wisconsin Center in Milwaukee in 1988. Their initial breeding attempt was best described as having its ups and downs!

by Gregory A. Septon and Annie Wendt

In March of 1988, a pair of Peregrine Falcons settled in downtown Milwaukee. Both falcons were in juvenile plumage with a spattering of gray feathers on their otherwise brown backs, and both showed strong contrast in their facial markings. It wasn't felt that the pair would nest due to their immaturity, but we were pleasantly surprised on the morning of 15 June when we found two newly hatched peregrine chicks. The brood of two was later augmented with the addition of two captive-produced chicks. On the morning of 26 July the youngsters fledged, but problems ensued that made the following weeks seem more like a bad dream than anything else. The young father immediately began stooping at his offspring and knocking them out of the air. This behavior continued and caused several injuries. As a result, we lost two of the four chicks. One young male remained in the city, and a Milwaukee-hatched female—after being treated twice at the Raptor Research and Rehabilitation Program—was re-released at an Omaha, Nebraska, site.

The sub-adult male's aberrant behavior was presumably related to his immaturity, and we hope this behavior will change as he matures. In spite of these problems, we feel that overall, the Wisconsin Peregrine Recovery Program is working. The program has produced the first successful urban nesting in Wisconsin, and this was also the first documented case of two juvenile peregrines successfully nesting. We have now had the first fledging of wild-produced peregrines in the state in nearly twenty-five years. Furthermore, six additional young peregrines were released successfully in Madison on the University of Wisconsin campus (Ausloos and Lien 1988). With released peregrines now returning to nest in Wisconsin, the future for the species in the state is looking up.

Because of the rather unusual events in Milwaukee, we paid special attention to documenting the behavior of the young falcon parents. To share our observations, we have prepared the following detailed report.

SITE DESCRIPTION

The hub of activities for Milwaukee peregrines is the First Wisconsin Center, the city's tallest building (41 stories) and the location of the hack box from which peregrines were released in 1987. Positioned on the west side of the building, the hack box is mounted on a six-foot ledge outside the building's observation deck. Wooden panels were installed inside the observation deck behind the box to prevent visual contact between falcons on the ledge and approaching attendants. The observation deck was closed to building employees and the public during the critical period before the chicks were flying well.

A video camera was mounted on the north end of the hack box, allowing remote monitoring of the falcons while they were in the box. A monitor, located in the building allowed the public to view activities. By popular demand, we also posted an update every several days to keep people informed of the latest developments.

We also made observations from the roof of the 411 Building, located two blocks west of the First Wisconsin Center. This thirty-story building afforded an excellent vantage point of the north and west sides of the First Wisconsin Center, the hack box, and the city at large, including most of the falcons' favorite perches. These included: the M&I Marshall and Ilsley Bank (M&I), the antenna atop the First Financial Center (the antenna), the Old Federal Building (Fed. Bldg.), the Wisconsin Gas Company Building (Gas Co.), City Hall, the Wisconsin Bell Telephone Company Building (Telephone Co.) and the Cathedral of St. John the Evangelist (Cathedral). They also frequented the 411 when we were off the roof.

FLEDGING EVENTS

We first learned that the Milwaukee site was active on 21 March when an employee in the First Wisconsin Center reported seeing a Peregrine Falcon chasing a pigeon near the building. Within ten days, we received a report of two peregrines flying together. We first observed the pair 5 April, at which time the male caught a Brown Creeper and cached it on the 16th floor of the First Wisconsin Center. At that time, both birds showed mostly juvenile plumage, with some gray feathers on their backs and a fair amount of white on the crop area.

A nest box was installed on the roof of the Juneau Village Apartment Building (Juneau Village), about 5 blocks northwest of the First Wisconsin Center on 15 April; it would serve as an alternate nest site should this pair decide not to use the box on the First Wisconsin Center. Both peregrines were sighted frequently throughout April and early May.

On 12 May, Greg took "Slicer," an unreleasable peregrine from the 1987 release, to the roof of the Northwestern Mutual Life Insurance Building (NML) to monitor the response of the pair to a strange falcon. The first to respond was the male, who circled the roof. He never stooped, nor did he come in for a close look, but shortly afterwards the female arrived and stooped at "Slicer" repeatedly. After stooping 12–15 times, she would rest on the Gas Co. or the Fed. Bldg. for 10–15 minutes before returning to stoop again.

Although she never hit "Slicer," several of the stoops were close enough to make him leave the perch and cower on the ground. Concerned for "Slicer's" welfare, at one point Greg approached

the perch, but the female continued to stoop, seemingly undisturbed by Greg's presence. During this entire period, the female was completely silent. This pattern continued for about an hour, when Greg and "Slicer" left the roof.

The following day, Greg inspected both the Juneau Village box and the First Wisconsin Center box, but he found no sign of nesting activity in either box. We continued to receive reports of sightings of falcons through 18 May, including a report by a Gas Co. employee that almost every night between 4:00 and 7:00 P.M. he saw both peregrines at the First Wisconsin box. No additional sightings were reported until 15 June.

Because Milwaukee was scheduled to be used as a hack site again this year, Greg, Charlie Gieck, Tom Smith, John Nelson, and contacts from First Wisconsin met on 15 June to decide if releasing chicks here was advisable. Because the pair was so young and because of the abrupt end of sightings after 18 May, it was assumed that the pair would not attempt to nest and may have even left the area. The female's lack of vocalizations while stooping at "Slicer" also raised doubts about how territorial this pair actually was. At this point, we planned to go ahead with the scheduled hacking of young captive-reared birds.

After the meeting, Greg decided to inspect the First Wisconsin box once more. Upon opening the door of the box, he got a big SURPRISE!! The female peregrine flushed from only inches inside the door, exposing two newly hatched peregrine chicks, their eyes still closed. The female was very defensive and vocal, stooping continuously as Greg retreated from the ledge. Arrangements were made to hack the captive-reared young in Madison (Ausloos and Lien 1988).

The video monitor was immediately activated. We were able to monitor the parents and chicks throughout the time they were in the box without disturbing them in any way. Both falcons, although only yearlings, were model parents. The female spent 90% or more of her time in the box with the chicks for the first week, brooding or providing shade for them as conditions warranted. The male provided food for the female and chicks, but was seldom seen inside the box. The female did all the feeding and removed any leftovers immediately thereafter.

At this point, although we suspected that at least the female was banded, we did not have any clue to their identity. On 23 June, while setting up a blind on the observation deck, Greg was able to read the band number that identified the female as "Madonna," a bird released last year in Rochester, MN. The following day Annie was able to identify the male as "McArthur," released last year in Ft. Sheridan, IL.

On 24 June we installed a board across the front of the box to keep the chicks from venturing onto the ledge at such an early age. The ledge in front of the box is bare metal flashing with very poor footing, and the winds were often gusty. Judging by the youngsters' feet, we decided the older of the two was a tiercel (named "Flash"), the younger a falcon (named "Mariah").

Adding the board proved to be a timely act, as the following day the little tiercel, "Flash," was very active and probably would have been out of the box. At this point, he wasn't even able to get up on his feet, but he was still very mobile. He was about 10 days old. Because of his increasing mobility, on 28 June we added a second board, raising the barrier to a height of 16".

By 10 July, we were concerned that

the barrier would not keep "Flash" in the box much longer, and we decided to place bars over the front of the box in hopes that the parents would continue feeding the chicks through the bars. We also cut a door in the north end of the box, giving us the option of letting the chicks have access to the wider, gravel-covered portion of the ledge at a later date. We felt it would be safer for them to have access to the ledge there than in front of the box.

The chicks were not fed again until early evening, when "Madonna" brought in food and fed the youngsters through the bars, as we had hoped. At this point, both chicks were quite active. "Flash" was well feathered, with only a touch of down on his head, flanks and under his wings.

We talked about adding additional captive-produced chicks to the nest. The pair were wonderful parents, and they seemed to have no trouble bringing in enough food for the chicks. The mother, especially, was very attentive and was seldom away from the site for more than brief periods. "McArthur," on the other hand, made himself scarce, roosting out of sight; he was usually seen only when he brought in food. Pat Redig of the University of Minnesota was able to locate two captive-produced chicks about the same age as "Flash" and "Mariah," and he made arrangements to ship them to us in Milwaukee.

The new chicks ("Pippin" and "Diana") arrived on 15 July and were added to the hack box without a hitch. The parents, already defensive, grew more agitated with two extra screaming chicks voicing their displeasure at human intrusion. The male was bolder than ever, flying between the columns along the corner of the ledge and directly over our heads. "Flash" and "Mariah" were

banded at this time. We also added a water pan, primarily to help counteract the effects of the extremely hot weather. Both "Flash" and "Mariah" bathed that afternoon, splashing vigorously and loosening much of their remaining down. Within six hours the parents brought food and fed their extended family.

POST-FLEDGING EVENTS

On 26 July, with the four birds aged 38 to 42 days, we color-marked them and opened the north door of the box. "Mariah" was out of the box within an hour of release, followed shortly by the remaining chicks. She was also the first to fly, and her first flight was strong, taking her around to the north side of the Center, about roof level. "McArthur" flew in and began stooping her. "Madonna" circled overhead, screaming. After several stoops, "McArthur" hit "Mariah," and she dropped out of control, nearly 20 stories. We recovered her, dazed and bleeding from a cracked mandible. She was shipped to the Raptor Research and Rehabilitation Program in St. Paul, MN, for treatment.

"Flash" flew about 1:00 P.M., and he was also attacked by "McArthur," who chased him around the building. The fledgling was able to building-hop to a protected perch on the Fed. Bldg., where he stayed most of the afternoon. "Pippin" left the ledge about 3:00 P.M.. He was able to land on the roof before being harassed into the air by his father. He was struck several times before being driven to the sidewalk across the street from the Center, where we recovered him. He was uninjured so later that night we returned him to the box.

"Madonna" brought food to the ledge and fed "Diana" about 3:30 P.M.. "Diana" did not fly that first day. "Flash"

did some more building-hopping and was stooped at repeatedly every time he was in the air or on an exposed perch. He spent the night on a City Hall ledge.

On the morning of 27 July, "Diana" had fledged and was perched in a small tree on the north side of the Center. Just before 9:00 A.M., she flew several blocks west to the Northwestern National Insurance Bldg., followed by "McArthur" who continued to stoop at her, coming close enough to make her duck at each pass, until she crawled out of sight in the decorative stonework. At 3:50 P.M. that afternoon we recovered "Diana," who died after flying into a window across the street from the Gas Co.

"Pippin" spent the entire day on the Center. "McArthur" brought food to the ledge and fed him twice that day and, while the chick was eating, the older male dive-bombed him several times. "Pippin" flapped up and down the ledge often, usually attracting "McArthur." At one point, both parents were flying over the Center and, when "McArthur" began harassing "Pippin" on the ledge, "Madonna" stooped at her mate, who immediately retreated to the northeast corner of the roof. She never attacked the fledglings herself, and she often screamed while her mate harassed the youngsters.

"McArthur" harassed the chicks every time they became airborne or when they were on exposed perches, but he also continued to feed the chicks. On 28 July "Pippin" was driven to the street a second time, and he was returned to the hack box that night, along with "Mariah," who had been returned from the Minnesota that evening.

On 31 July we watched "McArthur" and "Flash" flying together, dog fighting. "Flash" was looking very strong, even chasing his father. They flew for

several minutes, claspings feet and crabbing. Suddenly "McArthur's" attitude changed and instead of being playful, he became very agitated and began striking the youngster with force, twice knocking him to the ground. "Flash" appeared to be limping, and as Greg approached him, the chick became airborne. The father hit him again, hard enough to knock feathers loose, before "Flash" landed on a second-story ledge. "McArthur" knocked him off the ledge and into an alley, where Greg was able to catch him. The chick had suffered a broken femur and was sent to the Minnesota, where he later died of complications.

"Mariah" was injured a second time on 3 August. She and "McArthur" were dog fighting, and every time the male approached, "Mariah" rose to meet him with her feet. Although "McArthur" never struck her, when she flipped over, responding to his final approach, she lost control and fell straight down nearly twenty stories, landing on Prospect Ave. Sheriff's detectives stopped traffic while a passerby lifted her to the grass. When Annie recovered her, "Mariah" was bleeding from the mouth and showing evidence of a leg injury. She was shipped later that evening to Minnesota, where she was treated for her injuries.

"Pippin" was the only fledgling that survived the rest of the summer, and he seemed to hold his own. "McArthur" struck him five times on 4 August when he, "Pippin," and "Madonna" were all scared off the roof of the Center by the window washers. "Pippin" ended up on the third floor roof, but he was uninjured and later flew to the Gas Co. "McArthur" was not seen actually striking "Pippin" again, although he continued harassing the fledgling whenever he flew.

"Pippin" did very little flying, taking

only short, circling flights, and spent most of his time on the roof of the Center. The parents both continued to feed him, and "Madonna" began trying to coax "Pippin" off the roof with food. Early morning on 14 August "McArthur" and "Pippin" were seen flying about a mile north of the Center, with "McArthur" stooping twenty times or more and "Pippin" coming up with his feet to meet the older male, until they disappeared from sight to the north.

"Pippin" was not seen downtown again until 17 August. For the next few days, "Madonna" spent several hours each morning, after making a kill, perched on a building with the bird and calling repeatedly. "Pippin" and "McArthur" were each seen only every few days, and "Madonna," too, was seen with increasingly less frequency through the Labor Day weekend.

HUNTING ACTIVITY

We observed very few actual kills. In most instances, "McArthur" or "Madonna" would take off from a perch and disappear between buildings, only to be seen a short time later perched with a dead bird. On several occasions, we witnessed what we believed to be "team" hunting by the pair, with "Madonna" flying high over the buildings or perched on a tall vantage point while "McArthur" flew low over the streets and shagged birds off their perches.

We were able to watch "Pippin" in pursuit of prey only once, on 27 August. He had been perched on the fifth floor of the Telephone Co., but became airborne, bumped into a window of a nearby building, and recovered. He then took after a small flock of pigeons, making a half-hearted attempt to strike one of them, and subsequently aborted the

chase and flew off to the north. While still frequenting the downtown area, he was harassed every time he became airborne, and was unable to spend time "practicing" hunting the way the hacked chicks had last year.

We recovered remains of a number of prey items throughout the summer. The vast majority of prey taken was Rock Doves, followed by Yellow-billed Cuckoos and Black-billed Cuckoos) and European Starlings early in the season. The following list of the species we identified is arranged according to frequency of occurrence: Rock Doves (*Columba livia*), Yellow-billed Cuckoo (*Coccyzus americanus*), European Starling (*Sturnus vulgaris*), Black-billed Cuckoo (*Coccyzus erythrophthalmus*), Blue Jay (*Cyanocitta cristata*), Common Grackle (*Quiscalus major*), Northern Oriole (*Icterus galbula*), Belted Kingfisher (*Ceryle alcyon*), Green-backed Heron (*Butorides striatus*), Sora Rail (*Porzana carolina*), American Woodcock (*Scolopax minor*), Mourning Dove (*Zenaida macroura*), Bank Swallow (*Riparia riparia*), Chimney Swift (*Chaetura pelagica*), Downy Woodpecker (*Picoides pubescens*), and Budgerigar (*Melopsittacus undulatus*).

UNUSUAL INCIDENTS

On 22 July, Greg received a call from First Wisconsin's security staff. "The FBI has requested that you and your assistant refrain from going out on the ledge until after Vice President Bush leaves town at 1:00. The secret service sharpshooters will be on the roof. . ."

On 4 August, after a brief rain shower, "Madonna" made a line-drive flight toward the First Wisconsin center where another unidentified peregrine was flying. When she approached, she began stooping the strange falcon and scream-

ing, gradually driving it to the north out of her territory.

More nasty weather was moving in, with incredible lightning to the west, but nobody wanted to be the wimp and be the first to leave the roof where we had been observing the falcons. Greg informed us that lightning wasn't dangerous until it made your hair stand on end. Annie looked at Greg. "Greg," she said, "Your hair is standing on end." He turned. "Yours is too. Let's get outta here." There was no argument.

COMMENTS

Needless to say, when Greg discovered the newly hatched chicks in the box, we were ecstatic. We hadn't expected falcons to nest here so soon. We were especially surprised that these birds bred when only yearlings. They may be the only documented case of a successful nesting by two yearlings.

This summer's record heat, with five days over 100° and over thirty days over 90°, slowed the falcons down almost as much as it slowed us down. They were rarely active except early morning and late evening, and spent most of their time perched out of sight (presumably in the shade somewhere) once the chicks were out of the nest.

"McArthur's" aggressive behavior was totally unexpected, and the source of immeasurable frustration for us. The experts we consulted could only offer moral support because this behavior is rarely observed and never to the degree and extent we observed.

Steve Sherrod, in *Behavior of Fledgling Peregrines* (1983), suggests that this behavior may be intended to keep youngsters out of the reach of aerial predators while their flight is unsteady. Also, "it is interesting to note that surviving suba-

dult falcons which returned to hack sites from the preceding year, appeared to react somewhat like parents in this respect. The aggressive stoops by which the subadults forced the young down, however, were of a more serious nature, and they often hit the youngsters a forceful blow. The stimulus in this case seems to be a 'new falcon' flying in the area, and aggression is the response."

We feel that "McArthur's" immaturity played a large role in his behavior. He acted more like the subadults referred to by Sherrod than a typical parent. Although he was a parent, he was still a subadult and showed this type of behavior. Perhaps in the future his aggressiveness will be tempered by maturity and experience, and he will no longer strike his offspring. Defensive behavior, however, should normally be an asset, especially for peregrines nesting where predators pose a threat to their offspring. It will be interesting to observe his behavior should he return next year.

We seemed to be constantly confronted with situations which forced us to decide whether or not to intervene on the falcons' behalf. We sought advice on many occasions, but with several of our problems we were told that we were on our own—no one had previous experience with our particular situations. Several times we chose intervention rather than a hands-off approach, especially if we felt the chicks were at risk. We felt the location of the hack box, while suitable for releases, had drawbacks as a nest site. Unlike most urban hack sites, our box is not located on the roof of the building, where the youngsters would have a confining "playpen."

Urban sites have particularly high public visibility, and we felt that continued public support, which is vital to a program such as this, was a factor that

must be taken into consideration. We realize that at any site chicks may be lost, with normal mortality often 50% or greater. At the same time, we wanted to protect the chicks from unreasonable risk. Once the chicks were out and flying, they were, by necessity, on their own unless they hit the street. It will take some time to get the "bugs" out of balancing intervention with "letting nature take its course." We hope "McArthur" and "Mariah" will be back next year and that their behavior improves so that interventions are not needed so often.

A NOTE OF THANKS

In a project like this, particularly during the trying times, it was especially gratifying to find so many persons and organizations so willing to help. The project's major sponsors were the Department of Natural Resources Bureau of Endangered Resources, the First Wisconsin Bank, the Marcus Corporation, and the Milwaukee Public Museum. We especially appreciate the advice, support, encouragement, and patience extended by Drs. Pat Redig, and Bud Tordoff. Special thanks are extended to our volunteer falcon watchers, Ron Gutschow, Penny Gonzalez, Mike Langer, Mary Ellen Young, and Richard Wagner and all those who reported sightings early this season. Thanks also go to: Charlie Gieck, DNR; Dick Griffith, Olivia Wong, Phil Belair, Amy Taran, and the Security staff, First Wisconsin Bank; Bob Shinnors and Charlene Kepler, Trammel Crow Corp.; Steve Marcus, Marcus

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The 1988 Peregrine Falcon Release at Madison, Wisconsin

In 1988 six Peregrine Falcons were hacked from the top of Van Hise Hall on the University of Wisconsin-Madison campus. All of the birds eventually dispersed normally.

by Brian J. Ausloos and Ricky Lien

The success of the Wisconsin Peregrine Falcon Recovery Plan (Gieck 1988) depends on the annual release of 10–20 captive-produced falcons in Wisconsin until the goal of 20 breeding pairs is achieved. Peregrines have previously been released on the Mississippi River and in Milwaukee (Septon 1987). In 1988 birds returned to the Milwaukee release site (Septon and Wendt 1988), rendering that site unsuitable for further releases. The Mississippi River release sites were hazardous because of the threat of Great Horned Owl predation on young falcons. Madison was selected as the next most appropriate place to release birds. The Madison release site had much to recommend it; and, as the following report demonstrates, the site lived up to expectations and proved to be a very hospitable environment for peregrine.

SITE DESCRIPTION

The hack site was located on the University of Wisconsin-Madison campus. Van Hise Hall is the tallest building in

Madison, and it served nicely as the site for a hack box. Located only a few hundred yards from the south shore of Lake Mendota and about a mile from Lake Monona, this site offers large open areas for the released Peregrine Falcons to develop hunting skills and pursue prey. The tree cover along the shoreline of nearby Lake Mendota provided habitat for prey species, and some trees provided roosting areas for the falcons. The campus buildings in the vicinity of Van Hise also provided roosts for the birds. Van Vleck Hall, southeast of Van Hise Hall, was used as an observation post to monitor the birds activities. The Social Science Building, northwest of Van Hise, was used as a secondary feeding station for the birds.

The hack box was placed on the north edge of the roof of Van Hise Hall, overlooking Lake Mendota. Due to the lack of a wide ledge in front of the hack box, we released the birds through a small door on the east side of the hack box rather than through the large screened and barred door on the north face of the box. This prevented any birds from

bolting off the building as soon as the doors were opened. It also gave the birds a chance to walk around the roof of the building, feed on the Coturnix Quail we provided, and then move the ledge and take their first flights at a more relaxed pace.

PRE-RELEASE ACTIVITIES

The project had two initial set-backs. A young female Peregrine Falcon destined for release died just before being shipped to Madison. Then on the day the six remaining birds (Table 1) were to be shipped from Minneapolis to Madison, Northwest Airlines made a mistake in labelling two boxes of raptors being sent from the Raptor Center at the University of Minnesota. Labels for the box containing the peregrines and a box containing a young Cooper's Hawk were switched. The peregrines ended up in Mosinee and the Cooper's Hawk in Madison. Dr. Stanley Temple, brought the six falcons to Madison safely. It was decided to hold the birds until the following morning to allow the birds to settle down after the day's stressful confusion and heat. The birds were kept at Charmany Experimental Farm and banded that evening.

On July 8, 1988, the falcons were placed in the hack box, following an early morning press conference. For the next eight days the falcons were held in the

hack box until they were fully feathered. The birds were fed in the morning, and in the late afternoon or evening the box was opened so that food remains could be removed and a water pan filled. Water was always available to the falcons, and they were often observed sitting in it during the hottest portion of the days. Unseasonably hot weather made us concerned about heat stress, but the falcons seemed unbothered.

RELEASE NARRATIVE

On the morning of July 16, the birds were color-marked with non-toxic spray paint for individual identification and placed back in the hack box to calm down. As hoped, the birds left the box in a relaxed manner, leaving via the side door, exploring the roof and feeding on quail provided outside the box. The first falcon to leave the roof top was "WiFed." On the afternoon of the release day she slipped from the ledge and fluttered ungracefully to a lower ledge about 20 feet below. The rest of the day we anticipated first flights, but the birds were content to stay on Van Hise. A lot of wing flapping was observed.

The following day at 5:37 A.M., "Digby" made the first flight, circling Van Hise Hall three times. He attempted to land back on the roof top, but he slipped off the metal edging and landed with "WiFed" on the lower north

Table 1. Descriptions of the six Peregrine Falcons released in Madison, Wisconsin.

Name	Sex	Breeder	Hatch date	Placed in hack box	Released
Pooh	Female	Hunter	5/30/88	7/08/88	7/16/88
WiFed	Female	Couissens	6/01/88	7/08/88	7/16/88
Bandit	Female	Hunter	5/30/88	7/08/88	7/16/88
Bucky	Female	Hunter	5/30/88	7/08/88	7/16/88
Screamer	Male	Oliphant	6/01/88	7/08/88	7/16/88
Digby	Male	Hunter	5/30/88	7/08/88	7/16/88

ledge. "Screamer," the other male, made the second flight at 6:24 A.M., but he also missed landing on the roof top and ended up in a tree to the west of Van Hise. All birds had made their first flights by the evening of the third day. "Bucky" was the last bird to make a flight. These first flights were uncoordinated and clumsy. We were fortunate; no birds were injured.

All the falcons were able to make it up to the top of Van Hise to feed within a couple of days. A second feeding station placed on the nearby Social Science Building was not utilized until July 20. On that day all 6 falcons were flushed from the top of Van Hise Hall when fresh quail were placed on the roof. The falcons soon settled into a pattern of feeding at the Social Science site in the morning and on top of Van Hise in the evening.

HUNTING BEHAVIOR

Flying abilities developed rather quickly with a noticeable difference between the males and females. The males were more aggressive and usually the instigators in early mock combats. Flights at this time were short with the birds staying in the vicinity of Van Hise Hall. The vast majority of the falcons' non-flight time was spent on Van Hise Hall, the Social Science Building, Van Vleck Hall, or the Carillon Tower in front of the Social Science Building.

Aerial chases and mock battles between the falcons became increasingly common as time went by. Their attention eventually turned to the local Rock Doves (*Columba livia*), Chimney Swifts (*Chaetura pelagica*), Mallards (*Anas platyrhynchos*), Purple Martins (*Progne subis*), and Common Crows (*Corvus brachyrhynchos*). Although their chases were im-

pressive, no verification of a kill was made until August 10 when "Bucky" killed a pigeon near the WARF Building, approximately one mile west of Van Hise Hall. Unfortunately, the pigeon fell to the ground near the exit doors of the building just as most people were leaving to go home. "Bucky" abandoned this kill, but two hours later she killed another pigeon and was subsequently seen feeding on it.

The next witnessed kill occurred near Van Vleck Hall on August 17. Three falcons, "Digby," "Bucky," and "Screamer," were observed flying high above Van Vleck Hall when a Chimney Swift appeared approximately 45 feet out from the 9th floor window. About 30 seconds after a visitor said, "that bird better watch out," "Screamer" went into a stoop and caught the bird in mid-air. His momentum carried him near the ground, and he had to climb hard to land on the ledge in front of the 9th floor windows of Van Vleck. He shortly flew to the Social Science Building to feed.

Only one other kill was verified when "Digby" brought a Chimney Swift to the Carillon Tower to eat. These were the only verified reports of kills, but it was obvious that the birds were feeding on their own as more and more quail at the two feeding stations were being left uneaten.

CASUALTIES

We were fortunate at this release site to have all of our falcons survive to dispersal, when we lost contact with them. There were, however, some tense moments along the way. "WiFed" fell approximately 20 feet the first day out of the hack box, and several of the falcons were seen to hit buildings, but no in-

juries resulted. On September 16 "Bucky" crashed into windows on Russell Labs and was found dazed and lying on the ground. After being held for a short period and examined by Dr. Stanley Temple, "Bucky" was released, apparently none the worse for her experience. Dr. Temple reported that although "Bucky" wasn't fat, she seemed in good health.

DISPERSAL

On August 20, 35 days after release from the hack box, "Pooh" did not return to feed at the hack site. The falcons slowly started to become more independent as their hunting abilities developed. "Bucky," "Digby," and "Bandit" were the first birds to leave the area. The last recorded feeding at either feeding station occurred on September 6 when "Bucky" showed up on the Social Science Building. At this time it was difficult to keep food available for the falcons, as any food was soon discovered and eaten by American Crows. Crows were present during much of the project. At first content with waiting to get the scraps left when the falcons were finished eating, they became increasingly more aggressive, becoming so bold as to grab a falcon's tail feathers in an attempt to dislodge it from the quail. Up to two dozen crows could be seen surrounding a feeding falcon at times. Placement of quail was discontinued at the feeding stations on September 9, but after "Bucky" crashed into Russell Labs on September 16, quail were again placed on Van Hise every other day until early October.

Reports of falcon sightings allowed us to gain some idea as to where they had dispersed. A number of sightings placed one falcon in Middleton, on the western

edge of Lake Mendota. Other sightings reported falcons over the shores of Lakes Wingra and Monona or near the Hilldale shopping center. On October 1, "WiFed" was trapped at Cedar Grove Ornithological Station on the shore of Lake Michigan, some 85 miles northeast of Madison. She was in good condition, and she was released.

CONCLUSIONS

It is hoped that a pair of peregrines will return to the Madison area in the future. It is also possible that returning peregrines would utilize historical aeries along the Wisconsin River, Mississippi River, or Devil's Lake. Repeat releases from the Madison release site will be considered, if no falcons return.

The Peregrine Falcon program in Madison was definitely a success. We were fortunate to be able to use facilities on the University of Wisconsin-Madison campus for the peregrine release. As a result, the project was viewed by a large number of people. We appreciate the interest that was generated, as programs such as this could not continue without public support.

ACKNOWLEDGEMENTS

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Dr. Stanley Temple deserves special thanks for his patience and willingness to helping with even the smallest problem. It is doubtful that the peregrine program in Wisconsin would be at the point it is without his help. Thanks also to Anita Temple.

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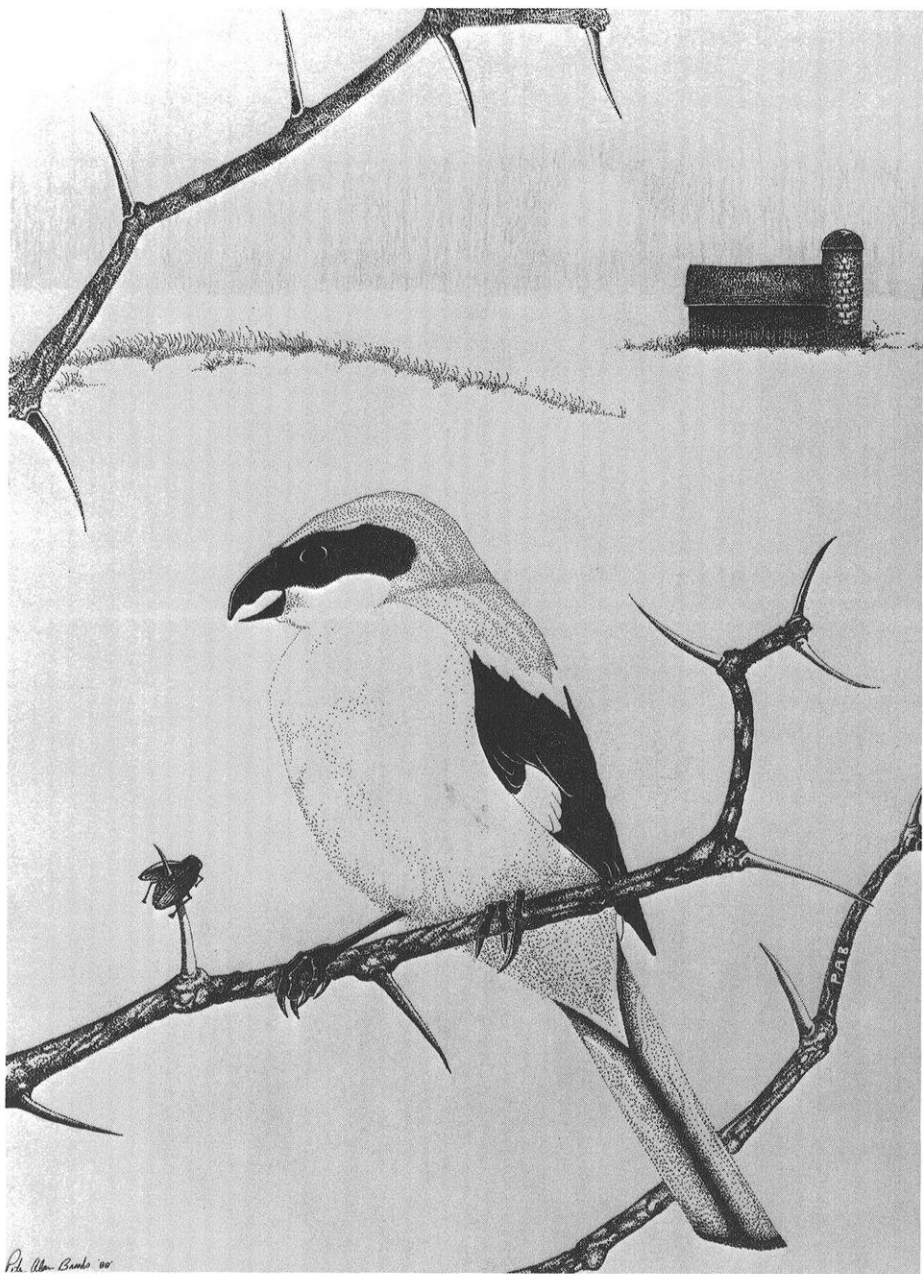
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Young Peregrine Falcons atop van Hise Hall (photo by UW News Service)



Loggerhead Shrike by Paul Alan Brooks

Can Birds be Indicators of Environmental Hazards?

by *Stanley A. Temple*

Most people have heard about the use of canaries in mines. In the past, miners took caged birds into the mine shafts with them to serve as indicators of hazardous conditions. Birds respond more sensitively than human beings to dangerous gases, like methane and carbon monoxide. If their caged birds stopped singing and became lethargic, the miners knew that they should leave the mine promptly, before the toxic gases became more concentrated and affected them as well. Out of this experience grew an expectation that birds could be used as versatile "bioindicators" that would respond to a variety environmental hazards before they could be detected by human beings.

This expectation gained much credibility during the "DDT-era" when birds responded negatively to the spread of organochlorine pesticides in the environment. In her classic book, *Silent Spring*, Rachel Carson focused on birds as bioindicators of pesticide contamination. Predatory birds—like Peregrine Falcons, Bald Eagles, and Ospreys—suffered reproductive failures in response to fairly low concen-

trations of pesticides in their environment. Again, birds seemed to be especially sensitive to an environmental hazard, and they provided an early warning of potential harm to human beings and the global environment.

These apparently successful applications of canaries and raptors as bioindicators notwithstanding, how generally useful are birds as sensitive indicators of environmental hazards? Are these few examples of successes the exceptions or the rule? To answer these questions a two-day conference was held at Wingspread in Racine, Wisconsin, in May 1987 (Sutcliffe 1987). Sponsored by the Cornell Laboratory of Ornithology and hosted by The Johnson Foundation, the conference participants focused on a number of important issues that I shall summarize here.

If bird populations are to be used as bioindicators, we must be able to detect the specific changes in bird populations that indicate the presence of an environmental hazard. But, just how well can we actually keep track of changes in bird populations? Because

of the ever-expanding interest in bird-watching, volunteer observers are now collecting unprecedented quantities of information on the status of bird populations. The Christmas Bird Count, Breeding Bird Survey, Bird-banding Laboratory, North American Nest-Record Program, Winter Bird Population Study, Breeding Bird Census, Colonial Bird Register, Project FeederWatch, and many local monitoring schemes—like our own Wisconsin Checklist Project—all generate useful data on bird populations in the U.S. From these data we know that bird populations change. Numbers fluctuate, reproductive success varies, and geographic ranges shift over time.

Nonetheless, we still need to know how well our various monitoring programs detect subtle population changes. Despite the volume of data being collected, in some cases we are only able to detect fairly major tilts in a population. The more subtle responses that might be the best early warnings usually go undetected. The Nest Record Program is, for example, our best source of data on the reproductive success of birds. Yet for most birds of prey, it would be difficult to use existing data to detect anything less than the types of major reductions in nesting success that were caused by DDT. Those reductions nearly caused some birds to become extinct; it would clearly be preferable to be able to detect less severe disruptions!

Small sample sizes and the lack of precision in some of our measurements of population characteristics are serious handicaps when it comes to detecting slight changes that may be important. On the other hand, existing population data do allow us to detect some types of changes and trends in

bird populations. They may not be as precise as we wish, but many of the changes and trends are real, and they beg an explanation.

Perhaps the greatest challenge in using birds as bioindicators is identifying the exact cause of an observed change in a population. The frustrating reality is that many events in the environment cause similar responses in bird populations. Suppose the results of Breeding Bird Surveys convince us that a local population has suffered a decline. Just because we are certain that the local breeding population has declined does not mean we can readily explain why. Was it poor reproduction during the previous year's nesting season? poor overwinter survival of birds on their wintering grounds? or did birds move elsewhere in response to a local shortage of food during the current nesting season? If it was poor survival over the winter, was it due to severe weather? an epidemic of a disease? tropical deforestation? pesticide poisoning? food shortage? or some other factor? Without a lot of additional information, the change we detected in the local breeding population can not be tied to a specific cause.

Changes in numbers are usually the most evident and easily detected changes in bird populations, yet they are also the most difficult changes to associate with a specific cause. On the other hand, changes in rates of reproduction or mortality are usually much more easily and directly linked to changes in the environment. In stepwise fashion an environmental perturbation may affect rates of reproduction or mortality, which in turn may cause changes in population size.

Few of our programs for monitoring bird populations measure rates of re-

production and mortality, but many monitor population size. Hence, we have a lot of data that are difficult to use in establishing cause-and-effect relationships but relatively few data that are really useful.

So, in the end, are birds really good bioindicators? The conclusion reached by the participants at the Wingspread conference (Temple and Wiens 1989) and others (Morrison 1985) is that the prospects are not especially good. Bird populations change, to be sure, and many of these changes are related in one way or another to underlying changes in the environment, but knowing exactly what has caused the population changes is usually beyond our grasp. There are too many complicating variables, it is too difficult to associate cause with effect, and it is too difficult to know what sorts of changes indicate that something in the environment is really awry. Responses to persistent, long-term hazards in the environment can be detected over time (as happened with DDT and birds of prey), but by the time we make the cause-effect linkage, major and often irreversible changes may have occurred in the bird population.

Does this mean we should not monitor bird populations? Of course not. Although birds may not be the ideal

early warning system that some environmentalists had hoped for, they can still tell us much about what is happening in their (and our) environment over the long run. We need to make better use of existing data on bird populations, and we need to collect much more data if we hope to be able to make sense out of the messages bird populations are telling us. Furthermore, even though it's not nearly so much fun, we also need to pay as much attention to recording what's happening in the environment as we do to counting birds. Only if data on the environment and the birds living there are collected in concert can we interpret the changes we see in our bird populations.

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G. W. Featherstonhaugh (*from the Collection of the Minnesota Historical Society*)

A Tory in the Wisconsin Wilderness

by Michael J. Mossman

In 1834 the U.S. Government hired George W. Featherstonhaugh (1780–1866) as its first geologist. During the next 4 years this stuffy-but-observant Englishman traveled throughout the eastern U.S. recording geological data and his frontier experiences. During the autumn of 1835 he followed the famous Fox-Wisconsin waterway from Green Bay to Prairie du Chien, then up the Mississippi well into present-day Minnesota, returning again down the Mississippi to Illinois and beyond. In the spring of 1837 he returned to explore the booming lead-mining district of southwestern Wisconsin.

Featherstonhaugh eventually published popular accounts of his travels in two books: *Excursion Through the Slave States* in 1844 and *A Canoe Voyage Up the Minnaw Sotor* in 1847. The latter 2-volume text was reprinted by the Minnesota Historical Society in 1970, and about a fourth of it relates his travels through what is today Wisconsin. Writing for a British audience, not long after the American Revolution and the War of 1812, Featherstonhaugh was often caustic in his descriptions of un-

refined, egalitarian frontier life. "Nothing is more fatal," he thought, "to religion, morality, integrity and sober manners, or more sure to accomplish the ruin of a nation, than frequent elections, universal suffrage, and perfect equality." Yet pompous as his writings may be, they were typically humorous, often probably accurate, and—at the least—a refreshing counterpoint to the romanticized view of early America with which we are so familiar. They also described some experiences with bird life and the environment in which it thrived.

When Featherstonhaugh began his journey in 1835, Wisconsin was part of the Michigan Territory. The white population was less than 10,000, but it was beginning to grow rapidly, especially south of the Fox-Wisconsin waterway where all lands had been ceded by various Indian tribes during the previous six years. The landscapes he encountered were relatively untouched by white settlement, except for occasional garrisons and traders' cabins, the villages of Navarino (at the present-day site of Green Bay) and Prairie du Chien, and the shot-tower near today's Spring Green.

On 22 August, Featherstonhaugh set off with a newly hired crew of five French-Canadian voyageurs and a fellow geologist whom he disliked and neglected to mention in his book. From Navarino they paddled their heavily laden birchbark canoe up the Fox River. Today one of the most heavily industrialized sections of river in the Midwest, the lower Fox was then pristine and wild, with formidable rapids.

"As we advanced [toward the rapids at Kaukauna] the river widened, and the country became strikingly beautiful, the banks, with fine trees here and there interspersed, sloping gracefully down on each side, as if the river was gliding through an amphitheater."

Continuing along the west shore of Lake Winnebago they ascended the Fox again where the city of Oshkosh now stands, and traveled along winding channels, lakes and marshes which have since been flooded to form Lake Butte des Morts. Here they encountered "immense quantities of *Zizania aquatica*, or wild rice. . . and a serpentine channel between lofty plants. . . 10 feet high bearing a great crop of seed." They camped amid the marshes that third night of their journey. While the voyagers slumbered outside, Featherstonhaugh spent much of the night singeing wings off the mosquitoes that lined his tent, until,

"forming determinations never to encamp in tall grass again, I at length fell asleep, and became the unresisting prey of these little demons, who, I found in the morning, had amply revenged on my face the slaughter of their race."

The next day they traveled roughly from present-day Omro to Princeton.

"we. . . pursued our way in a strong fog

along the low flat banks of the river, filled with the zizania. Further on the country began to rise, and groups of trees to become more plentiful. . . I climbed a lofty tree, and, the fog having cleared away, got an extensive inland view of the country, which was a perfect wilderness and nearly a dead flat, without any vestige of man or his labors. . . Oak, ash, and elm trees, with many shrubs, grew in every direction."

Later on,

"I heard the rail frequently crying, and sometimes flushed them up. . . We stopped for the men to eat and smoke a pipe in a country not very well wooded, open oak lands with low sandy bottoms, containing sedge, wild cane, and zizania. We were now about 100 miles from Green Bay, and a more perfect wilderness could not be imagined; nothing alive to be seen but black snakes [probably northern banded water snake, *Nerodia sipedon*], red-winged blackbirds, and the plaintive quail."

The next morning they approached the lake we now know as Puckaway:

"At 11 A.M. there were no longer any banks to the channel, and we appeared to be going through an ancient lake grown up with reeds and zizania. About 2 P.M. we had struggled through all this tall grass, and got to a lake called *Apachquay*, or "Lake of Rushes." . . Here we were obliged to paddle through an immense long field of zizania growing in the water. At half-past five we landed for the evening, and were obliged to encamp in the long grass, there being nothing else near us. I had a glorious scene here at sunset, that luminary lighting up with his parting beams several thousand acres of zizania, extending at least five miles in one direction and two miles in the other; the heads of the plant all waving gently about, as we sometimes see those of an extensive wheat-field do. . . the wild

ducks concealed amongst the plants were quacking loudly, the Red-winged Blackbirds were issuing from them in clouds, and the night hawks were wheeling about and screaming in every direction. Take it altogether, it was one of the most rare and pleasing scenes I ever witnessed."

Continuing the next day along the circuitous course of the Fox, some of which has since been obliterated by Buffalo Lake, Featherstonhaugh was

"exceedingly amused with seeing the tringa [apparently a general term for sandpipers] skip nimbly from one leaf to another, floating near the shore, to pick up the insects; they seemed to have remarkably fine sport. . . In every direction the country was covered with long wild grass; the buffalo, that formerly used to keep it down, having been driven to the other side of the Mississippi."

Struggling through thick beds of wild rice, they arrived at Fort Winnebago, near today's city of Portage.

"Fort Winnebago. . . is built upon an elevated piece of land, with Fox River and the rice-marshes connected with it in front. To the south-west there is a range of hills, call Bonibou [Baraboo], which form an agreeable object. . . we had a very agreeable walk, during which we sprung several very large grouse (*Tetrao cupido*) [Greater Prairie-Chicken]. These birds seem to flourish on this high dry land. . ."

From here, it took the crew just 2 days to portage to the Wisconsin, "a powerful black-looking stream," and canoe downstream to its confluence with the Mississippi, "roaring out our chansons as we shot rapidly past the picturesque islands and graceful banks." On sandstone cliffs along the lower portion of this stretch, they found Indian petroglyphs; and "the swallows had availed

themselves of the softness of the rock by picking holes in it, and building their nests there in innumerable quantities."

These were apparently Cliff Swallows, for when Featherstonhaugh revisited the shot-tower (at today's Tower Hill State Park) in 1837, he found that

"The colony of swallows, too, which I had observed in 1835, had increased greatly, continuing to make holes in the face of the soft sandstone with their beaks, and filling them with nests of clay, having small orifices; in some instances the nests were built upon the face of the vertical escarpment. Many hundreds of them had established themselves in the rock; some of the nests had eggs, and from others young birds were peeping out. It was truly a very pretty sight."

After spending 2 days at the pioneer village of Prairie du Chien, they paddled northward against the current of the Mississippi. On 4 September they camped south of LaCrosse, where Featherstonhaugh scaled a river bluff to view the Mississippi.

"I seemed to look down upon an immense forest, growing upon innumerable islands, among which various streams were gliding. Some of the islands were so extensive as to contain ponds of considerable extent, and large areas of the zizania, already frequented by the wild fowl, which had begun to arrive from the north in immense quantities. . . These scenes never satiate the eye and the mind; and I availed myself of every opportunity, when we landed, to renew the enjoyment of them. Whilst wandering about here, I sprung two beautiful broods of *Tetrao* [Sharp-tailed Grouse], which immediately took to the trees. I could have shot several of them, but had not my gun with me."

That night, apprehensive of the Sioux

and Chippewa country that lay ahead, Featherstonhaugh listened to Barred Owls around his campsite.

"... my people [crew], who cared nothing about being in wet clothes, as soon as they had made their accustomed carnivorous meal, and enjoyed their noisy conversation and their pipes, wrapped themselves up in their blankets, and were soon all asleep. Left, whilst standing by my fire, to the uninterrupted action of a busy imagination, I was struck by the apparently intelligent manner in which the owls and other night-birds answered each other. Every now and then an owl to the north, not more perhaps than 200 yards from the camp, would put his questions in a rather startling and distinct manner, and after a measured interval of time, the response, equally distinct, would be heard from the south, very near to me. . . I was very much interested in this; everything connected with natural history is pleasing to me; and the effect was exceedingly increased by the locality, the adventurous life I was leading, and the hour of the night. But what, more than anything else, excited my imagination was the knowledge I possessed that the Indians are such exquisite mimics of natural sounds; and that one of their tricks, when hovering about a camp, is to imitate the cries of night-birds, to lull their intended victims into confidence, and to communicate to each other their observations and intentions."

Finally he vented his anxiety. . .

"I retired to my tent, to rival the worst murders of the Indians, in an uncompromising destruction of myriads of mosquitoes; my satisfaction at seeing them jump back into the candle being equal to that of an Indian, perhaps, when he has torn the scalp from his enemy's head."

The next evening as they landed north of LaCrosse, one of the men knocked

a large "Tetrao", certainly a sharptail, from a tree. The following morning,

"The rain began to come down in torrents again about 4 A.M., and peeping out of the tent, I saw all the people with their heads and bodies wrapped up in their blankets, profoundly asleep, and snoring as if nothing could awaken them. About 7 A.M. it cleared off again, and whilst they were striking the camp, the serjeant and Beau Pre' killed five large birds like the one of the preceding evening. These birds are as yet so unaccustomed to man, that they sometimes permit themselves to be knocked from their roost."

Along the stretch of river now bordered by Buffalo County, the crew saw a flock of American White Pelicans, and "shot a great many wild pigeons, which being fat were a very acceptable addition to our larder."

These men were certainly very familiar with the Passenger Pigeon, which in the 1830's was probably among the most abundant birds in Wisconsin. Perhaps on this hunt Featherstonhaugh was reminded of his other experiences with this species, such as that described from the Arkansas Territory in his book, *Excursion Through the Slave States*.

"... flocks of them many miles long came across the country, one flight succeeding to another, obscuring the daylight, and in their swift motion creating a wind, and producing a rushing and startling sound, that cataracts of the first class might be proud of. These flights of wild pigeons constitute one of the most remarkable phenomena of the western country. I remember once, when amongst the Indians, seeing the woods loaded from top to bottom with their nests for a great number of miles, the heaviest branches of the trees broken and fallen to the

ground, which was strewed with young birds dead and alive. . . A forest thus loaded and half-destroyed with these birds, presents an extraordinary spectacle which cannot be rivalled; but when such myriads of timid birds as the wild pigeon are on the wing, often wheeling and performing evolutions almost as complicated as pyrotechnic movements, and creating whirlwinds as they move, they present an image of the most fearful power. Our horse, Missouri, at such times, has been so cowed by them, that he would stand still and tremble in his harness, whilst we ourselves were glad when their flight was directed from us."

Featherstonhaugh passed the mouth of the St. Croix River into present-day Minnesota on 10 September, and returned downstream on 22 October. The next day,

"... we suddenly came upon Lake Pepin, and the weather having improved into a fine sunny morning, the spectacle which presented itself was as rare and beautiful as any I had seen the whole summer. Upon the smooth and glassy surface of the lake hundreds upon hundreds of noble swans were floating with their cygnets, looking at a distance like boats under sail. The cygnets were still of a dull yellow colour, and all the birds were very shy. It made a beautiful picture, and, after contemplating it awhile, we again plied our paddles. . ."

These were probably Tundra Swans, which still migrate in numbers along this section of the Mississippi. Some may have been Trumpeter Swans, large migrations of which had perhaps by 1835 become a thing of the past on the Mississippi River.

Approaching Dubuque on 30 October, the explorers left the Wisconsin wilderness.

"Evidences of an advancing population

increased upon us as we pursued our way, to my great regret. There was now an end to all the attractive simplicity and independence of the roving life I had been leading in the Indian country. I should soon be in the vortex of a white frontier population, must abandon my canoe, exchange the peaceful tent, pitched on the clean bank of an interesting river, for dirty accommodation at some filthy tavern, and make up my account to pay in money for every act of civility I might receive."

Featherstonhaugh returned in May 1937 to journey overland through southwestern Wisconsin. This region west of Madison and south of the Wisconsin River contained nearly half the white population of the newly designated Wisconsin Territory, and was growing rapidly with the continued influx of lead miners and speculators. But European immigration had not begun, and the land remained essentially unscathed by the ax and plow. Although Featherstonhaugh's account of this trip is most fascinating for its sardonic descriptions of pioneer life, it does include a few references to nature. For example, he scared up "a great many fine tetrao" along the Pecatonica River near Mineral Point. Near Blue Mounds on 1 June, "I rose at early dawn, and took a walk on the prairie, where plover were feeding in the freshness of the morning, and where I started several tetrao." These plover were apparently Upland Sandpipers, whereas the "tetrao" may have been either Greater Prairie Chickens or Sharptailed Grouse.

Featherstonhaugh is eloquent in depicting the prairie and oak savanna in which these birds were found, for instance between Blue Mounds and Madison:

"we. . . got into one of the most exquisitely beautiful regions I have ever seen in any part of the world. The prairie that had hitherto [westward] been distinguished by a regular rolling surface, here changed its character, and took the form of ridges somewhat elevated, which frequently resolved themselves into masses of gracefully-rounded hills, separated by gentle depressions, that occasionally became deepened valleys. In these, some of the heads of a stream called Sugar River, a tributary of Rock River, took their rise. In whatever direction our eyes were turned, the most pleasing irregularities of surface presented themselves. But that which crowned the perfection of the view, and imparted an indescribable charm to the whole scene, from the knoll where we stood to the most distant point where the alternate hills and vales blended with the horizon, was the inimitable grace with which the picturesque clumps of trees, that sometimes enlarged themselves into woods, embellished this rural landscape from the hand of Nature. . . America will justly boast of this unrivalled spectacle when it becomes known, for certainly it is formed of elements that no magic could enable all Europe to bring together upon so great a scale. . . every moment produced a new excitement; the occasional glimpse of the shy deer, with their elegant fawns, and the more frequent flushing of the prairie-hen from her nest, gave animation to the still beauty around us."

Like other historical accounts, *A Canoe Voyage Up the Minnaw Sotor* is more evocative than thorough in its description of early Wisconsin wildlife. Yet

these various sources together provide an historic perspective essential to understanding today's wildlife populations, and the changes they continue to undergo. They illustrate the adaptability of species, such as the Cliff Swallow, which has disappeared from many cliff sites such as those near the shot-tower since settlement but now nests commonly beneath highway bridges that span the nearby Wisconsin. At the same time they attest to the subsequent loss of species such as the Passenger Pigeon; the severe fragmentation of our prairie grouse populations; or the decline of wetlands such as those at Lakes Puckaway, Buffalo, and Butte des Morts as a result of ditching, shoreline development, inundation from artificial dams, and the introduction of carp.

Yet while moving us to lament such losses, the "words of ornithologists past" can also help reveal the potentialities of this Wisconsin land and impel restoration efforts. And by reading the experiences and feelings of observers long ago, we enrich our own encounters with the same places and creatures, and may even hear—as did a wet and uneasy Englishman 150 years ago—Indian voices in the calls of a Mississippi River owl.

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Birds of Southern Wisconsin Floodplain Forests

by *Michael J. Mossman*

Some of Wisconsin's wildest and most luxuriant forests lie within the floodplains of major streams and rivers. Because of their high water table and characteristic, periodic flooding, relatively few lowland forests have been converted to agriculture, and many have been incorporated into state and federal preserves. Thus, they now provide some of the largest continuous tracts of natural habitat in the midwest, and support migrant and breeding bird faunas that are distinctive and especially rich. The observer who explores these swampy woods must often deal with poor access, and aggravations such as mosquitos, poison ivy, nettles, and mud. Consequently, the bird life of these forests is less well known than that of many other, more accessible habitats in the state. This article describes the floodplain forests and their avifauna, and details some representative sites.

This discussion of floodplain forests is limited to those without conifers, and which occur mainly in the southern half of the state. The most extensive tracts border the Mississippi and lower Wisconsin Rivers, especially where their

major tributaries enter (Figure 1). Substantial stands are also found along other rivers such as the Sugar, Rock, Baraboo, Yellow, Black, Chippewa, and Wolf, and as far north as the St. Croix and lower Peshtigo. Smaller tracts occur along many rivers and streams. A related type of habitat—lacustrine forest—forms swamps on poorly drained soils of lake margins or extinct lake beds, where surface water fluctuations are less extreme than in the river and stream bottoms; they are treated briefly in this paper.

Curtis (1959) combined these lacustrine and floodplain forests into the broad category of "southern lowland forests." Within this category, he used plant species composition rather than site characteristics to distinguish two forest types (Table 1). The more open-canopied "southern wet forest" is dominated by the most flood-tolerant tree species such as silver maple, willow, and cottonwood (Figure 2). The generally more close-canopied "southern wet-mesic forest," on drier or more stable sites, is dominated by American elm, silver maple, and green ash, with a complement of more mesic species

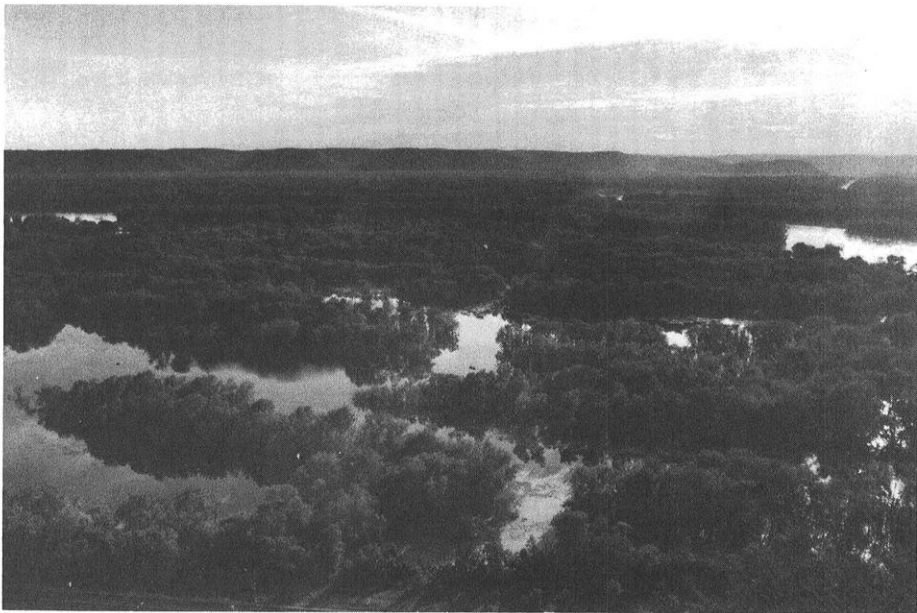


Figure 1. Mississippi River floodplain forest, Vernon County.

such as basswood and red maple (Figure 3). Southern lacustrine forests are included in both wet and wet-mesic categories, and are often dominated by black ash and red maple. The most common groundlayer species in wet forest are wood nettle (*Laportea canadensis*), poison ivy (*Rhus radicans*), and

grape (*Vitis riparia*); in wet-mesic forest they are woodbine (*Parthenocissus vitacea*), wood nettle, and jewelweed (*Impatiens biflora*).

These forests tend to have affinities to lowland forests farther south, and several southern plant species find their way northward into Wisconsin only

Table 1. Ranking of the 7 most important tree species in southern Wisconsin lowland forests, based on average importance values of Curtis (1959).

Species	Rank in:	
	Wet Forest	Wet-mesic Forest
Silver maple (<i>Acer saccharinum</i>)	1	2
Willow (<i>Salix nigra</i>)	2	
Cottonwood (<i>Populus deltoides</i>)	3	
American elm (<i>Ulmus americana</i>)	4	1
River birch (<i>Betula nigra</i>)	5	
Swamp white oak (<i>Quercus bicolor</i>)	6	6
Green ash (<i>Fraxinus pennsylvanica</i>)	7	3
Basswood (<i>Tilia americana</i>)		4
Black ash (<i>F. nigra</i>)		5
Red maple (<i>A. rubrum</i>)		7



Figure 2. "Open" Wisconsin River slough, Crawford County.



Figure 3. "Closed" Wisconsin River slough amid silver maple, Grant County.

along these corridors of habitat. For example, sycamore (*Platanus occidentalis*) occurs only in the southernmost Wisconsin counties along the Sugar, Mississippi, and Wisconsin Rivers; and river birch is common along the Wisconsin and Mississippi Rivers and their tributaries, especially where the woods have been grazed, as far north as Buffalo and Wood Counties.

Because of frequent flooding, shrubs and tree seedlings have a difficult time becoming established, and so mature lowland forests often exhibit a fairly open understory, with large trees spaced well apart, their canopies spreading to form a cathedral-like ceiling. Poison ivy, grape, and woodbine commonly form heavy vines, or lianas, that reach into the canopy. Herbaceous ground cover may vary considerably between years, depending on the extent and longevity of flooding. Severe flooding may raise the water level four or more feet. It is usually limited to the spring season, but may extend well into the summer. During late June 1984, for example, one could easily canoe through extensive tracts of Mississippi River bottom woods, over ground that the previous June was dry and covered with nettles and poison ivy. Since wet-mesic forests occur on drier or more stable sites than do wet forests, their understory is typically better developed and more diverse. In general, southern wet forest succeeds to wet-mesic forest, and wet-mesic forest succeeds to mesic (sugar maple-basswood) forest only with a long-term drop in the water table or in the severity of flooding.

Southern floodplain forests are typically dissected by slough channels, former oxbows, and beaver flowages, where trees are killed or precluded by

prolonged flooding. Floods also leave tangles of dead branches and detritus along sloughs. Sand or mud are often exposed on spits or slough margins, and commonly develop stands of dense willow saplings or shrubs, such as buttonbush (*Ceanothus occidentalis*). Canopy openings also occur as a result of disease, especially Dutch elm disease, which has virtually eliminated the American elm as a dominant canopy species since the time of Curtis' work. This has opened up the canopy of most wet-mesic forests, and somewhat obscured their distinction from wet forests.

Floodplain forests have suffered other losses and disturbances as a result of human activities, such as logging, grazing, ditching, conversion to agriculture, and inundation by dams. But, because of the difficulty of converting these forests, they have fared better than many of Wisconsin's native habitats. Comprising only 420,000 acres prior to settlement, southern lowland forests of moderate to high quality still cover some 32,000 acres, or 8% of their original extent. As other native habitats were decimated, corridors of lowland forests emerged as among the largest and probably the most viable remnants of natural plant and animal communities statewide, and especially so in the southern half of the state. They have become increasingly important as places for various forms of recreation, including hunting and fishing, as mitigation against flooding, as corridors of plant and animal migration and dispersal, and as breeding habitat for birds that require mature or extensive forests.

Much of Wisconsin's southern floodplain forest is owned and managed by public agencies and utilities.

The U.S. Fish and Wildlife Service manages many thousands of acres along both sides of the Mississippi River, as part of the Upper Mississippi National Wildlife and Fish Refuge. Water levels along this entire stretch of river are regulated by the U.S. Army Corps of Engineers at a series of 10 locks and dams. Many of the southern floodplain forests of the St. Croix River are managed by the National Park Service as a National Scenic Riverway. Privately owned, public utilities such as the Wisconsin Power and Light Company and Wisconsin River Power Corporation own substantial acreages along the Wisconsin River in association with their hydroelectric dams and reservoirs.

The Wisconsin Department of Natural Resources (WDNR) owns and manages several thousands of acres as state parks and wildlife areas along many floodplains, such as the Mississippi, Wisconsin, St. Croix, White, and Wolf Rivers. State Natural Areas have been designated within some of these state and federally owned tracts, and have been purchased by WDNR elsewhere, sometimes with the assistance of The Nature Conservancy. Today, these various agencies protect a total of 16 designated natural areas of this community type, comprising several thousand acres.

The importance of riverbottom corridors to migrant birds is well known among birdwatchers, many of whom travel regularly to sites such as Wyalusing, at the confluence of the Wisconsin and Mississippi Rivers, to view spring and fall migrations of songbirds and raptors. The bottoms are also popular birding spots in winter for Golden-crowned Kinglet and Brown Creeper, most woodpeckers, the occasional Yel-

low-rumped Warbler feeding on poison ivy berries, species such as Song Sparrows that frequent springs, and the Bald Eagle and various gulls and waterfowl that concentrate at open water.

It is during the nesting season that the birdlife of floodplain forests is most intriguing. At this time, resident birds tend to segregate into the particular breeding microhabitats to which they are especially adapted. My discussion of this avifauna is based mainly on data from the Natural Areas breeding-bird survey program (Mossman and Matthiae 1988), especially from surveys I conducted by foot and canoe in 85 floodplain stands during 1978–86. These stands were between 40 acres and several hundreds of acres in size, located along 19 rivers in 22 counties. They include 11 of the state's 16 designated natural areas of this type, and many other public and private tracts of moderate to high quality. Surveys lasted from one to several hours. The number of individual birds recorded per survey ranged from 30 to approximately 400. Birds of adjacent habitats such as marshes, shrub swamps, and upland forests, were not counted in these surveys, even when these habitats interdigitated with the floodplain forests. I counted birds in open channels and shorelines only when channels were less than about 30 m wide.

Although I usually estimated percent cover of canopy and understory species during these surveys, it was often difficult to classify stands as either wet or wet-mesic. This was because of the problem with elm die-offs, the mosaic pattern of wet and wet-mesic microsites within many stands, and the composition of most stands being roughly intermediate between wet and wet-mesic (e.g., dominated by silver

maple, with small, approximately equal proportions of green ash, river birch, and swamp white oak). However, trends were apparent in the distribution of some bird species along the gradient from wet to wet-mesic. More obvious differences were found between the avifaunas of "open" stands that were dissected with many open sloughs and channels, and "closed" forest in which sloughs or channels were fewer and mostly covered by tree canopy.

Table 2 summarizes the frequency of occurrence, general abundance, and habitat associations of 91 species encountered on the 85 breeding-bird surveys. Missing from the table are a few species that breed uncommonly in floodplain forest, including Double-crested Cormorant, Osprey, Wild Turkey, Cooper's Hawk, and Screech Owl. The most frequently encountered species, in descending order, were: Great Crested Flycatcher, Eastern Wood-Pewee, Song Sparrow, Northern House Wren, American Robin, American Redstart, Northern Oriole, Downy Woodpecker, Blue-gray Gnatcatcher, and Blue Jay. Other less common species may also be considered characteristic of southern floodplain forests, since they are more abundant here than in most or all other habitat types in Wisconsin. These include the Yellow-crowned Night-Heron, Wood Duck, Red-shouldered Hawk, Barred Owl, Yellow-bellied Sapsucker, Tufted Titmouse, Brown Creeper, Warbling Vireo, and the Prothonotary, Kentucky, and Yellow-throated Warblers.

I also surveyed 5 southern lacustrine swamps, and found a bird fauna similar to that of floodplain forests. Great Crested Flycatcher and Common Yellowthroat were most common. There were relatively more Hairy Woodpeck-

ers, Veeries, American Robins, and Scarlet Tanagers, and fewer Red-bellied Woodpeckers, Warbling Vireos, and Prothonotary Warblers than in floodplain forests. Northern species such as Winter Wren, Golden-winged Warbler, Canada Warbler, and Northern Waterthrush occurred in some stands near the tension zone.

There are several distinctive features in the floodplain forest avifauna. One is the large number of fish-eating species, including Double-crested Cormorant, 4 species of herons, Great Egret, Belted Kingfisher, Bald Eagle, Osprey, Hooded Merganser, and even Common Grackle. Several of these fish-eaters nest colonially. Great Blue Herons nest in many floodplain and lacustrine forests, as well as upland sites, singly or in colonies ranging in size from 2 to over a thousand nests. The largest and most stable colonies occur in mature stands that are isolated from human disturbance. Great Egrets have nested in recent years among several of the largest Great Blue Heron colonies on the Mississippi River, as well as in floodplain forests of the Wolf and Embarrass Rivers, and Fourmile Island State Natural Area in Horicon Marsh. Yellow-crowned Night-Herons apparently nest singly or in very small colonies in floodplain forests along the lower Baraboo, Wolf, Yellow, lower Wisconsin, and Mississippi Rivers. Black-crowned Night-Herons nest mostly in cattail and bulrush marshes, shrub swamps, and isolated shrub- or tree-covered islands, but occasionally in floodplain forest. Although Double-crested Cormorants usually nest on isolated snags and islands, they sometimes nest within floodplain forests, such as the Ambrough Slough Great

Table 2. Abundance and habitat associations of birds breeding in southern Wisconsin floodplain forests.

Species	Frequency (%) ¹	Abundance ²	Habitat Association
Great Blue Heron	58	C	Open or wooded sloughs
Great Egret ³	5	U	Open sloughs
Green-backed Heron	25	U	
Black-crowned Night-Heron	1	R	
Yellow-crowned Night-Heron ³	4	U	Extensive forest
Wood Duck	55	C	Open or wooded sloughs
Mallard	15	U	Open or wooded sloughs
Blue-winged Teal	4	U	Open sloughs
Hooded Merganser	7	U	Wooded sloughs
Turkey Vulture	7	U	
Bald Eagle ³	1	R	
Red-shouldered Hawk ³	32	FC	Moderate to large tracts
Broad-winged Hawk	1	R	North only
Red-tailed Hawk	4	U	
Ruffed Grouse	1	R	Drier sites, near uplands
Sandhill Crane	1	R	
Spotted Sandpiper	5	U	Stream, river and slough margins
Black Tern	1	R	
Mourning Dove	21	U	
Black-billed Cuckoo	4	U	More common northward
Yellow-billed Cuckoo	65	C	Canopy of closed or (most often) open woods, declines northward
Great Horned Owl	12	U	Open woods
Barred Owl	33	FC	Open or closed woods
Common Nighthawk	5	U	
Whip-poor-will	2	R	On drier sites near uplands
Chimney Swift	27	FC	Sometimes near large chimney snags
Ruby-throated Hummingbird	15	U	
Belted Kingfisher	38	FC	Along rivers and streams
Red-headed Woodpecker	53	C	Mostly in open woods
Red-bellied Woodpecker	62	C	Mostly in closed woods
Yellow-bellied Sapsucker	64	C	Mostly in open woods, with birch
Downy Woodpecker	80	A	
Hairy Woodpecker	67	C	Increases northward
Northern Flicker	47	FC	
Pileated Woodpecker	45	FC	Mostly in extensive, mature forest
Eastern Wood-Pewee	93	A	Most common where canopy closed
Acadian Flycatcher ³	5	U	Closed, wet-mesic, streamside woods
Willow Flycatcher	2	R	Open, shrubby sites
Least Flycatcher	16	U	Open woods and groves
Eastern Phoebe	8	U	Near buildings, bridges, cliffs
Great Crested Flycatcher	93	A	Most common near snags
Eastern Kingbird	15	U	Open woods and edges
Purple Martin	5	U	
Tree Swallow	68	C	Mostly channels among open woods

(continued)

Table 2. Abundance and habitat associations of birds breeding in southern Wisconsin floodplain forests (*continued*).

Species	Frequency (%) ¹	Abundance ²	Habitat Association
Northern Rough-winged Swallow	19	U	Near cliffs, exposed banks, tip-ups
Bank Swallow	1	R	Near cliffs, exposed banks
Cliff Swallow	1	R	Near cliffs, bridges
Barn Swallow	7	U	Near bridges, farms
Blue Jay	78	A	Mostly closed woods
American Crow	55	C	
Black-capped Chickadee	62	C	
Tufted Titmouse	14	U	Decreases northward
White-breasted Nuthatch	76	A	
Brown Creeper	48	FC	Dead standing trees
House Wren	88	A	Piles of detritus and dead wood
Blue-gray Gnatcatcher	79	A	Canopy of open or closed woods
Eastern Bluebird	1	R	Open woods or sloughs with snags
Veery	16	U	Closed forest
Wood Thrush	20	U	Closed forest
American Robin	87	A	
Gray Catbird	59	C	Shrubby sites
Cedar Waxwing	35	FC	
European Starling	28	FC	Mostly near snags and openings
Yellow-throated Vireo	72	C	Mostly in open mature woods
Warbling Vireo	67	C	Open woods and edges
Red-eyed Vireo	74	C	Mostly in wet-mesic forest
Blue-winged Warbler	6	U	Wet-mesic forest openings
Yellow Warbler	28	FC	Mostly in open and wet forest
Yellow-throated Warbler ³	2	R	Only where sycamore present
Cerulean Warbler ³	36	FC	Canopy of extensive, mature forest
Black-and-white Warbler	1	R	Northward only
American Redstart	82	A	Diverse vertical forest structure
Prothonotary Warbler	72	C	Flooded trees, edges of sloughs
Ovenbird	26	FC	Wet-mesic forest
Northern Waterthrush	1	R	Swampy streamside
Louisiana Waterthrush	4	U	Closed streamside forest
Kentucky Warbler ³	7	U	Lush understory in closed, extensive, mature forest
Mourning Warbler	9	U	Closed, mostly northern and central forest with dense shrubs or nettles
Common Yellowthroat	69	C	Mostly openings
Scarlet Tanager	22	U	Closed forest
Northern Cardinal	65	C	Declines northward
Rose-breasted Grosbeak	58	C	Wet-mesic forest
Indigo Bunting	59	C	Wet-mesic forest openings and edges

(continued)

Table 2. Abundance and habitat associations of birds breeding in southern Wisconsin floodplain forests (*continued*).

Species	Frequency (%) ¹	Abundance ²	Habitat Association
Rufous-sided Towhee	7	U	
Song Sparrow	93	A	Slight preference for wet forest
Red-winged Blackbird	62	C	Mostly open forest and edges
Common Grackle	75	A	Edges of water, flooded woods
Brown-headed Cowbird	55	C	
Northern Oriole	81	A	Mostly open forest
American Goldfinch	64	C	Mostly wet forest and shrubby edges
House Sparrow	2	R	Sometimes in heron rookeries

¹Percent of stands in which the species was recorded.²A = Abundant, C = Common, FC = Fairly Common, U = Uncommon, R = Rare.³Designated or proposed as threatened or endangered in Wisconsin.

Blue Heron colony near Prairie du Chien.

Cavity nesters, wood drillers, and bark gleaners are probably better represented in lowland forests than in any other community in Wisconsin, a reflection of the large number of trees typically injured or killed by fluctuating water levels and Dutch elm disease. Seven of Wisconsin's 8 breeding woodpecker species are fairly common to abundant here. Altogether, 25 (27%) of the 91 species in Table 2, including over a third of those species considered common or abundant, nest at least sometimes in tree cavities. One of these, the House Sparrow, also sometimes nests within the large stick nests of herons and egrets. Another characteristic floodplain species, the Brown Creeper, nests primarily under the bark of dead or dying trees, while the Great Egret, herons, Eastern Kingbird, Osprey, and Bald Eagle often nest on snags. Some of these species have undoubtedly increased over the past 25 years in response to the widespread effects of Dutch elm disease, and may

decline again as the remaining elms collapse. This is probably most likely for the Red-headed Woodpecker, which nests frequently in dead elms from which the bark has fallen.

Cliff nesters are also prevalent in the floodplain fauna, because of the frequent proximity to rock cliffs, cutbanks, and bridges. Of these species, the Bank Swallow and Kingfisher are most restricted to natural sites, whereas Barn Swallows and Rock Doves nest almost entirely on bridges and buildings. Floodplain Cliff Swallows and Eastern Phoebe nest about as readily on natural as artificial substrates, as do European Starlings, which also use tree cavities. The nests of Common Grackles and Robins are occasionally built under bridges. Rough-winged Swallows nest in cliffs and cutbanks, sometimes in small cavities of bridges, and rarely, in the absence of such sites, over water among the upturned roots of fallen trees.

A few floodplain forest birds may be considered "northern" species. The Song Sparrow and Hairy Woodpecker,

for instance, are widespread but increase in abundance northward within this forest type. The Mourning Warbler, Veery, and Northern Waterthrush are uncommon to rare in the southern counties, and increase northward. South of the tension zone, they are most common in lacustrine ash swamps, which resemble the hardwood and coniferous-hardwood swamps of northern Wisconsin in which these birds are often abundant.

The Yellow-bellied Sapsucker, Brown Creeper, and American Redstart are fairly widespread in northern Wisconsin, but in southern Wisconsin breed regularly only in lowland forests (Figures 4 and 5). They all nest commonly as far south as the Illinois border. The



Figure 4. Wisconsin River slough, with Yellow-bellied Sapsucker nest on barkless section of snag, Richland County.



Figure 5. Floodplain forest opening around dead elm, which contains a Brown Creeper nest, Richland County.

Redstart tends to increase northward, while the Brown Creeper seems influenced more by the availability of dead standing trees than by latitude. The Sapsucker has an unusual distribution. It nests commonly along the Mississippi River from Dubuque to Lake Pepin, and along the lower Wisconsin from Wyalusing to Avoca. Northward along these rivers and their tributaries the species becomes uncommon, and north of the tension zone it becomes primarily an upland species. Especially in Grant, Crawford, and Buffalo Counties, Sapsucker nests are common, and easy to locate when the nestlings are vocal in June. Its floodplain distribution appears correlated with that of a southern plant species, river birch,

which is a common feeding and nesting substrate.

Like river birch, several other southern floodplain plant species decline or disappear northward in Wisconsin. Several southern bird species do so as well, some of which have expanded their breeding ranges northward primarily along river corridors in historic times. These include the Red-bellied Woodpecker, Tufted Titmouse, Blue-gray Gnatcatcher, and Northern Cardinal. The most extreme example of a southern bird species in Wisconsin is the Yellow-throated Warbler, formerly also called Sycamore Warbler, which occurs regularly during the breeding season only along the Sugar River in southern Rock County, where sycamore and other associated plant species extend northward into the state.

Today the Northern Cardinal is very common along the floodplains of southern Wisconsin, but becomes less frequent above LaCrosse and Portage, and is absent from the northernmost stands along the St. Croix and Peshigo. Blue-gray Gnatcatchers and Cerulean Warblers decrease in abundance somewhat to the north, but occur regularly in suitable habitat even in the most northern sites. Kentucky Warblers breed at scattered sites along the Mississippi and Wisconsin as far upstream as Buffalo and Dane Counties. The Prothonotary Warbler nests commonly in appropriate habitat as far north as Buffalo, Columbia, and Wau-paca Counties, and somewhat less commonly northward to Polk, Marathon, and Outagamie Counties.

The Parula Warbler, a characteristic breeder in floodplain forests south of Wisconsin as well as in lowland coniferous forests north of the tension zone, is conspicuously absent from southern

Wisconsin floodplain forests. This may be largely due to the absence here of beard-like lichens or Spanish moss, in which the species usually nests.

An important feature of the floodplain forest avifauna is its large complement of species that depend on extensive, forested tracts in which to breed (Temple 1988). At least 20 species from Table 2 appear to require stands at least 40 acres in size, and some occur only in much larger tracts. For example, I found Kentucky Warblers on only 6 surveys in 4 distinct floodplain forest stands, which ranged in size from 500 to over 7,000 acres in size. Of the 8 present or proposed endangered and threatened species in Table 2, five are sensitive to forest fragmentation: Yellow-crowned Night-Heron, Red-shouldered Hawk, Acadian Flycatcher, and Cerulean and Kentucky Warblers.

Populations of most floodplain forest birds have undoubtedly declined with the degradation and loss of substantial acreages since settlement. Yet the large extent, maturity, and interconnection of many remaining floodplain forests means that the breeding bird life of this habitat has remained relatively intact. No species are known to have disappeared permanently from this forest type as a result of habitat destruction. Two floodplain species were lost as a result of hunting and habitat destruction elsewhere: the Passenger Pigeon, which once passed through these corridors by the millions, and the Carolina Parakeet, which may have nested sparingly along the Mississippi and other floodplains in extreme southern Wisconsin. Others such as the Double-crested Cormorant, Great Egret, Bald Eagle, and Osprey, were virtually extirpated from this hab-

itat but returned with protection, the banning of DDT and habitat management. Careful management may also bring back 2 additional species that once bred along the riverbottoms — the Peregrine Falcon and Trumpeter Swan.

The best way of ensuring that these floodplain forest bird communities remain intact is by careful stewardship of their habitat. This means managing and protecting forests to meet the habitat requirements of individual species, with special attention paid to those species that are threatened or that are uncommon in other Wisconsin habitats; and by maintaining large, interconnected tracts that minimize the chances of local extinctions (Temple 1988).

These various characteristics of the rich, floodplain forest avifauna, and the particular habitat distributions of individual species make for fascinating birding during the breeding season. Observers willing to explore the larger, seemingly forbidding tracts by foot or canoe are further rewarded by an atmosphere of wildness and luxuriance, and by the discoveries that can be made in areas little known to other bird-watchers.

For example, in extensive, mature forests with trees at least 70 feet tall, you will almost certainly hear Cerulean Warblers in the canopy, and may find Kentucky Warblers among a lush understory of forbs, shrubs, and vines. In openings caused by the death of elms and other canopy trees, look for American Redstart, Indigo Bunting, Gray Catbird, Rose-breasted Grosbeak, and Mourning Warbler. Where dead, standing trees are prevalent, you will often hear the high tumbling songs of Brown Creepers, and might follow

adults to their nests beneath slabs of bark on dead trees. Prothonotary Warblers, the “Golden Swamp Warblers” of early naturalists, are easily located in many flooded woods or on the edges of sloughs, where they can be watched feeding their fledglings, or at nest cavities in snags usually 3–5 feet above the ground or water. The nests of Yellow-bellied Sapsuckers are perhaps the most easily found of all floodplain forest birds, when their nestlings beg loudly from cavities of river birch and other live or dead trees.

Coming upon sloughs or channels, you may come upon a Great Blue Heron, Great Egret, or—if you’re fortunate and in extensive forest—a Yellow-crowned Night-Heron. The more open sloughs and their patches of dense shrubs and saplings tend to be dominated by Tree Swallow, Red-winged Blackbird, Common Grackle, Eastern Kingbird, American Goldfinch, Song Sparrow, and Common Yellowthroat. Sometimes associated with these sloughs are marshes with additional breeders such as Black Tern, Marsh Wren, and Yellow-headed Blackbird. Almost everywhere in wooded tracts are Great Crested Flycatcher, Eastern Wood-Pewee, House Wren, Blue-gray Gnatcatcher, and Song Sparrow. Fairly extensive woods along smaller streams tend to have fewer Prothonotary Warblers, House Wrens, and Common Grackles than along major rivers, and more mesic-loving species such as Acadian Flycatcher, Wood Thrush, Red-eyed Vireo, and Louisiana Waterthrush.

Other fauna commonly observed in floodplain forests are muskrat, beaver, otter, gray and fox squirrels, raccoon, and several species of bats, turtles, frogs, and salamanders.

The southern floodplain forest is one of the few types of habitat in which intact breeding-bird communities are still possible without major restoration efforts. WSO members can help agencies such as the Wisconsin Department of Natural Resources, U.S. Fish and Wildlife Service, and The Nature Conservancy maintain these communities by: lending financial support; contributing useful ornithological data through the WDNR's Natural Areas breeding-bird survey; and providing input on preservation priorities and other activities such as logging, public access, and the creation and management of impoundments. In so doing, we help guarantee future generations the same opportunities to wander the riverbottoms among the songs of species such as Cerulean, Kentucky, and Prothonotary Warblers.

DESCRIPTION OF SITES

The following 3 floodplain forests are among the finest examples remaining in Wisconsin, and together include a broad spectrum of local habitat conditions and breeding bird species. As is typical for the most pristine sites, access is difficult and limited to a few road and railroad grades, except by canoe. Visitors should be prepared for mosquitoes, nettles, poison ivy, and wet ground.

NELSON-TREVINO BOTTOMS

Site.—At 3,740 acres, the largest of WDNR's 217 designated natural areas. With the adjacent Tiffany Wildlife Area it comprises the largest floodplain forest (8,000 acres) along the upper Mississippi River.

Location.—Western edge of Buffalo County, at the confluence of the Chippewa and Mississippi Rivers. It is bounded on the south by the Mississippi, on the west by the Chippewa, on the north by the Burlington Northern railroad grade, and on the east by State Highway 25.

Access.—To view the eastern edge of the tract, stop along Highway 25 just south of the Village of Nelson. Floodplain forest just north of the natural area is viewed by stopping along Highway 35, 2–4 miles north and west of Nelson. Or, from Highway 35, 3.5 miles west of Nelson, walk the inactive railroad grade southward 0.5 miles to the north edge of the natural area. The best way to penetrate the interior of the area is by boat, preferably canoe, from the various access points along either highway, especially when water levels are moderate to high. A compass, and an aerial photograph, topographic map, or Upper Mississippi National Wildlife and Fish Refuge map are highly recommended. Maps are not absolutely reliable because the amount of navigable water varies widely between seasons and years.

Site Description.—This tract was partially cut and perhaps burned, and its more accessible meadows grazed and mowed prior to protection by federal refuge status in 1924. However, it remains one of the most pristine floodplain forests in the midwest — a mosaic of mature and young forest, sloughs, channels, marshes, meadows, and shrubby thickets. Forest covers about half of the area, and is dominated by silver maple, with river birch, cottonwood, elm, and green ash. The interior

has a wilderness aspect, and is worth at least a half-day's visit by canoe.

Birds.—Table 3 lists the numbers of birds recorded while canoeing for a total of 10 hours on 3 June days, with no overlapping coverage. There are especially high numbers of birds such as Tree Swallow, Yellow-bellied Sapsucker, Warbling Vireo, Red-winged Blackbird, and Common Grackle, which prefer open forests and sloughs. Table 3 does not include herons and egrets encountered within the large rookery located near the center of the tract. This rookery has included over 200 active nests of Great Blue Herons and Great Egrets annually for at least 20 years. Great Egrets declined from 122 nests in 1977 (Thompson 1978) to 43 in 1984, and 0 in 1988, as the population has apparently shifted to other Mississippi River colonies. During the canoe surveys, I located 5 active nests of Prothonotary Warbler and 4 of Northern Oriole, among others.

WAUZEKA BOTTOMS

Size.—The soon-to-be-designated natural area encompasses 798 acres, and is part of a complex of extensive forested tracts along this section of river.

Location.—Southern Crawford County at the confluence of the Wisconsin and Kickapoo Rivers. Bounded on the north by the Milwaukee, St. Paul and Pacific Railroad, on the west by the Kickapoo River, and on the south and east by the Wisconsin River.

Access.—Access is by canoe along the Wisconsin and Kickapoo Rivers, from landings in the Village of Wauzeka, or

along Highway 132 on the south side of the Wisconsin, directly across from the natural area, 2 miles west of Woodman. Visitors can watch and listen from the rivers, or can stop along the riverbanks and walk into the tract. At times of high water, you can penetrate the western part of the tract along a winding shortcut channel that connects the 2 rivers. Although some observers walk the railroad tracks from the Village of Wauzeka, eastward along the north side of the tract, this is not recommended, since the railroad is active and privately owned.

Site Description.—Although some cutting has occurred in the past, this remains the best and largest tract of mature floodplain forest along the Lower Wisconsin, and perhaps the finest southern wet-mesic forest statewide. Recently purchased by The Nature Conservancy, its ownership is being transferred to WDNR. Near the Wisconsin River, the canopy is high and relatively complete, composed of silver maple, swamp white oak, and green and black ashes. The understory is lush, with a fairly complete ground cover and many lianas. Low pockets and sloughs are scattered through the interior, especially along the railroad grade, and are dominated by snags, an open canopy of silver maple and river birch, shrubs such as buttonbush, and emergents that include *Sagittaria* and *Iris*.

Birds.—Table 3 lists those birds encountered on the afternoon of 16 June 1984, amid intermittent rain, while walking the railroad tracks, then canoeing the Wisconsin River along the tract's southern edge, and through the shortcut slough to the Kickapoo. This area has a diverse admixture of open-

Table 3. Numbers of birds encountered on breeding season surveys in 3 southern floodplain forest tracts.

Species	Number of birds encountered at:		
	Nelson-Trevino	Wauzeka	Avon
Great Blue Heron	6 ¹	5	1
Great Egret	3 ¹	0	0
Green-backed Heron	1	2	1
Yellow-crowned Night-Heron	0	+	0
Wood Duck	7 ¹	7 ¹	3
Mallard	1	1	0
Blue-winged Teal	2 ¹	0	0
Hooded Merganser	0	+ ¹	0
Red-shouldered Hawk	3	1	0
Spotted Sandpiper	0	0	1
Mourning Dove	3	0	1
Yellow-billed Cuckoo	7	13	2
Barred Owl	+	3	2
Chimney Swift	7	7	0
Ruby-throated Hummingbird	0	1	1
Belted Kingfisher	1 ¹	2	0
Red-headed Woodpecker	2	4 ¹	3
Red-bellied Woodpecker	7	8	12
Yellow-bellied Sapsucker	32	14 ¹	0
Downy Woodpecker	12	11 ¹	10
Hairy Woodpecker	12 ¹	7 ¹	1
Northern Flicker	3	4	2
Pileated Woodpecker	2	4	1
Eastern Wood-Pewee	11	15 ¹	42
Acadian Flycatcher	0	0	3
Least Flycatcher	0	0	3
Eastern Phoebe	0	+ ¹	0
Great Crested Flycatcher	17	20	48
Eastern Kingbird	1	+	0
Purple Martin	0	2	0
Tree Swallow	92 ¹	21 ¹	12
Northern Rough-winged Swallow	4	+	6 ¹
Cliff Swallow	0	0	2
Barn Swallow	3	0	10 ¹
Blue Jay	4	4	6
American Crow	4	5	8
Black-capped Chickadee	4	4 ¹	2
Tufted Titmouse	+	+	7
White-breasted Nuthatch	13	9	6
Brown Creeper	7	3	1
House Wren	63	28	72
Blue-gray Gnatcatcher	33	20	14
Eastern Bluebird	0	+ ¹	0
Veery	0	1	3
Wood Thrush	0	2	4
American Robin	16	8	7
Gray Catbird	3	12	17
Cedar Waxwing	1	1	9
European Starling	2	+	3
Yellow-throated Vireo	6	6	7
Warbling Vireo	48 ¹	2	0
Red-eyed Vireo	3	4	17
Yellow Warbler	0	1	2

(continued)

Table 3. Numbers of birds encountered on breeding season surveys in 3 southern floodplain forest tracts (*continued*).

Species	Number of birds encountered at:		
	Nelson-Trevino	Wauzeka	Avon
Yellow-throated Warbler	0	0	2
Cerulean Warbler	5	5	7
American Redstart	20	33	39
Prothonotary Warbler	23 ¹	27 ¹	9
Ovenbird	2	+	0
Louisiana Waterthrush	0	0	1
Kentucky Warbler	0	3	0
Common Yellowthroat	14	17	8
Scarlet Tanager	0	1	2
Northern Cardinal	1	24 ¹	26
Rose-breasted Grosbeak	5	2	13
Indigo Bunting	6	7	19
Song Sparrow	16	48	24
Red-winged Blackbird	64 ¹	16	2
Common Grackle	113 ¹	25 ¹	6
Brown-headed Cowbird	11 ¹	1	16
Northern Oriole	32 ¹	9 ¹	4
American Goldfinch	5	16	2
House Sparrow	0	+	0

¹Positive evidence of nesting (active nest or local brood).²+ Recorded on other visit(s).

and closed-forest species, with especially good representation of those that prefer extensive, mature tracts, e.g., Yellow-crowned Night-Heron, Pileated Woodpecker, and Cerulean and Kentucky Warblers. Kentucky Warblers can usually be heard from the Wisconsin River.

AVON BOTTOMS

Size.—The entire forested tract covers about 800 acres along a 5-mile corridor, 0.1–0.5 miles in width. Only a portion of this is designated as a state natural area, the boundaries of which are currently being revised.

Location.— Along the Sugar River between the Village of Avon and the Illinois state line, in southwestern Rock County.

Access.—This stretch of river is spanned only by Nelson Road, which heads south from Highway 81 about 13 miles west of Beloit. It bisects the forest through a particularly good section. View here from the bridge or shoulder. The best birding is by canoe within about 1.5 miles either direction of Nelson Road. If you're willing to paddle upstream, put in and take out at this bridge. Otherwise, put in along Beloit-Newark Road, 0.5 mile west of the Village of Avon, and allow about 3–4 leisurely hours to reach Nelson Road. If you canoe beyond Nelson Road, allow 5–6 hours to reach the next landing, which is about 8 river miles downstream at Illinois' Sugar River Forest Preserve.

Site Description.—This corridor includes the only major stand of syc-

more in Wisconsin, as well as populations of other southern plant species that are here at the northern extreme of their range. Among the dominant silver maples are many swamp white oaks, ashes, and cottonwoods, and scattered basswoods and sycamores, the latter of which include some of the tallest trees present. Meadow pastures, cropland, and bits of upland woods border the floodplain forest and sometimes the river channel.

Birds.—Data in Table 3 are from a canoe survey during 0550–1000 h on 31 May 1986, beginning at Nelson Road, going upstream 0.5 mile and then downstream to the Illinois border. The main attraction here is the population of Yellow-throated Warblers, which occur sparingly, often in or near sycamores, between Avon and about 1.5 miles below Nelson Road. Other southern species such as the Tufted Titmouse and Northern Cardinal are especially abundant here. Otherwise, the avifauna is fairly characteristic of high quality floodplain forests along other small rivers in southern Wisconsin. In particular, there are relatively few individuals of species such as Tree Swallow and Warbling Vireo that prefer open woods and sloughs; while there are good populations of more “mesic” or “closed” forest species, including eastern Wood Pewee, Acadian Flycatcher, Wood

Thrush, Veery, Red-eyed Vireo, Louisiana Waterthrush, and Rose-breasted Grosbeak. This tract is outside the range of river birch, and perhaps as a result, Yellow-bellied Sapsuckers are rare or absent.

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Gray Squirrel by Cary Hunkel

Uninvited Guests at the Feeding Station

by Scott R. Craven

Does your blood pressure rise when you see the neighbor's cat stalking your bird feeder? Do you reach for the shotgun when you see a gray squirrel poised to leap onto your feeder? Do you run screaming from the house when your favorite Northern Cardinal becomes breakfast for a passing Cooper's Hawk, right before your eyes? If your answer is "yes" to any one of these or several other questions, you have uninvited and unwanted guests at your winter bird-feeding station. Fortunately there are ways to solve most of these "problems," or at least modify your own response, so you can relax and enjoy your feeder without periodic bouts of stress!

Let's begin with cats. Coping with cat problems around a feeder is more often an exercise in diplomacy than wildlife management. In the rare event that you know, beyond reasonable doubt, that the offending cat is a stray, the animal can easily be captured in a live trap (such as a Hav-a-hart or Tomahawk). Bait the trap with a sardine can, cat food, or similar bait and turn the captured cat over to the local Humane Society. DO NOT relocate the

cat to a farm or distant neighborhood in the mistaken belief that the cat will be better off.

If you know the cat's owner, then it's time to negotiate. Few cat owners are willing to come to grips with the predatory behavior of their "harmless pets." Enlighten them in a diplomatic way. Current research on cats by Stan Temple and his students should soon provide the facts needed to convince disbelievers that cat predation really is a serious problem in Wisconsin. Ask the cat owner to keep the cat indoors, attach a bell to the cat, or make an effort to keep it out of your yard. For your part, keep concealing ground vegetation near the feeder to a minimum, and frighten the cat every time you see it. If you have a dog, it can be a tremendous aid in frightening the cat!

Squirrels cause frequent and persistent problems at feeders of all types. They monopolize seed supplies, frighten birds, and damage feeders when they enlarge seed ports or feeder covers to gain access. Gray squirrels, red squirrels (in northern Wisconsin), chipmunks, and even flying squirrels are all potential pests.

Let's take the easy ones first. Chipmunks are only a temporary problem during late spring and early fall. During most of the bird-feeding season, chipmunks are hibernating below ground with a nice supply of your seeds safely cached. Most people find chipmunks to be "kind of cute," and they are easily tamed to be fed by hand. If you have children, chipmunk "control" is not recommended. Learn to live with them, and let the kids enjoy them. If there are no children, you simply can't bear the thought of a mammal near your feeder, or if the chipmunks are doing other damage, such as extensive excavation of a rock wall or garden, then control can be implemented. Chipmunks are easily captured for relocation in a smaller version of the same live traps used for cats. Nutmeats, peanut butter, or sunflower seeds are excellent baits. If you are a little less tolerant or more impatient, traditional wooden base, snap-type rat traps (*not* mouse size) are very effective. Bait them with peanut butter, perhaps stiffened in hot weather with rolled oats, and place them near chipmunk burrows or along foundation walls where chipmunks travel. Be certain the traps won't be attractive or accessible to pets or children.

Flying squirrels are usually detected by accident or by discovering a mysterious nocturnal reduction in your seed supply. Don't view flying squirrels as a problem. They are so interesting to watch and so rarely seen that you should seize the opportunity to accommodate them. Rig your feeder so that it can be illuminated by the beam of a floodlight. You can then flip on the light after dark for a glimpse of these fascinating animals.

Gray squirrels and red squirrels can

be discussed together. The larger gray squirrel is arguably "Feeder Pest Number 1." On the other hand, squirrels can be fascinating to watch as they leap, dangle, climb, swing, and drop, to get to a feeder. If you can protect your feeders from damage, squirrels can be fed right along with the birds. Several specialized feeders, corn cob holders, and other devices are available to make squirrel feeding practical and entertaining. If you are not now, nor likely to become, a convert to the merits of feeding squirrels, the following suggestions may help in what is certain to be an ongoing struggle between you and the squirrels.

1. Use feeders with metal "armor" to protect seed ports, covers, etc. They are more expensive but worth it in the long run.
2. Try one of several so-called "squirrel-proof" feeders. They operate with weight-balanced treadles that close the feeder when a heavy (compared to a bird) squirrel tries to feed.
3. Suspend your feeders from thin cables or wires. Further protect them by running the cables through short lengths of old garden hose (which will spin around) or old LP records or similar discs.
4. Position your feeders at least six feet from tree trunks, limbs, roofs or other points from which a squirrel can launch itself.
5. Protect pole mounted feeders with a squirrel baffle, inverted cone, sheet metal guard, or sliding weighted sleeve. Most of these devices are commercially available.
6. Remove squirrels by live trapping and relocating them, as described for cats and chipmunks.
7. On your own property, if it's safe

and legal to do so, squirrels may be hunted all year. Consult the Wisconsin DNR hunting regulations.

8. NOTE: Squirrels *cannot* and *should not* be poisoned.
9. Provide an alternative food source (corn, nuts, seeds, etc.) away from your bird-feeding station. This will either help or attract more squirrels to deal with!
10. Grin and bear it!

A few other mammals may also be a problem. In some urban areas or farm settings, rats may utilize a bird feeder. They are capable climbers but usually forage on the ground below the feeder. Telltale holes in the snow about the diameter of a half-dollar may indicate the presence of rats. A smaller hole may indicate the presence of a short-tailed shrew. These mouse-sized dark gray animals will also visit a winter feeder. Don't worry about them. They are not a problem and are fun to watch. Get rid of the rats with a rat trap. Be sure to place it under a box with holes on the sides or a tepee arrangement of boards so birds will not be accidentally caught.

Some suburban areas are plagued with an overabundance of deer. They too, will visit feeders and try to extract seeds or eat spillage. While fun to watch and easily attracted to hay, corn, or apples, deer can cause extensive damage to gardens, landscape plantings, parks, and greenways. If deer are a problem in your area, obtain a copy of UW Extension Publication G3083, *Controlling Deer Damage in Wisconsin*.

Some birds also qualify as uninvited guests—even at a bird feeder. People have varying degrees of tolerance for rock doves (pigeons), house sparrows, starlings, and even mourning doves. In

some urban settings, these species may be the only feeder visitors! Thus, they are certainly preferable to an empty feeder. If, however, pigeons, sparrows, or starlings are competing with more desirable species, they can be discouraged by several practices.

1. Avoid feeding table scraps, stale bread or pastry, and low-cost seed mixes.
2. Stick with the seeds native birds find most attractive (sunflower, white millet, etc.) and specialty seeds such as niger or safflower.
3. Some claim that an unstable, hanging feeder is less attractive to house sparrows than a rigidly mounted one.
4. Trap and remove house sparrows, pigeons, and starlings. These 3 species are unprotected in Wisconsin, and specialized, commercial traps are available. Check Wisconsin DNR regulations or clear your trapping operation with your local WDNR conservation warden. Be absolutely sure no "nontarget" birds are captured or injured.

Hawks may kill birds at your feeder and it could involve any one of several raptors and prey species. Usually the raptor is a Sharp-shinned Hawk, Cooper's Hawk, or American Kestrel. Such predation is a perfectly natural event, and it should not be viewed as a disaster, nor should it be viewed as a harmful action by the offending raptor. Just as songbirds are attracted to the concentration of food at your feeder, so raptors are attracted to the concentration of their prey there. It's an opportunity to observe the next link in the food chain that starts at your feeder. If your birds have some shrubby escape cover reasonably near the feeder, you have done all you can and should do to protect them from nat-

ural predators. All raptors are protected so you can not do anything to harm them.

I hope some of these comments will help make your feeding station more productive and enjoyable. Maybe you have even changed your opinion on a common "pest" problem. Remember, it's all a matter of perspective. Squirrels, rats, sparrows, and other "pests" are doing nothing more or less than

the chickadees, cardinals, finches, and woodpeckers at your feeder; they're merely trying to find a square meal under the harsh conditions of a Wisconsin winter.

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Eastern Chipmunk by *Thomas R. Schultz*

The Spring Season: 1988

by William K. Volkert

The spring season was characterized by warm, dry and windy conditions. This was the spring that preceded the hottest and driest summer in fifty years. The season began rather normal, giving no hint of what was to come. The rain stopped falling before the end of April, and the unseasonably hot weather was upon us by mid-May. The severe weather certainly affected bird movement, distribution, food supply, and birding activities.

March began near normal, with temperatures ranging from 7 to 55°F for the month. The scarce snow accumulation and early thaw left little water available for those birds which depend on it. The sparse rains did little to enhance our wetlands. About 1 to 3 inches of rain and snow fell during the last week, with temperatures ranging from the 20's to the 50's.

April started with southerly winds and temperatures rising into the 60's and 70's. Rain followed on the 6th with cooler temps in the 30's and 40's. It was soon back in the 70's, but cooled off by the middle of the month. On April 20th, 2 to 5 inches of rain fell, mostly in the southeastern part of the

state. This was the last significant rainfall for the year, until the drought broke later in August.

May began warm and dry with temps in the 70's and 80's. A light rain fell on the 8th with temperatures dropping into the 50's to 70's. Passerine waves were few, but were reported following this front and again on the 13th. A low temperature of 21°F was reported for the month at Phillips on the 17th. From here on in we were in the heat of it, with temperatures well into the 90's by the last week of the month.

Despite the extreme weather, the birds made a good showing during the spring migration. A total of 307 species were reported for the season, with 64 observes turning in records for 67 Counties. Among the rare sighting were Eared Grebe, Western Grebe, the second state record for White-faced Ibis, Ruff, Parasitic Jaeger, Long-tailed Jaeger, 9 gull species, Burrowing Owl, Chuck-will's-widow, Scissor-tailed Flycatcher, Sage Thrasher, Summer Tanager, and European Goldfinch (which may have been an escape). Among our winter finches, Common Redpolls, crossbills, and especially Pine Siskins

were widespread and remained until late in the season. Another trend seems to be going as expected; the House Finch was reported in 15 Counties during the period. Since the first state record in 1986, when it was reported in 4 Counties, it has spread rapidly and become well established. The following is a summary of those species sighted during the 1988 spring season.

REPORTS

(MARCH 1-MAY 31, 1988)

Red-throated Loon.—Many observers reported sightings in Douglas, Manitowoc, Milwaukee, Ozaukee and Sheboygan Counties. On May 13, 5 birds were sighted in Douglas County (L. Semo). Last reported in Douglas County, May 26 (G. DeBoer).

Common Loon.—First reported in Polk County, March 12 (J. Hudick). On May 1, 35 birds sighted Ozaukee County (D. Tessen).

Pied-billed Grebe.—First reported in Dane County, March 9 (S. Thiessen).

Horned Grebe.—First reported in Dane County, March 12 (S. Thiessen). On April 19, 325 birds in Ozaukee County (S. Swengel).

Red-necked Grebe.—First reported in Columbia County, March 31 (D. Tessen). Also reported during the period in Bayfield, Burnett, Chippewa, Dodge, Douglas, Dunn, St. Croix and Winnebago Counties.

Eared Grebe.—Reported in Columbia County, April 13 (S. Swengel); May 20 and 28 (D. Tessen) sighting 3 birds; and May 22 (S. Robins, T. Soulen and P. Sunby).

Western Grebe.—Reported as follows: Burnett County, April 24 (J. Smith); Douglas County, May 19 (R. Johnson and L. Semo) 3 birds and May 22 (A. & S. Shea); Chippewa County, May 31 (J. Polk).

American White Pelican.—Reported as follows: Douglas County, April 30 (R. Johnson);

Green Lake County, May 7 (T. Schultz), May 14 (J. Baughman) and May 22 (G. DeBoer and D. Tessen); and Manitowoc County (C. Sontag).

Double-crested Cormorant.—First reported in Brown County, April 3 (D. Tessen) sighting 150 birds. Reported during period in 27 other Counties.

American Bittern.—First reported on April 16 (J. Haseleu) Dodge County and Taylor County (P. Risch). During period in 24 other Counties.

Least Bittern.—First reported in Racine County, May 11 (G. DeBoer). Also during period in Bayfield, Burnett, Columbia, Dane, Dodge, Green Lake, Lafayette, Rock, Taylor, Waukesha and Winnebago Counties.

Great Blue Heron.—Present at the beginning of the period in Dane County (B. Hilsenhoff).

Great Egret.—First reported in Dane County, March 29 (S. Thiessen). Also reported in Burnett, Columbia, Dane, Dodge, Dunn, Fond du Lac, Green Lake, Iowa, Iron, Jefferson, Marathon, Milwaukee, Outagamie, Polk, Rock, Sheboygan, St. Croix, Taylor, Washington, Waukesha, Winnebago Counties.

Little Blue Heron.—Reported in Waukesha County, April 18 (G. DeBoer, A. & S. Shea) and Marquette County, May 14 (M. Foust).

Cattle Egret.—First reported in LaCrosse County, May 8 (T. Risch). Also reported in Dodge County, May 15 (A. & S. Shea); Columbia County, May 17 (A. & S. Shea) and St. Croix County, May 23 (J. Smith).

Green-backed Heron.—First reported in Dane County, March 26 (S. Thiessen).

Black-crowned Night Heron.—First reported in Manitowoc County, April 9 (C. Sontag).

Yellow-crowned Night Heron.—Reported in Iowa County, April 18 (C. Roethe). Also Milwaukee County, May 15 (J. Frank) and Rock County, May 29 (D. Tessen).

White-faced Ibis.—Only the second state record, this bird was sighted during the WSO convention in Waukesha County. Reported as follows: May 19 (S. Robbins, M. Peterson, and J. Smith) and May 20 (D. Tessen). Accepted by Records Committee.

Tundra Swan.—First reported in Dane County, March 5 (M. Bontly). On March 27, 2,500 birds sighted in Outagamie County (D. Tessen). Last reported in Oconto County, May 29 (G. DeBoer).

Mute Swan.—Present at beginning of period in Ashland, Bayfield, Dane, Douglas, Portage, Racine, and Shawano Counties. Reported during the period in Burnett, Dodge, Douglas, Milwaukee, Sheboygan and Waukesha Counties.

Greater White-fronted Goose.—First reported in Rock County, March 12 (D. Tessen). Also reported in Burnett, Dodge and Columbia Counties, where 4 birds were sighted (reported by many observers).

Snow Goose.—Present at beginning of period in Jefferson County (K. Etter Hale).

Canada Goose.—Present at beginning of period in Ashland, Bayfield, Barron, Burnett, Columbia, Dane, Dodge, Green Lake, Jefferson, LaCrosse, Milwaukee, Outagamie, Portage, Racine, Richland, Sauk, Sheboygan, St. Croix, Trempeleau and Winnebago Counties.

Wood Duck.—Present at beginning of period in Chippewa, Green Lake, Richland, Shawano and Trempeleau Counties.

Green-winged Teal.—First reported in Walworth County, March 12 (D. Tessen).

American Black Duck.—Present at beginning of period in 21 counties.

Mallard.—Present at beginning of period in 21 Counties.

Northern Pintail.—First reported on March 12 in Rock and Walworth Counties (D. Tessen).

Blue-winged Teal.—Present at beginning

of period in Milwaukee (R. Gutschow) and Sauk (S. Swengel) Counties.

Northern Shoveler.—Present at beginning of period in Dane (E. Hansen, B. Hilsenhoff, S. Robbins and S. Thiessen) and Milwaukee (D. Tessen) Counties.

Gadwall.—Present at the beginning of the period in Dane County (E. Hansen, B. Hilsenhoff, and S. Thiessen).

American Wigeon.—Present at the beginning of the period in Dane County (E. Hansen, B. Hilsenhoff, S. Robbins and S. Thiessen).

Canvasback.—Reported at the beginning of the period in Racine County (G. DeBoer). On March 18, 400+ birds were reported in Rock County (A. & S. Shea).

Redhead.—Reported at the beginning of the period in Dane County (E. Hansen and S. Thiessen).

Ring-necked Duck.—First reported in Dane County, March 2 (E. Hansen).

Greater Scaup.—On March 6, 5,000 birds were sighted in Milwaukee County (J. Frank). Last reported in Manitowoc County at the end of the period (C. Sontag).

Lesser Scaup.—On March 14, 8,000 birds were sighted in Milwaukee County (S. Diehl). Last reported at the end of the period in Manitowoc County (C. Sontag).

Harlequin Duck.—Reported as follows: beginning of period to April 5 in Racine County (G. DeBoer); March 12, Racine County (A. & S. Shea) and Sheboygan County (D. & M. Brasser).

Oldsquaw.—Last reported in Manitowoc County, April 27 (C. Sontag).

Black Scoter.—Reported in Adams County, March 27 (S. Robbins); Douglas County, May 19 (L. Semo); Manitowoc County, (D. Tessen); and Ozaukee County, April 22 (A. & S. Shea) and May 1 (G. DeBoer).

Surf Scoter.—Reported during the period

in Burnett, Douglas, Milwaukee and Ozaukee Counties. On March 12, one bird was sighted in Rock County (D. Tessen).

White-winged Scoter.—Reported in Douglas County, May 21 (R. Johnson and L. Semo); Ozaukee County, April 22 (A. & S. Shea) and April 19 (S. Swengel); and Rock County, March 12 (D. Tessen) sighting 2 birds.

Common Goldeneye.—Present at the beginning of the period in Ashland, Bayfield, Burnett, Dane, Door, Eau Claire, Manitowoc, Marathon, Milwaukee, Polk, Portage, Racine, Sauk, Shawano, Sheboygan and Winnebago Counties.

Barrow's Goldeneye.—One bird was reported in Menominee County, April 4 (Anne Dirks). (Pending final approval of Records Committee).

Bufflehead.—Present at the beginning of the period in Door, Manitowoc, Milwaukee and Sheboygan Counties.

Hooded Merganser.—First reported in Portage County at the beginning of the period (L. Semo).

Common Merganser.—Present at the beginning of the period in Ashland, Bayfield, Dane, Eau Claire, Manitowoc, Racine and Sauk Counties.

Red-breasted Merganser.—Present at the beginning of the period in Door, Manitowoc, Milwaukee, Racine and Winnebago Counties. Last reported in Sheboygan county, May 14 (J. Baughman).

Ruddy Duck.—Present at the beginning of the period in Milwaukee County (S. Diehl).

Turkey Vulture.—First reported in Sauk County, March 5 (K. Lange). Also reported as far north as Bayfield, Burnett and Douglas Counties.

Osprey.—First reported in Taylor County, April 8 (P. Risch). Also reported during the period in 27 Counties across the state.

Bald Eagle.—Present at the beginning of

the period in Ashland, Barron, Bayfield, Burnett, Chippewa, Douglas, Dunn, Jackson, LaCrosse, Polk, Price, Trempealeau and Vilas Counties.

Northern Harrier.—Present at the beginning of the period in Chippewa, Green Lake, LaCrosse, Richland, St. Croix, Winnebago and Wood Counties. Also reported during the period in 29 Counties.

Sharp-shinned Hawk.—Present at the beginning of the period in Barron, Eau Claire, Green Lake, Jackson, LaCrosse, Outagamie, Sauk, and Walworth Counties.

Cooper's Hawk.—Present at the beginning of the period in Dane, Eau Claire, Green Lake, LaCrosse, and Portage Counties. Also reported during the period in 30 other Counties.

Northern Goshawk.—Present at the end of the period in Door County (R. & C. Lukes).

Red-shouldered Hawk.—Present at the beginning of the period in Portage County (L. Semo). Also reported during the period in 18 other Counties.

Broad-winged Hawk.—First reported in Monroe County, April 7 (T. Soulen).

Swainson's Hawk.—Reported in Columbia County, April 24 (A. Holzheuter).

Red-tailed Hawk.—Present during the period throughout the state.

Rough-legged Hawk.—Present at the end of the period in Forest and Oneida Counties (S. Swengel).

Golden Eagle.—Reported in Juneau County, March 6 (T. Soulen) and Burnett County, April 10 (J. Frank).

American Kestrel.—Present during the period throughout the state.

Merlin.—Reported during the period in Ashland, Burnett, Dane, Douglas, Eau Claire, Iowa, Iron, Jefferson, LaCrosse, Manitowoc,

Milwaukee, Ozaukee, Portage, Rock, Sauk, Sheboygan, Taylor, Vilas and Winnebago Counties.

Peregrine Falcon.—First reported in Burnett County, April 28 (J. Hoefer). Also reported during the period in Ashland, Buffalo, Manitowoc, Milwaukee, Sauk and Shawano Counties.

Gyr Falcon.—Reported in Taylor County, March 10 (P. Risch).

Gray Partridge.—Reported during the period in the following Counties: Brown, Columbia, Dane, Grant, Outagamie, Ozaukee, Rock, and St. Croix.

Ring-necked Pheasant.—Reported during the period in 36 Counties.

Spruce Grouse.—Reported as follows: April 25, Oneida County (B. Reardon) and May 1 to end of period, Forest County (S. & L. LaValley).

Ruffed Grouse.—The current population is near the peak of the 10-year cycle. Reported during the period in 38 Counties.

Greater Prairie Chicken.—Reported during the period in Burnett, Marathon, Portage, Taylor and Wood Counties.

Sharp-tail Grouse.—Reported during the period in Burnett, Douglas, Jackson, Marathon and Taylor Counties.

Wild Turkey.—Reported during the period in Clark, Dane, Eau Claire, Fond du Lac, Grant, Jackson, Juneau, LaCrosse, Lafayette, Richland, Sauk, Shawano, Taylor, Walworth, Washington and Waukesha Counties.

Northern Bobwhite.—Reported during the period in Dunn, Eau Claire, Green Lake, Jackson, Richland, Rock and Sauk Counties.

Yellow Rail.—First reported in Burnett County, April 28 (J. Hoefer). Reported from this county by many observers for the remainder of the period.

King Rail.—First reported on May 14 in Columbia County (Jeff Baughman and T. Schultz) and in Dane County (D. Tessen).

Virginia Rail.—First reported in Milwaukee County, April 9 (S. Diehl).

Sora.—First reported in Waukesha County, April 8 (T. Soulen).

Common Moorhen.—First reported in Columbia County, May 2 (S. Robbins). Also reported during the period in Brown, Dane, Dodge, Fond du Lac, Walworth, Waukesha and Winnebago Counties.

American Coot.—Present at the beginning of the period in Dane County (B. Hilsen hoff, S. Robbins and A. & S. Shea).

Sandhill Crane.—First reported at the beginning of the period in Winnebago County (T. Ziebell).

Black-bellied Plover.—First reported in Columbia County, May 4 (P. Ashman). Last reported in Douglas County, May 30 (D. Tessen).

Lesser Golden-Plover.—First reported in Dane County, April 2 (B. Hilsen hoff). Present at the end of the period in Columbia County (D. Cedarstrom).

Semipalmated Plover.—First reported in Manitowoc County, April 26 (C. Sontag). Present at the end of the period in Sheboygan County (D. & M. Brassier).

Piping Plover.—Reported in Manitowoc County, May 16 (C. Sontag) and Bayfield County, May 24 (S. Swengel) sighting 2 birds.

Killdeer.—Present at the beginning of the period in Dane, Green Lake, Jefferson, Milwaukee, Sauk and Trempeleau Counties.

American Avocet.—First reported on May 14 in Columbia County (Jeff Baughman, T. Schultz and D. Tessen) sighting 2 birds; Sheboygan County (Jeff Baughman and T. Schultz); and Dunn County, May 19 (J. Polk).

Greater Yellowlegs.—First reported in Columbia County, March 26 (Jeff Baughman and E. Hansen). On April 30, 150 birds were sighted in Columbia County (D. Tessen).

Lesser Yellowlegs.—First reported in Columbia County, March 26 (E. Hansen). Last reported in Burnett County, May 29 (D. Tessen).

Solitary Sandpiper.—First reported in Milwaukee County, March 23 (M. Bontly). Last reported in Dodge County, May 22 (D. Tessen).

Willet.—First reported on April 27 in Dane County (S. Thiessen and A. & S. Shea) sighting 53 birds. Also reported in Brown, Columbia, Dodge, Douglas, Kewaunee and Milwaukee Counties.

Spotted Sandpiper.—First reported in Jefferson County, April 23 (W. Mueller).

Upland Sandpiper.—First reported in Richland County, April 29 (B. Duerksen). Also reported in 23 other Counties throughout the state.

Whimbrel.—First reported in Manitowoc County, May 19 (J. Frank). Also reported in Kewaunee County. On May 27, 300 birds were sighted in Door County (R. & C. Lukes).

Hudsonian Godwit.—First reported in Dodge County, April 28 (J. Frank). Also reported in Ashland, Bayfield, Columbia, Brown, Dane, Douglas, Chippewa, St. Croix and Winnebago Counties.

Marbled Godwit.—First reported in Columbia County, April 23 (P. Ashman). Also reported in Ashland, Dane, Dodge, Douglas, Ozaukee, Portage and Winnebago Counties.

Ruddy Turnstone.—First reported in Dane County, May 13 (B. Hilsenhoff). Present at the end of the period in Racine County (G. DeBoer).

Red Knot.—Reported as follows: Bayfield County, May 20 (D. Verch) and May 24 (S. Swengel); and Douglas County, May 22 (A. & S. Shea).

Sanderling.—First reported in Dodge County, May 16 (B. Volkert). Present at the end of the period in Ashland County (D. Verch) sighting 38 birds.

Semipalmated Sandpiper.—First reported in Columbia County, April 28 (P. Ashman). Present at the end of the period in Ashland,

Bayfield (D. Verch) and Dane (S. Thiessen) Counties.

Western Sandpiper.—Reported as follows: Columbia County, May 20 (S. Swengel and D. Tessen); Dane County, May 15 (A. & S. Shea); and Taylor County, May 22 (N. & P. Risch).

Least Sandpiper.—First reported in Columbia County, April 16 (D. Tessen). Present at the end of the period in Ashland, Bayfield and Dane Counties.

White-rumped Sandpiper.—First reported in Dodge County, May 11 (S. Swengel). Also reported in Barron, Bayfield, Chippewa, Columbia, Dane, Douglas, Dunn, Manitowoc, St. Croix, and Winnebago Counties.

Baird's Sandpiper.—First reported in Columbia County, April 30 (P. Sunby). Present at the end of the period in Ashland and Bayfield Counties (D. Verch).

Pectoral Sandpiper.—First reported on March 26, in Columbia (Jeff Baughman and E. Hansen) and Dane (E. Hansen) Counties. Present at the end of the period in Ashland and Bayfield Counties (D. Verch).

Dunlin.—First reported in Dodge County, April 23 (Jeff Baughman). Present at the end of the period in Ashland and Bayfield Counties (D. Verch).

Stilt Sandpiper.—First reported in Chippewa County, May 7 (J. Polk). Also reported in Bayfield, Columbia and Dodge Counties.

Ruff.—Reported in Dodge County, May 14 at Theresa Marsh (D. Tessen).

Short-billed Dowitcher.—First reported in Columbia County, May 1 (P. Ashman). Present at the end of the period in Columbia County (Jeff Baughman).

Long-billed Dowitcher.—First reported in Dane County, May 10 (S. Robbins).

Common Snipe.—Present at the beginning of the period in Ozaukee County (Jeff Baughman).

American Woodcock.—First reported in Dane County, March 12 (E. Hansen).

Wilson's Phalarope.—First reported in Green Lake County, May 10 (T. Schultz).

Red-necked Phalarope.—Reported as follows: May 18, Juneau County (S. Swengel); May 23, Dane County (G. DeBoer); and May 27, Dunn County (J. Polk).

Parasitic Jaeger.—Reported in Douglas County, May 22 (A. & S. Shea).

Long-tailed Jaeger.—Reported in Chipewewa County, May 23 (J. Polk).

Laughing Gull.—First reported in Sheboygan County, May 14 (Jeff Baughman and T. Schultz). Also reported in Manitowoc County, May 26 (C. Sontag).

Franklin's Gull.—First reported in Dane County, March 28 (B. Hilsenhoff). Also reported in Dunn, LaCrosse, Manitowoc and Milwaukee Counties.

Little Gull.—First reported in Manitowoc County, April 28 to the end of the period (C. Sontag) sighting 5 birds. Also reported in Douglas and Milwaukee Counties.

Bonaparte's Gull.—First reported in Manitowoc County, March 26 (C. Sontag). On May 1, 3,000 birds were sighted in Milwaukee County (D. Tessen).

Ring-billed Gull.—Present throughout the period.

Herring Gull.—Present during the period throughout the state.

Thayer's Gull.—Present at the beginning of the period in Milwaukee County (Jeff Baughman). Also reported in Milwaukee County, March 6 (J. Frank) and Manitowoc County, March 29 (S. Swengel).

Iceland Gull.—Reported in Manitowoc County, March 29 (S. Swengel).

Glaucous Gull.—Reported in Douglas,

Manitowoc and Milwaukee Counties. Last reported in Sheboygan County, May 14 (Jeff Baughman and T. Schultz).

Caspian Tern.—First reported in Manitowoc County, April 6 (C. Sontag). Also reported in Ashland, Bayfield, Burnett, Door, Douglas, Kewaunee, Milwaukee, Ozaukee, Sheboygan and Winnebago Counties.

Common Tern.—First reported in Winnebago County, April 20 (T. Ziebell). Also reported in 12 Counties during the period.

Arctic Tern.—Reported in Manitowoc County, April 24 (C. Sontag) and April 26 (M. Peterson). Accepted by Records Committee.

Forster's Tern.—First reported in Manitowoc County, April 11 (C. Sontag). Also reported in 22 Counties during the period.

Black Tern.—First reported in Dane County, April 30 (B. Hilsenhoff). Also reported in 32 Counties during the period.

Rock Dove.—Present during the period throughout the state.

Mourning Dove.—Present during the period throughout the state.

Black-billed Cuckoo.—First reported in Dane County, May 1 (S. Thiessen).

Yellow-billed Cuckoo.—First reported in Green Lake County, May 10 (T. Schultz).

Eastern Screech-Owl.—Present at the beginning of the period in Jackson, Milwaukee, Racine and Richland Counties.

Great Horned Owl.—Present during the period throughout the state.

Snowy Owl.—Reported during the period in Columbia, Door, Manitowoc, Milwaukee, Taylor and Wood Counties. Last reported in Ashland County, April 9 (D. Verch).

Burrowing Owl.—Reported in Columbia

County, April 24 (Ron & Elaine Hull). Accepted by the Records Committee.

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

Great Gray Owl.—Reported in Ashland County, from April 2 to May 21 (K. Merkel). On May 7, he reported sighting 6 birds in the area.

Long-eared Owl.—Reported during the period in Ashland, Columbia and Brown Counties.

Short-eared Owl.—Reported in Burnett, Manitowoc and Portage Counties. On May 28, 6 birds were sighted in Burnett County (D. Tessen).

Northern Saw-whet Owl.—Reported during the period in Ashland, Bayfield, Burnett, Douglas, Eau Claire, Iron, Sauk and Sawyer Counties.

Common Nighthawk.—First reported in Sauk County, May 6 (S. Swengel).

Chuck-wills-widow.—Reported in Polk County as follows: May 15 to end of period (J. Hudick); May 25 (G. DeBoer); May 26 (T. Soulen) and May 28 (D. Tessen).

Whip-poor-will.—First reported on April 30 in Iowa (B. Volkert) and Jackson (D. Harmer) Counties.

Chimney Swift.—First reported in Dane County, April 21 (P. Ashman).

Ruby-throated Hummingbird.—First reported on May 6 in Barron (A. Goff) and Sauk (K. Lange) Counties.

Belted Kingfisher.—Present at the beginning of the period in Dane, Richland, Trempealeau and Washington Counties.

Red-headed Woodpecker.—Present at the beginning of the period in Sauk County (S. Swengel).

Red-bellied Woodpecker.—Northerly

Counties include Bayfield, Barron, Door, Polk and St. Croix.

Yellow-bellied Sapsucker.—First reported in Winnebago County, April 3 (T. Ziebell). On April 26, 27 birds were sighted in Bayfield County (S. Swengel).

Downy Woodpecker.—Present during the period throughout the state.

Hairy Woodpecker.—Present during the period throughout the state.

Black-backed Woodpecker.—Reported as follows: April 1 in Sawyer and Ashland Counties (K. Merkel); in Douglas County, May 14 (J. Smith), May 18 (L. Semo), May 29 (D. Tessen); and Vilas County, May 28 (Jeff & Jim Baughman).

Northern Flicker.—Present at the beginning of the period in Sauk County (S. Swengel).

Pileated Woodpecker.—Southern Counties include Columbia, Fond du Lac, Grant, Green Lake, Sauk and Washington.

Olive-sided Flycatcher.—First reported in Waukesha County, May 1 (D. Tessen).

Eastern Wood-Pewee.—First reported on May 9 in Racine (G. DeBoer) and Sauk (S. Swengel) Counties.

Yellow-bellied Flycatcher.—First reported in Ozaukee County, May 10 (S. Swengel). Also reported in Dane, Douglas, Milwaukee, Price and Vilas Counties.

Acadian Flycatcher.—First reported in Sauk County, May 14 (Jeff Baughman and D. Tessen).

Alder Flycatcher.—First reported in Green Lake County, May 19 (Jeff Baughman and T. Schultz).

Willow Flycatcher.—First reported on May 19 in Dane (Jeff Baughman) and Green Lake (T. Schultz) Counties.

Least Flycatcher.—First reported on April

30 in Burnett (J. Hoefer) and Dane (P. Ashman) Counties.

Eastern Phoebe.—First reported in Sauk County, March 15 (K. Lange).

Great-crested Flycatcher.—First reported in Sauk County, May 1 (K. Lange).

Eastern Kingbird.—First reported in Walworth County, May 1 (D. Tessen).

Scissor-tail Flycatcher.—Reported in Douglas County, May 20 to 22 (R. Johnson and L. Semo). Reported in Ozaukee County, May 7 (Kim Wegman). Accepted by Records Committee.

Horned Lark.—Present during the period throughout the state.

Purple Martin.—First reported in Milwaukee County, April 4 (W. Woodmansee).

Tree Swallow.—First reported in Rock County, March 12 (D. Tessen).

Northern Rough-winged Swallow.—First reported in Dane County, April 8 (B. Hilsenhoff and S. Thiessen).

Bank Swallow.—First reported in Dane County, April 12 (E. Hansen).

Cliff Swallow.—First reported on April 20 in Portage (L. Semo) and Sheboygan (D. & M. Brasser) Counties.

Barn Swallow.—First reported in Dane County, April 1 (D. Cedarstrom).

Gray Jay.—Reported during the period in Ashland, Douglas, Forest, Iron, Oneida, Price, Sawyer, Taylor and Vilas Counties.

Blue Jay.—Present during the period throughout the state.

American Crow.—Present during the period throughout the state.

Common Raven.—Southern Counties include Door, Jackson, LaCrosse, Portage, Sauk and Shawano.

Black-capped Chickadee.—Present during the period throughout the state.

Boreal Chickadee.—Reported during the period in Ashland, Forest, Iron, Oneida, Price and Vilas Counties.

Tufted Titmouse.—Reported during the period in Chippewa, Dane, Dunn, Eau Claire, Grant, Green Lake, LaCrosse, Marquette, Richland, Rock and Sauk Counties.

Red-breasted Nuthatch.—Present during the period throughout the state.

White-breasted Nuthatch.—Present during the period throughout the state.

Brown Creeper.—Present during the period throughout the state.

Carolina Wren.—Reported in Dane County, May 3 (S. Robbins).

House Wren.—First reported in Taylor County, April 1 (N. Risch).

Winter Wren.—First reported in Sauk County, March 26 (S. Swengel).

Sedge Wren.—First reported in Barron County, April 5 (A. Goff).

Marsh Wren.—First reported in Milwaukee County, May 10 (M. Bontly).

Golden-crowned Kinglet.—First reported in Dane County, March 26 (P. Ashman). Present at the end of the period in Douglas, Sauk, Sawyer and Vilas Counties.

Ruby-crowned Kinglet.—First reported in Menominee County, March 30 (D. Tessen). Present at the end of the period in Sawyer and Vilas Counties.

Blue-gray Gnatcatcher.—First reported in Washington County, April 26 (J. Haseleu).

Eastern Bluebird.—First reported on March 4 in Richland (B. Duerksen) and Sauk (S. Swengel) Counties.

Veery.—First reported in Sauk County, May 6 (K. Lange).

Gray-cheeked Thrush.—First reported in Barron County, April 18 (A. Goff).

Swainson's Thrush.—First reported in Kenosha County, April 20 (H. Bishop).

Hermit Thrush.—First reported in LaCrosse County, March 28 (T. Risch).

Wood Thrush.—First reported on May 3 in Dane (S. Thiessen) and Grant (S. Swengel) Counties.

American Robin.—Present at the beginning of the period in Ashland, Dane, Green Lake, Racine, Walworth and Winnebago Counties.

Varied Thrush.—Reported from the beginning of the period to March 15 in Shawano County (M. Peterson) and March 26 to April 2 in Price County (M. Hardy).

Gray Catbird.—First reported in Taylor County, April 20 (N. Risch).

Northern Mockingbird.—Reported as follows: May 2, Manitowoc County (C. Sontag); May 3, Grant County (S. Swengel); May 4, Sauk County (S. Swengel) and May 9, LaCrosse County (T. Risch).

Brown Thrasher.—First reported in Milwaukee County, March 3 (M. Bontly).

Stage Thrasher.—Reported in Door County, May 14 (K. Glueckert). Accepted by the Records Committee.

Water Pipit.—First reported on March 27 in Dane County (Jeff Baughman, A. & S. Shea, and T. Schultz). Also reported during the period in Chippewa, Columbia, Green Lake, Manitowoc, Marquette, and Shawano Counties.

Bohemian Waxwing.—Reported during

the period in Ashland, Chippewa, Eau Claire, Iron, Marathon, Oneida, Ozaukee, Polk, Portage and Waupaca Counties.

Cedar Waxwing.—Present at the beginning of the period in LaCrosse and Jackson Counties (T. Risch).

Northern Shrike.—Last reported on April 2 in Ashland County (D. Verch).

Loggerhead Shrike.—First reported in Walworth County, April 23 (D. Tessen). Reported nesting in Columbia County by many observers; and in Lafayette County, May 20 (D. Tessen).

European Starling.—Present during the period throughout the state.

White-eyed Vireo.—First reported in Dane County, May 8 (E. Hansen and S. Thiessen). Also reported in Green, Lafayette, Milwaukee and Racine Counties.

Bell's Vireo.—First reported in Sauk County, May 13 (A. & S. Shea). Also reported in Iowa and Lafayette Counties. On May 20, 4 birds were sighted in Green County (D. Tessen).

Solitary Vireo.—First reported in Dane County, April 29 (S. Robbins).

Yellow-throated Vireo.—First reported in Dane County, May 2 (B. Hilsenhoff).

Warbling Vireo.—First reported in Dane County, April 30 (A. & S. Shea).

Philadelphia Vireo.—First reported on May 8 in Milwaukee (S. Diehl) and Washington (J. Haseleu) Counties. Also reported in Bayfield, Dane, Door, Douglas, Green Lake, Outagamie, Racine and Sauk Counties.

Red-eyed Vireo.—First reported in Grant County, April 30 (F. Leshner). On May 14, 35 birds were sighted in Dane County (D. Tessen).

Blue-winged Warbler.—First reported in Grant County, April 30 (F. Leshner).

Golden-winged Warbler.—First reported in Grant County, April 30 (F. Leshner).

Tennessee Warbler.—First reported in Dane County, April 30 (S. Thiessen).

Orange-crowned Warbler.—First reported in Dane County, April 23 (S. Robbins).

Nashville Warbler.—First reported on April 30 in Dane (A. & S. Shea), Grant (F. Leshner), Rock (D. Tessen) and Sauk (K. Lange) Counties.

Northern Parula.—First reported in Rock County, April 30 (D. Tessen).

Yellow Warbler.—First reported in Walworth County, April 23 (D. Tessen).

Chestnut-sided Warbler.—First reported in Burnett County, April 28 (J. Hoefler).

Magnolia Warbler.—First reported on May 3 in Grant (S. Swengel) and Sauk (K. Lange) Counties.

Cape May Warbler.—First reported on May 3 in Dane (S. Robbins), Fond du Lac (B. Volkert) and Grant (S. Swengel) Counties.

Black-throated Blue Warbler.—First reported in Dane County, May 7 (E. Hansen). Also reported in Brown, Douglas, Fond du Lac, Forest, Manitowoc and Milwaukee Counties.

Yellow-rumped Warbler.—First reported in Dane County, April 1 (D. Cedarstrom).

Black-throated Green Warbler.—First reported on April 30 in Grant (F. Leshner) and Sauk (K. Lange) Counties. Present at the end of the period in Fond du Lac County (Jeff Baughman).

Blackburnian Warbler.—First reported in Brown County, May 2 (M. Wierzbicki).

Yellow-throated Warbler.—Reported in Rock County, May 20 (D. Tessen) and May 22 (T. Soulen). Also reported in Grant County, May 14 (S. Thiessen) sighting 2 birds in Wyalusing State Park.

Pine Warbler.—First reported in LaCrosse County, April 16 (T. Risch).

Prairie Warbler.—Reported in Dane County, May 15 (A. & S. Shea).

Palm Warbler.—First reported in Walworth County, April 24 (P. Parsons).

Bay-breasted Warbler.—First reported in Outagamie County, May 7 (J. Anderson).

Blackpoll Warbler.—First reported in Dane County, May 8 (E. Hansen).

Cerulean Warbler.—First reported in Grant County, April 30 (F. Leshner).

Black-and-white Warbler.—First reported in Sauk County, April 25 (K. Lange).

American Redstart.—First reported in Dane County, May 5 (D. Cedarstrom).

Prothonotary Warbler.—First reported in Grant County May 3 (S. Swengel). Also reported in Dodge, Iowa, LaCrosse, Milwaukee, Outagamie, Ozaukee, Racine, Rock, Sauk and St. Croix Counties.

Worm-eating Warbler.—First reported in Sauk County, May 2 (B. Hilsenhoff). Also reported in Brown, Dodge, Manitowoc, Outagamie and Racine Counties.

Ovenbird.—First reported in Grant County, May 1 (F. Leshner).

Northern Waterthrush.—First reported in Sauk County, April 26 (K. Lange).

Louisiana Waterthrush.—First reported in Manitowoc County, March 30 (C. Sontag). Also reported in Dane, Dodge, Grant, Iowa and Sauk Counties.

Kentucky Warbler.—First reported in Milwaukee County, May 9 (J. Frank). Also reported in Dodge, Grant, Lafayette, Ozaukee, Sauk, and Waukesha Counties.

Connecticut Warbler.—First reported in

Dane County, May 13 (B. Hilsenhoff). Present at the end of the period in Milwaukee County (R. Gutschow).

Mourning Warbler.—First reported in Sauk County, May 8 (K. Lange). Present at the end of the period in Milwaukee County (M. Bontly).

Common Yellowthroat.—First reported in Dane County, May 3 (S. Thiessen).

Hooded Warbler.—First reported in Milwaukee County, May 7 (W. Mueller). Also reported in Dane, Fond du Lac, Manitowoc and Waukesha Counties.

Wilson's Warbler.—First reported in Racine County, May 7 (G. DeBoer).

Canada Warbler.—First reported in Sauk County, May 9 (S. Swengel).

Yellow-breasted Chat.—First reported in Milwaukee County, May 9 (W. Woodmansee). Also reported in Dane, Kenosha and Ozaukee Counties.

Summer Tanager.—Reported in Ozaukee County, May 18–20 (Julie Halka).

Scarlet Tanager.—First reported in Grant County, April 30 (F. Leshner). On May 10, 8 birds were sighted in Walworth County (P. Parsons).

Northern Cardinal.—Northerly Counties include Barron, Burnett, Marathon and Iron Counties.

Rose-breasted Grosbeak.—First reported in Vilas County, April 26 (A. Karow).

Indigo Bunting.—First reported in Taylor County, April 16 (N. Risch).

Dickcissel.—First reported in Sauk County, May 14 (D. Tessen). Also reported in Burnett, Dunn, Green, Iowa, LaCrosse, Lafayette, Oconto, Polk, Rock, Sauk, Shawano, St. Croix and Trempeleau Counties.

Rufous-sided Towhee.—First reported in Walworth County, March 4 (P. Parsons).

American Tree Sparrow.—Last reported in Green Lake County, April 16 (T. Schultz).

Chipping Sparrow.—First reported in Jackson County, March 20 (T. Risch).

Clay-colored Sparrow.—First reported in Walworth County, April 28 (P. Parsons). Also reported in 23 other Counties.

Field Sparrow.—First reported in Dane County, March 23 (E. Hansen).

Vesper Sparrow.—First reported in Sauk County, March 31 (S. Swengel).

Lark Sparrow.—First reported in Sauk County, April 9 (D. Tessen). Also reported in Dunn, Grant, St. Croix and Trempeleau Counties.

Savannah Sparrow.—First reported in Dane County, March 26 (E. Hansen).

Grasshopper Sparrow.—First reported in Sauk County, May 1 (S. Swengel). Also reported in 18 other Counties.

Henslow's Sparrow.—First reported in Kenosha County, April 4 (S. Diehl). Also reported in Dane, Fond du Lac, Green Lake, Iowa, Marquette, Ozaukee, Richland, Shawano, Taylor, Washington and Winnebago Counties.

LeConte's Sparrow.—First reported in Burnett County, April 22 (J. Hoefler). Also reported in Ashland, Green Lake, Oneida and Vilas Counties.

Sharp-tailed Sparrow.—First reported in Racine County, May 14 (G. DeBoer). Also reported in Burnett County, May 28 (D. Tessen); May 22 (A. & S. Shea) and May 25 (S. Swengel).

Fox Sparrow.—First reported on March 12 in Dane (P. Ashman and B. Hilsenhoff) and Green Lake (T. Schultz) Counties.

Song Sparrow.—Present at the beginning of the period in Dane County (E. Hansen and S. Thiessen).

Lincoln's Sparrow.—First reported in Milwaukee County, May 8 (M. Bontly and S. Diehl).

Swamp Sparrow.—Present at the beginning of the period in Dane County (S. Thiessen).

White-throated Sparrow.—Present at the beginning of the period in Dane County (S. Robbins).

White-crowned Sparrow.—First reported on May 6 in Dane (D. Cedarstrom) and Dodge (Jeff Baughman) Counties.

Harris' Sparrow.—Reported in Milwaukee County, May 7 (W. Woodmansee).

Dark-eyed Junco.—Last reported on May 29 in Vilas County (Jeff Baughman).

Lapland Longspur.—Last reported on May 19 in Dodge (Jeff Baughman and T. Schultz) and Ozaukee (J. Frank) Counties sighting 300 birds.

Snow Bunting.—Last reported in Ashland County, April 30 (K. Merkel). Also reported in Ashland, Bayfield, Burnett, Columbia, Door, Douglas, Eau Claire, Forest, Shawano, Taylor and Vilas Counties.

Bobolink.—First reported in Green Lake County, April 27 (T. Schultz). Also reported in 39 other Counties throughout the state.

Red-winged Blackbird.—Present at the beginning of the period in Dane, Milwaukee and Sauk Counties.

Eastern Meadowlark.—Present at the beginning of the period in Iowa (C. Roethe) and Portage (L. Semo) Counties.

Western Meadowlark.—First reported in Iowa County, March 5 (C. Roethe). Also reported in 27 other Counties throughout the state.

Yellow-headed Blackbird.—First reported in Columbia County, April 9 (D. Tessen).

Rusty Blackbird.—Present at the begin-

ning of the period in Dane County (E. Hansen and B. Hilsenhoff).

Brewer's Blackbird.—First reported in Walworth County, March 12 (D. Tessen).

Common Grackle.—Present at the beginning of the period in Dane, Milwaukee and Walworth Counties.

Brown-headed Cowbird.—First reported in Winnebago County, March 5 (D. Tessen).

Orchard Oriole.—First reported on May 5 in LaCrosse (F. Leshner) and Sauk (S. Swengel) Counties. Also reported in Columbia, Dane, Grant, Green, Kenosha, Lafayette, Rock, Trempeleau and Walworth Counties.

Northern Oriole.—First reported in LaCrosse County, April 30 (F. Leshner).

Pine Grosbeak.—Last reported in Vilas County, April 23 (Jim Baughman). Also reported in Ashland, Bayfield, Iron, Marathon, Menominee, Portage and Price Counties.

Purple Finch.—Present at the end of the period in Ashland, Bayfield, Barron, Chippewa, Iron and Sawyer Counties.

House Finch.—What was a rare sighting only 2 years ago, has become almost commonplace. Widespread sightings came from the following locations: Columbia, Dane, Iowa, LaCrosse, Manitowoc, Milwaukee, Outagamie, Ozaukee, Portage, Racine, Sauk, Sheboygan, Trempeleau, Washington and Winnebago Counties. (This bird is here to stay.)

Red Crossbill.—Reported during the period from 26 Counties. Last reported at the end of the period in Outagamie County (D. Tessen).

White-winged Crossbill.—Reported during the period in Ashland, Bayfield, Barron, Douglas, Marathon, Price, Sawyer, Shawano, Taylor and Vilas Counties. Last reported in Forest County, April 23 (A. & S. Shea).

Common Redpoll.—Reported during the period in 16 Counties. On April 2, 200 birds

were sighted in Ashland County (K. Merkel). Last reported in Ashland County, April 19 (D. Verch).

Hoary Redpoll.—Reported as follows: March 6 to April 1 in Price County (M. Hardy); March 15, Ashland County (D. Verch) and March 16, Oneida County (S. Swengel).

Pine Siskin.—Present at the end of the period in Ashland, Barron, Bayfield, Dane, Door, Douglas, Eau Claire, Fond du Lac, Forest, Iron, Manitowoc, Marathon, Milwaukee, Price, Portage, Ozaukee, Sawyer, Sheboygan, Taylor, Vilas, Washington, Winnebago and Wood Counties.

American Goldfinch.—Present during the period throughout the state.

Evening Grosbeak.—Present at the end of the period in Ashland, Barron, Bayfield, Douglas, Forest, Iron, Price and Sawyer Counties.

House Sparrow.—Present during the period throughout the state.

European Goldfinch.—Reported in Langlade County, April 15 (Theodore Fox and Clara McKenna). Accepted by Records Committee, possibly an escaped bird.

CONTRIBUTORS

Jim Anderson, Philip Ashman, Jeff Baughman, Jim Baughman, Dan Bel-

ter, Homer Bishop, Marilyn Bontly, David & Margaret Brasser, Mary Butterbrodt, David Cedarstrom, Gerald DeBoer, Scott Diehl, Barbara Duerksen, Marty Evanson, Jim Frank, Alta Goff, Ron Gutschow, Karen Etter Hale, Ellen Hansen, Maybelle Hardy, Dorothy Harmer, Judy Haseleu, Bill Hilsenhoff, Jim Hoefler, Joseph Hudick, Thomas Hunter, Robbye Johnson, Ada Karow, the Kuhns, Ken Lange, Steve & Laura LaValley, Fred Leshner, Roy & Charlotte Lukes, Mark Martin, Keith Merkel, William Mueller, Patricia Parsons, Mark Peterson, Janine Polk, Mary Jean Raile, Bill Reardon, Carol Richter, Nick Risch, Paul Risch, Tim Risch, Sam Robbins, Chuck Roethe, Clark Schultz, Tom Schultz, Larry Semo, Al & Sue Shea, Jerry Smith, Charles Sontag, Tom Soulen, Paul Sunby, Scott Swengel, Daryl Tessen, Steve Thiessen, Dick Verch, Melvin Wierzbicki, Winnie Woodmansee, Norma Zehner and Tom Ziebell.

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Big Day Counts: 1988

by *William K. Volkert*

There were 21 Big Day Counts in 1988. Last year there were 23. The counts took place between May 11 and May 29. Group size varied from a single observer to parties of three. Several observers conducted more than one count. The high species count was 176. Here are the highlights of the 21 counts, which are arranged in chronological order.

(1) Jerry DeBoer, Karl Leggler, and Greg Howard.—May 11, 12:01 A.M.—8:30 P.M., 380 miles by car, 4 miles on foot, 152 species. Route: Vernon Marsh, Racine and Milwaukee County Parks, Horicon, Columbia County Ponds, Baxter's Hollow.

(2) Jim Frank.—May 11, 3:30 A.M.—6:00 P.M., 285 miles by car, 3 miles on foot, 151 species. Route: Cedarburg Bog, Kletzsch Park, Schlitz Audubon Center, Milwaukee Harbor, Riveredge Nature Center, Belgium Pond, Horicon, Grassy Lake.

(3) Mike Mossman and Sam Robbins.—May 12, 3:00 A.M.—8:45 P.M., 207 miles by car, 4 miles on foot, 155 species including a Worm-eating Warbler. Route: Mazomanie, Baraboo Hills, De-

vil's Lake, Madison area, Arlington Ponds.

(4) Al Shea and Sue Shea.—May 13, 1:25 A.M.—9:10 P.M., 280 miles by car, 2.5 miles on foot, 167 species, including a Worm-eating Warbler. Route: Waunakee Marsh, Dunlap Hollow, Mazomanie Bottoms, Devil's Lake, Baxter's Hollow, Crystal Lake, Goose Pond, Schoenenberg Marsh, Grassy Lake, Grand River Marsh, Lake Maria.

(5) Mary Donald and Roger Sundell.—May 14, 3:00 A.M.—9:30 P.M., 241 miles by car, 5 miles on foot, 139 species, including Laughing Gull and House Finch. Route: Cedarburg Bog, Ehlers Park, Harrington Beach, Belgrave Ponds, Milwaukee River Parks, Milwaukee Coast Guard Impoundment.

(6) Randy Hoffman and Daryl Tesen.—May 14, 12:30 A.M.—8:00 P.M., 415 miles by car, 5 miles on foot, 173 species, including American Avocet, Ruff, and Worm-eating Warbler. Route: Waunakee Marsh, Mud Lake, Laws Bottom, Baxter's Hollow, UW Arboretum, Arlington Ponds, Grassy Lake, Horicon Marsh, Manitowoc, Atkinson Marsh.

(7) Karl and Dorothy Legler.—May 14, 1:00 A.M.—10:00 P.M., 360 miles by car, 5 miles on foot, 145 species, including a King Rail and White-eyed Vireo. Route: Laws Bottoms, Baraboo Hills, UW Arboretum, 9-Springs, Arlington Ponds, Horicon.

(8) Jeff Baughman, Tom Schultz, and Wendy Schultz.—May 14, 12:00 A.M.—8:30 P.M., 414 miles by car, 2 miles on foot, 176 species, including American White Pelican, American Avocet, Laughing Gull, Little Gull, and Worm-eating Warbler. Route: Dunlap Hollow, Mud Lake, Grassy Lake, Grand River Marsh, Baxter's Hollow, Mazomanie, Arlington Prairie, A&W Ponds, Horicon, Kettle Moraine, Manitowoc, Two Rivers.

(9) Al Shea and Sue Shea.—May 15, 3:30 A.M.—4:30 P.M., 230 miles by car, 1 mile on foot, 153 species, including Western Sandpiper, Prairie Warbler, Worm-eating Warbler. Route: Horicon Marsh, A&W Ponds, UW Arboretum, Fish Lake, Crystal Lake, Baxter's Hollow, Devil's Lake, Wisconsin River, Baraboo River, Grassy Lake, Mud Lake, Schoenenberg Marsh, Harvy Road Pond.

(10) Jim Frank.—May 17, 3:45 A.M.—8:00 P.M., 365 miles by car, 3 miles on foot, 149 species. Route: Cedarburg Bog, Kletzsch Park, Riveredge Nature Center, Belgium Pond, Noyes Forest, Horicon Marsh, Grassy Lake, DM Pond, Milwaukee Harbor.

(11) Jeff Baughman, Tom Schultz, and Wendy Schultz.—May 19, 12:00 A.M.—8:15 P.M., 423 miles by car, 2 on foot, 173 species, including American White Pelican, Little Gull, and Worm-eating Warbler. Route: Mud Lake, Grassy Lake, White River Marsh, Snake Creek Wetlands, Grand River Marsh, Baxter's Hollow, Mazomanie, Arling-

ton Prairie, A&W Ponds, Horicon Marsh, Theresa Marsh, Kettle Moraine, Manitowoc.

(12) Jim Frank.—May 19, 3:45 A.M.—6:00 P.M., 245 miles by car, 3 miles on foot, 141 species, including a Whimbrel. Route: Cedarburg Bog, Riveredge Nature Center, Belgium Pond, Harrington Beach, Noyes Forest, Horicon Marsh, Manitowoc Harbor.

(13) Bernie Brouchoud and Carrol Rudy.—May 20, 2:00 A.M.—8:45 P.M., 137 species, including Little Gull, and Willet. Route: unrecorded.

(14) David Brasser and Margaret Brasser.—May 21, 5:30 A.M.—9:00 P.M., 208 miles by car, 5 miles on foot, 108 species. Route: Horicon Marsh, Riveredge Nature Center, Harrington Beach, Woodland Dunes Nature Center, Manitowoc Harbor, Maywood Environmental Center.

(15) Joseph P. Hudick.—May 21, 4:40 A.M.—9:00 P.M., 350 miles by car, 2 miles on foot, 127 species, including Chuck-will's-widow and Scissor-tailed Flycatcher. Route: Western Polk County, Northern St. Croix County, Crex Meadows, Fish Lake, Wisconsin Point.

(16) Debbie Risch, Paul Risch and Nick Risch.—May 22, 3:45 A.M.—9:00 P.M., 314 miles by car, 2 miles on foot, 145 species, including Western Sandpiper. Route: Pershing Wildlife Area, Miller Dam Flowage, Chequamegon National Forest, Mead Wildlife Area.

(17) Al Shea and Sue Shea.—May 22, 3:00 A.M.—11:00 P.M., 319 miles by car, 3 miles on foot, 166 species, including Western Grebe, Yellow Rail, Parasitic Jaeger, Chuck-will's-widow, Scissor-tailed Flycatcher, and Sharp-tailed Sparrow. Route: Brule River Corridor, Solon Springs, St. Croix Flowage, Gordon Barrens, Wisconsin Point, Fish

Lake, Grantsberg, Crex Meadows, Dresser.

(18) Larry Semo.—May 23, 4:00 A.M.—6:30 P.M., 140 miles by car, 3 miles on foot, 134 species, including Western Grebe. Route: Douglas County, Stones Bridge, Gordon, Wisconsin Point.

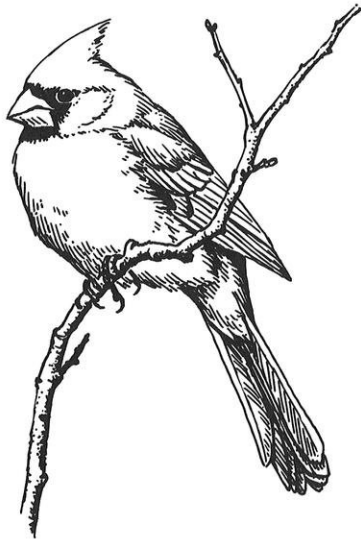
(19) John Woodcock.—May 28, 4:30 A.M.—10:30 P.M., 258 miles by car, 4.5 miles on foot, 127 species. Route: Manitowoc, Woodland Dunes Nature Center, Collins Marsh, Green Bay, Atkinson Marsh, Oconto Marsh, Little Maiden Marsh, Archibald Lake, Jones Spring.

(20) Daryl Tessen.—May 28, 4:30 A.M.—10:00 P.M., 415 miles by car, 2 miles on foot, 138 species, including

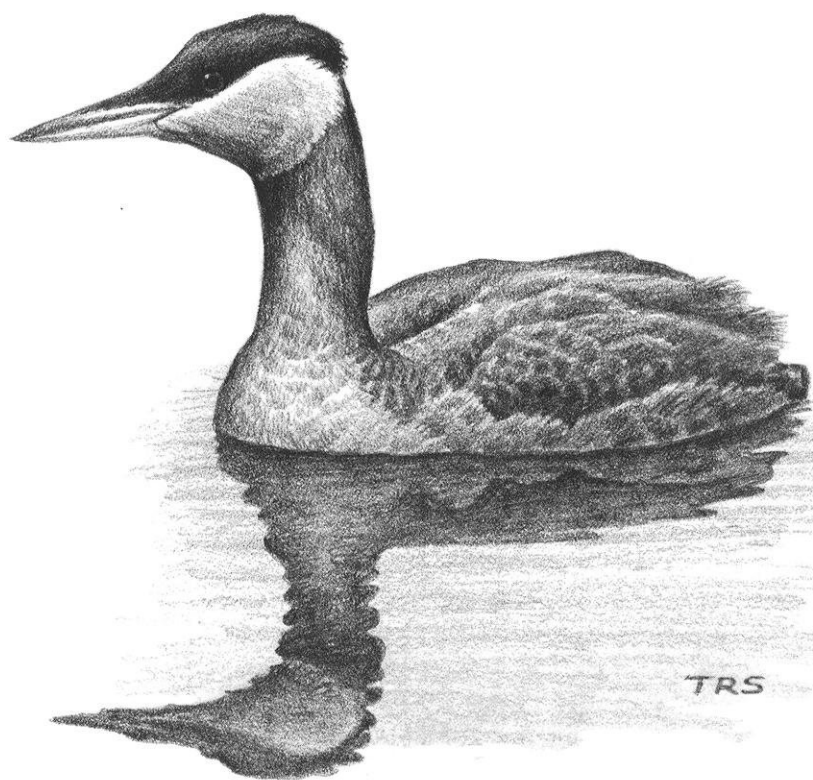
Eared Grebe, Yellow-crowned Night-Heron, Yellow Rail, Chuck-will's-widow, and Sharp-tailed Sparrow. Route: Newark Prairie, Sugar River, Cadiz Springs, Arlington Ponds, Wilson Pond, Oakbridge Lake, Crex Meadows, Dresser.

(21) Daryl Tessen.—May 29, 4:00 A.M.—8:30 P.M., 245 miles by car, 3 miles on foot, 157 species, including Yellow Rail, Black-backed Woodpecker, Sharp-tailed Sparrow. Route: Crex Meadows, Fish Lake, Gordon, Solon Springs, Stones Bridge, Winnebougou Bridge, Wisconsin Point.

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Northern Cardinal by Thomas R. Schultz



Red-necked Grebe by *Thomas R. Schultz*

May Day Counts: 1988

by *William K. Volkert*

There were 20 May Day counts reported this year. Most counts took place on May 14. The high count was 175 species, and 6 counts had over 150 species. Details of the counts are provided below, along with notes of rare species recorded.

Ashland and Bayfield Counties.—May 20, 4:30 A.M., 19 observers, 6 parties, 162 species. Compiler, Dick Verch.

Brown and Oconto Counties.—May 7, 6:00 A.M.—8:08 P.M., observers and parties unrecorded, 128 species. Compiler, Green Bay Bird Club.

Burnett County.—May 20, 4:21 A.M.—10:25 P.M., 3 observers, 1 party, 121 species, including Yellow Rail. Compiler, Jim Hoefler.

Calumet County.—May 14, 4:30 A.M.—5:30 P.M., 7 observers, 3 parties, 108 species, including Lawrence's Warbler. Compiler, Carrol Rudy.

Fifield-Oxbo Area.—May 14, 5:00 A.M.—8:00 P.M., 25 observers, 18 parties, 93 species, including Black-backed

Woodpecker, Redpoll, and Tree Sparrow. Compiler, Maybelle Hardy.

Fond du Lac County.—May 15, 5:00 A.M.—5:00 P.M., 20 observers, 6 parties, 158 species. Compiler Tom Schultz.

Kenosha County.—May 14, 5:00 A.M.—8:00 P.M., number of observers and parties unrecorded, 133 species. Compiler, Ron Hoffman.

Lake Geneva.—May 8, 12:05 A.M.—8:30 P.M., 7 observers, 3 parties, 92 species. Compiler G. M. Culp.

Manitowoc County.—May 21, 5:00 A.M.—4:00 P.M., 9 observers, 7 parties, 116 species, including House Finch. Compiler, Bernie Brouchoud.

Marathon County.—May 15, 4:00 A.M.—4:00 P.M., 9 observers, 6 parties, 126 species, including Northern Mockingbird. Compiler, Duane R. Goetsch.

Milwaukee.—May 14, 2:30 A.M.—9:30 P.M., 10 observers, 5 parties, 161 species, including Laughing Gull and

House Finch. Compiler, Mary F. Donald.

Mosquito Hill Nature Center.—May 14, 7:00 A.M.—4:00 P.M., 6 observers, 1 party, 80 species, including Worm-eating Warbler. Compiler, James S. Anderson.

Oconomowoc.—May 8, 5:30 A.M.—10:30 P.M., 15 observers, 6 parties, 128 species. Compiler, Ed Peartree.

Plymouth.—May 14, 5:15 A.M.—8:00 P.M., 20 observers, 8 parties, 143 species, including Yellow Rail and House Finch. Compiler, Harold Koopmann.

Portage County.—May 14, 6:30 A.M.—6:30 P.M., 16 observers, 8 parties, 129 species. Compiler, Nancy Stevenson.

Racine and Kenosha Counties.—May 14, 2:30 A.M.—8:30 P.M., 12 observers, 10 parties, 175 species, including

White-eyed Vireo, Worm-eating Warbler, Sharp-tailed Sparrow, and House Finch. Compiler, Jerry DeBoer.

Shawano County.—May 14, 3:00 A.M.—9:00 P.M., 22 observers, 17 parties, 152 species. Compiler, Mark Peterson.

Taylor County.—May 27, 3:30 A.M.—9:30 P.M., 6 observers, 3 parties, 82 species. Compiler, Dwight Offord.

Waukesha County.—May 14, 6:00 A.M.—1:00 P.M., 21 observers, 5 parties, 130 species. Compiler, Robert Adams.

Winnebago County.—May 14, 5:00 A.M.—8:00 P.M., 15 observers, 9 parties, 168 species, including House Finch. Compiler, Tom Ziebell.

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“By the Wayside”

Western Grebe, White-faced Ibis, Arctic Tern, Burrowing Owl, Scissor-tailed Flycatcher, Sage Thrasher, and European Goldfinch were the highlights of the past spring season.

WESTERN GREBE (*Aechmophorus occidentalis*)

19–23 May 1988, Douglas County, Superior, Wisconsin Point.—When I had just started glassing Lake Superior from the beach, I noticed two Western Grebes located about 75 feet off the beach. They were first sleeping but raised their heads soon because of my presence. They were smaller than a Double-crested Cormorant with a light neck and cheek. A dark gray or light black back was carried low in the water, just a few inches were above. A black posterior strip extended up the neck and developed into a black crown that dropped below the eye and went to the base of the bill. The throat and cheek were white. They were long necked, flat-crowned and had a dagger-like bill. I called Robbye Johnson, and later that day we found a third Western Grebe just off Gull Bluff. This single bird hung around here until at least May 23 when I last located it. The birds rode too low in the water, were longer necked, and the black on the crown dropped below eye, thus Clark's Grebe was rejected.—*Larry Semo, Box 435, Superior, WI 54880.*

WHITE-FACED IBIS (*Plegadis chihi*)

19 May 1988, Frog Alley-Vernon Marsh, Waukesha County.—A group of 17 of us arrived at Frog Alley in Vernon Marsh in Waukesha County. This was the first stop on the pre-convention trip. When I got to the edge of the swamp, I stopped and began to scan the marsh and mudflat. I located a large bird with a reddish-brown color similar to that of a Cinnamon Teal. I looked through my 20x scope and then saw a long, dark gray bill that was noticeably curved downward. The bird was approximately 2 feet tall with dark gray legs, except for reddish coloration at the knees. The wings had a shiny iridescence when folded and varied in color from pinkish to bluish-green. The bill was dark gray, approximately 5–6" long and noticeably curved downward. There was a small area between the bill and eye that appeared to be reddish in color. There also was a pale tan border around the bill and eye on the face that appeared to be approximately 1/4" wide.

The bird either stood in one place, or it foraged in the mud of the grassy mud-

flat it was on. It would occasionally fly 50–100' to another location to feed. The pale tan border around the bill and eye was always noticeable through the 20× scope. As we left, the bird extended its right wing, apparently attempting to dry its wing. The underside of the wing was brown, except for a patch about 4" in diameter which was a pale, iridescent bluish-green.—*Mark S. Peterson, Box 53, Caroline, WI 54928*

ARCTIC TERN (*Sterna paradisaea*)

26 April 1988, Manitowoc County, Manitowoc Impoundment.—I arrived at the Manitowoc Impoundment about 12:40 P.M. and began walking around the rock wall. I could see a flock of gulls and terns standing on the mudflat at the south end of the impoundment. When I was about 100 yards away from the numerous Herring Gulls and Ring-billed Gulls, I stopped and began looking more closely. There were 80–90 Caspian Terns and two "small terns." No other terns were present in the impoundment. From my position with the sun to the left and behind me the 2 small terns appeared to be similar in appearance. They were both standing, but appeared to be in a low stooped position. The bill and feet were a dark red, with the top of the bill almost black. The cap was black. The wings, back and breast were gray. The tail was a pale gray and appeared to extend about 1/2" beyond the wings. An area just below the cap appeared to be white and was approximately 1/2" wide. I approached to within approximately 50 yards and could see the above field marks clearly through my 20× scope.

Most of the birds in the impoundment then flew. I found one of the small terns flying overhead and could see a white

forked tail, the white patch just below the crown, and a narrow black border on both the front and back edges of the wings, extending from the tips almost to the bend in the wings. I then lost sight of the bird and could not relocate either of them.

The bill was darker than either Forster's Terns or Common Terns near shore standing on pilings. Standing position was more stooped and lower to the ground than the Forster's and Common Terns. Breast was gray, more white in Common or Forster's. Face had a white patch about 1/2" wide extended to neck and breast in Common and Forster's Terns. Wings had pale black linings in flight, approximately 1/2" shorter than tail when at rest.—*Mark S. Peterson, Box 53, Caroline, WI 54928.*

BURROWING OWL (*Speotyto cunicularia*)

24 April 1988, Columbia County, 2 miles north of Portage, 1/2 mile east of Highway CX on Carroll Rd..—A bird flushed off the ground within 10' of the road from a small strip of brush and saplings. It flew about 40' down the fenceline and landed on a fence post. It was in open view, and the sky was clear with bright sun behind us. We looked through binoculars and checked the field guides and determined it was a Burrowing Owl. It was very erect and bobbed once or twice and made a "chuck" call—like a chicken. This caused my mother-in-law to confirm it as a Burrowing Owl. She had seen them in Florida several years ago do the same thing. I approached within 21' (later paced off). I could see the big, bright yellow eyes looking right at me. He flew to another post whereupon I sent my wife home to call a friend, Jim Rilling, to bring his

camera. She returned with our three children and I wrote the following notes: Round owl head, no ear tufts. Short tail, wings as long as tail. Light brown back with white spots. More white on the breast with soft brown streaks. Breast pattern and colors exactly like a Ruffed Grouse. Breast above the legs all white. The most obvious feature was the long legs that appeared featherless. Line of white above each eyebrow. Chocolate colored necklace under the chin with white patches above and below this. This was evident when he was fully erect but not when he settled down. Size 10–12". Jim arrived about 10:50 A.M. and took a number of pictures within 20' (Figure 1). The owl flew twice more to other fence posts. We lost track of him and

went back to where he first flushed and saw him 10' away, crouched real low to the ground. His eyes were just slits with very little yellow showing. He was very hard to see even with binocs. He finally flew off to the North into some bigger trees, and we left. Until then he had stayed within 40' of where we had first flushed him, alternately flying to and from that area and landing on different fence posts each time. My son, Greg, mentioned seeing a small owl fly across the road in front of the car the previous Thursday in this same spot right at dusk. On Saturday, 4/23/88, we had wet snow in the morning that later melted. We didn't search for him on Monday, 4/25/88 but did on Tuesday morning, and he flushed out of the same spot. A number of birders came up all day, and everyone saw him. This was a clear day. Wednesday a lot of people came up all day until 5:00 P.M., but no one saw him. We had a few inches of heavy wet snow Wednesday a.m. turning to light rain all day. Strong NW winds and overcast with temps in the mid 30's. Just before 7:00 P.M. we went to look again. The clouds were breaking up, the rain had stopped and the winds were calm. He was perched on a tree branch right where we'd first flushed him. We observed him for a time with a spotting scope, then drove slowly by in the car and observed him all puffed up with one leg pulled up in his feathers and his head pulled down. This was our last sighting.—Ron Hull, N 8619 Carroll Rd., Portage, WI 53901.

SCISSOR-TAILED FLYCATCHER
(*Tyrannus forficatus*)

7 May 1988, Ozaukee County, Town of Grafton.—The bird had a tail that was approximately 2/3 of its total length. The

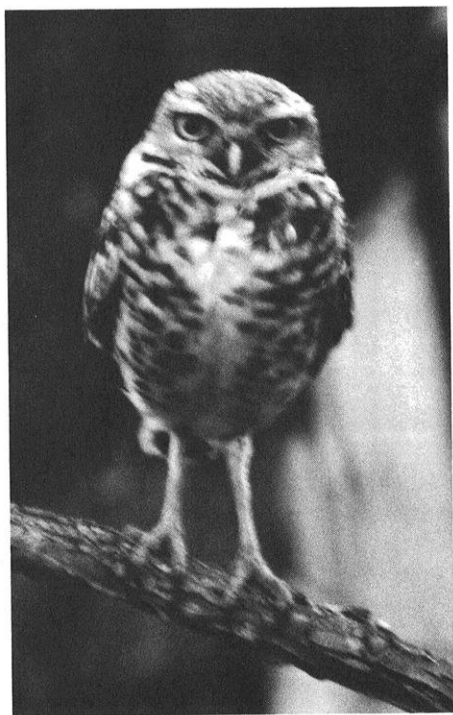


Figure 1. Burrowing Owl in Portage County, 24 April 1988 (photo by Gerald De Boer).

tail appeared to be entirely black when the bird was resting. In flight when it spread its tail I could see white outer edges on the tail. The overall color of the bird was a blue grey with its wings being darker than its head. Under the wings the bird was a rose color that faded towards its breast to an off white.

The bird's body size seemed about the size of a blackbird, but the tail added a great deal to its overall length. That is what I noticed first because I had just been looking at a blackbird before I saw this bird. It did seem more elegant in shape than the blackbird, not quite as heavily built. Every-time it flew up it did sort of a cartwheel in the air and came to rest on a stake or fence post. The bird appeared to be a very acrobatic flyer. In the time I watched it, it stayed in a relatively small area flying up and then perching on the next stake in line.

When I saw this bird I could not think of any bird found in this area normally that would have such a long tail. I looked through the National Geographic Society Field Guide and found the Scissor-tailed Flycatcher and Fork-tailed Flycatcher. But, as it did not have a dark head and did have rose color under its wings, I decided it must be a Scissor-tailed Flycatcher.—*Kim Wegmann, 491 N. Port Washington Rd., Grafton, WI 53024.*

SAGE THRASHER (*Oreoscoptes montanus*)

14 May 1988, Door County, 3.5 miles north of Ellison Bay, 500 yards off Highway 42.—I saw this bird on my front lawn from as close as 5 yards to 20 yards away. It was near a foraging American Robin quite a bit of the time. This bird collected bugs clinging to the grass. With quick motions, it darted from one bug to the other the whole time I watched.

Underneath, it had small, thin brown streaking. The streaks were thicker and longer on the breast. The smaller streaks were visible on the flanks also. Two thin brownish stripes were present on the chin. The back can be described as grayish with no markings. There were no distinct wing bars, they were very thin and faint. It had yellowish wash on the shoulders and flanks. The rump had a rustyish tint. The eye appeared orangish-red. A faded white stripe was present over the eye. As this bird moved around, an inconspicuous whitish tail tip could be seen.

The bird was 1–2" smaller than the robin, but had a longer tail. Their build was fairly similar, though this bird was a little more slender and not as chunky as the robin.

No voice was heard and the bird was never seen in flight. After all of the observations were made, I ran for my bird book; returned and the bird was gone. The bird was possibly seen the next day in flight, but I couldn't confirm it.

No comparisons were made during the sighting aside from the robin. I didn't know what it was until I looked it up. Comparisons in the book: all thrushes had shorter tails, heavier streaking, dark eyes, and slightly different build. Juvenile mockingbird didn't have the streaking, has large wing bars, and is bigger. All other thrashers have curved bills, this bird had a straight bill.—*Kevin Glueckert, P.O. Box 119, Ellison Bay, WI 54210.*

EUROPEAN GOLDFINCH (*Carduelis carduelis*)

15 April 1988, Langlade County, 3–4 miles south of Antigo.—When my son called me from the hospital about 8:00, Friday April 15 and said his friend and co-worker, Dr. T.C. Fox, was feeding a

European Goldfinch at his feeder I couldn't wait to call Mrs. Fox (Barbara), and she told me to come out (about 3–4 miles south of Antigo on a hill overlooking Antigo flats). It was a sunny windy morning. When she greeted me, she said "He has been here. He flies in and away with the goldfinches and I hope he'll return."

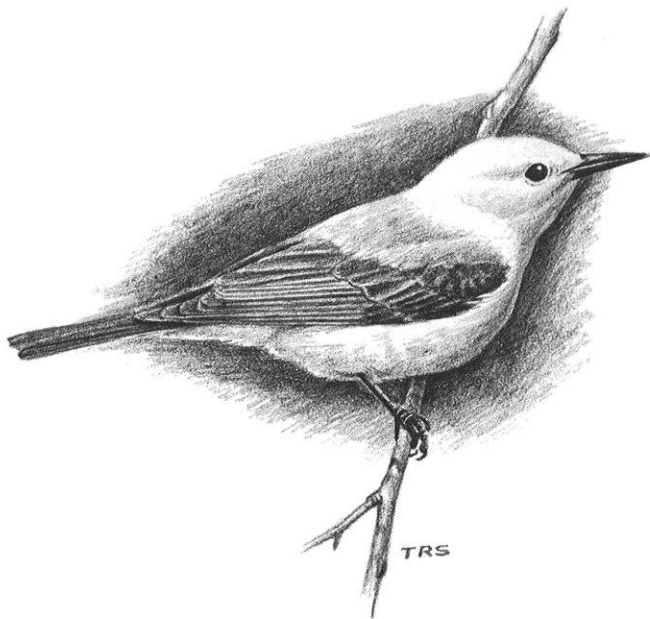
Her viewing chair in the breakfast room looks out through glass doors to the feeders about 20–25 feet away. We waited about 10 minutes when she said "There he is." I was so excited it took me a few seconds to get him in focus. He was with about 30–40 American Goldfinches.

He was a little larger and was not the golden yellow of his goldfinch friends.

He had a tawny appearance, but his red face and the wide white throat band that made a necklace from his black cap were so striking in appearance, so well defined, that it would be difficult to mistake him.

I had *Birds of North America*, and Barbara had several reference books on the table that we looked at. I was so pleased that Ben Pickering who is from England where the bird is seen commonly, saw him and agreed it was the European Goldfinch.

He only appeared one day, and I feel so fortunate that I saw him several times. Where did he come from and where did he go?—*Clara R. McKenna, 1125 Superior St., Antigo, WI 54409.*



Prothonotary Warbler by Thomas R. Schultz

ABOUT THE AUTHORS AND ARTISTS

Brian J. Ausloos was one of the hack-site attendants at the peregrine release site in Madison. He has a B.S. from UW-Stevens Point, and he is particularly interested in the law enforcement aspects of wildlife management.

Peter Alan Brooks is a Milwaukee native with training in graphic arts. He specializes in pen-and-ink work. He is currently attending school in Oregon. The drawing in this issue is his first published work.

Scott R. Craven is an Associate Professor and Extension Specialist in the UW-Madison's Department of Wildlife Ecology. Scott is well known to naturalists around the state because of his extension publications and radio shows.

James O. Evrard is a wildlife biologist with the Wisconsin DNR's Bureau of Research. He has a Master's degree in Wildlife Ecology from the UW-Madison. His present research activities focus on waterfowl and wetlands.

Cary Hunkel has a Masters of Fine Arts degree from the University of Wisconsin-Madison. Her art has been shown

at the "Birds in Art" exhibition in Wausau. She is currently the recording secretary for Madison Audubon Society.

Ricky Lien was one of the hack-site attendants at the peregrine release site in Madison. He is completing his Master's degree in Land Resources at the UW-Madison. His thesis work is on the design of nature preserves.

Michael J. Mossman is a Nongame Biologist with the DNR's Bureau of Research. He has a Master's degree in Wildlife Ecology from the UW-Madison. He is a frequent contributor to *The Passenger Pigeon* and is the coauthor of *Breeding Birds of the Baraboo Hills*.

Thomas R. Schultz is WSO's Assistant Editor for Art and chairman of the Field Trip Committee. His artwork has appeared in many prestigious shows and he was voted Wisconsin Wildlife Artist of the Year in 1988.

Gregory A. Septon has been a taxidermist at the Milwaukee Public Museum since 1976. He attended the UW-Parkside. His interests are in birds of

prey and gamebirds; he is an accomplished photographer.

Paul I. V. Strong has been coordinating Wisconsin Project Loon Watch since 1985. He is a biologist at the Sigurd Olson Environmental Institute at Northland College in Ashland. He has his Ph.D. degree in Wildlife Resources from the University of Maine.

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Annie Wendt was one of the hack-site

attendants at the peregrine release site in Milwaukee. She is a Minnesota native and is working on her Master's degree in biology at the University of Minnesota. Her main interest is in birds of prey.

Jonathan Wilde is a long-time WSO member and one of Wisconsin's premier wildlife artists. His undergraduate training was at the UW-Madison. His artwork has been featured in numerous shows around Wisconsin and the world.

William K. Volkert is the Springfield-note Compiler and Chairman of WSO's Education Committee. Bill is a naturalist stationed at the Wisconsin DNR's Horicon Marsh Wildlife Area.

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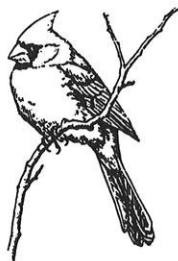
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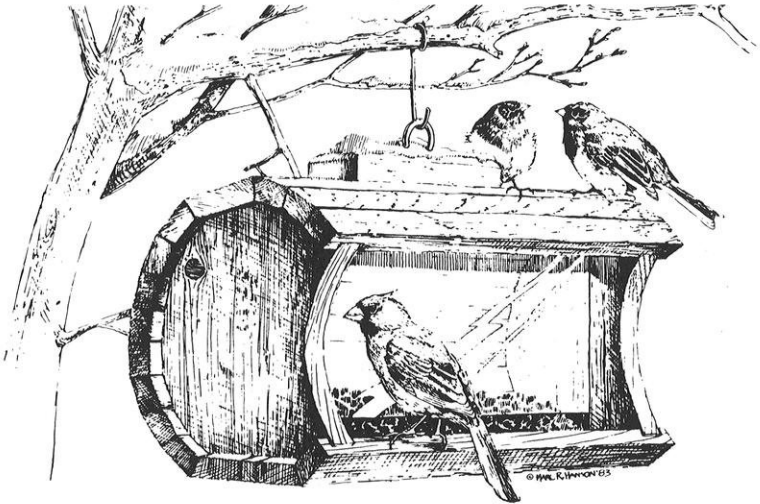
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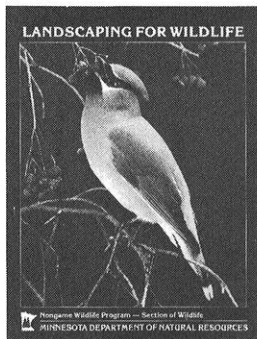
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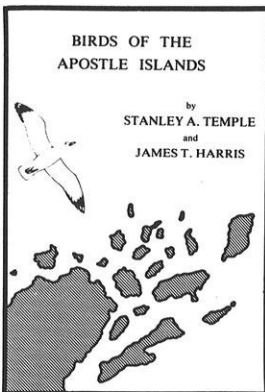
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