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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.

Breeding Bird Surveys

Another June has passed, and I have survived another year's round of breeding bird surveys. In 1990, I completed sixteen breeding bird surveys of one form or another. Some of these were job related, as coordinator of the breeding bird surveys on Wisconsin's State Natural Areas, while other were strictly on a volunteer basis. Although sixteen surveys may seem like a lot of surveys, it was less than the twenty-one surveys in 1989 and the twenty-three surveys in 1988. The reason more surveys were not completed this year was the frequency of storm systems in June. Rain delayed some surveys, but the wind affected far more.

I sometimes ask myself why I do this every year. It's definitely to obtain knowledge, know the birds better, and to visit new places. There is another very important reason and that is to give something tangible back to the birds. I am not alone; there are hundreds of others who dedicate countless hours participating in our state's breeding bird surveys.

Every WSO member should be acquainted with the North American Breeding Bird Survey. This survey was developed to gather information on long-term population trends of North American birds. In Wisconsin, this survey was initiated in 1966 and has continued until today. During this entire period, Sam Robbins has coordinated the survey. His twenty-five years of dedication to this project is unequalled in Wisconsin's illustrious history of ornithology.

For those of you that are unfamiliar with this survey, a brief synopsis is in order. Wisconsin has seventy designated routes. Each route has fifty, three-minute, look-and-listen stops located precisely one-half mile apart. The observer records all the birds seen and heard at each stop on a tally sheet. The survey commences one-half hour before sunrise and is complete about four hours later.

Over the past twenty-five years, a tremendous volume of data has been collected. The compilation and tabulation of these data show species population trends. Single species or species groups can then be looked at to find answers as to why they are declining or increasing.

This survey has produced invaluable data over the years, but it does have one major flaw. It is done from the road. Nearly every species is affected to some degree by the human impacts of the road itself and the edge it creates. Those species whose optimum habitat is interior forest would be one example of a species group under-sampled in this survey.

In 1971, WSO in cooperation with the State Natural (formerly Scientific) Areas program initiated breeding bird surveys on those portions of Wisconsin little touched by the hand of man. The program was initially coordinated by Evelyn Werner. She was followed by Mike Mossman and myself. The primary focus of this program has been to assess the avifauna of our State Natural Areas and detect long-term population trends.

In the past five years between fifty and sixty observers have participated in this survey. Approximately 200 species are recorded each year from these natural areas. Even though these areas are often far from roads, they have not totally escaped the hand of man.

Eric Epstein and I were doing a survey this past June on Black Lake bog, a 3,500-acre area on the Wisconsin-Minnesota border. We first drove down a road one mile past the last house, then we portaged seven-tenths of a mile to the river, paddled two and one-half miles upstream to Black Lake. In Wisconsin, it is probably as far away from a road as you can get. Yet, once there, we discovered the equivalent of the "duck blind Hilton." There were covered blinds with three bunks, a table, a magazine rack, and a double decker doghouse. As we were doing our survey there, we noticed Barn Swallows. What were they doing here? Finally, near the end of the route we discovered the nest under a duck blind on stilts near the water's edge.

These breeding bird surveys have demonstrated their value as assessment tools. Recent breeding bird surveys in the Nicolet National Forest, coordinated by Bob Howe, have dramatically increased our knowledge of birdlife there. This survey just completed its fourth year. At the time of this writing, I don't have the exact number of participants, but early indication predicted over seventy participants.

There are other smaller scale surveys taking place annually. The Apostle Islands National Lakeshore, Horicon and Trempealeau National Wildlife Refuges, some state wildlife areas, U.W.-Milwaukee Field Station, and many private land owners conduct surveys annually.

The upshot is birds are more than just a source of individual pleasure. They are excellent indicators of how our planet is doing. Birds are a barometer of environmental conditions. For us to understand how the birds are doing, we need to survey them. Here is a well-deserved thank you to all of the participants in these surveys. You are making a difference. Future generations of human beings and birds will be indebted to your efforts.

Randy Hoffman

President

Patterns of Abundance and Diversity of Birds on the Apostle Islands

Breeding land birds of the Apostle Islands have been well studied. The diversity of birds varies considerably between islands, and some of the factors that explain the interisland variation can be identified. These findings contribute importantly to our understanding of factors controlling avian diversity elsewhere in Wisconsin.

by Stanley A. Temple

Studies of birds living on islands have contributed much to our understanding of the ways in which animals are distributed over the earth's landscapes. Patterns of abundance and diversity that are so conspicuous on islands are now recognized as being typical of continental landscapes that include ecosystems that are naturally island-like (such as wetlands) or that have become island-like through human activities (such as remnant prairie fragments in a developed agricultural landscape).

In Wisconsin, there are both true islands, such as the Apostle Islands in Lake Superior, and mainland landscapes that have become very island-like, such as the fragmented forests of southern Wisconsin. The patterns of abundance and diversity of birds in these ecological settings are currently of great interest to scientists and conservationists (e.g., Ambuel and Temple 1983, Temple 1988, Temple and Cary 1988).

During 1977–79, I studied breeding land birds on the Apostle Islands (Temple and Harris 1985). The results of these studies support current concepts about the patterns of abundance and diversity of birds on islands and provide insights into problems that result from habitat fragmentation in mainland Wisconsin.

Methods

From mid–May through early July in 1977 and 1978, and June 1979, teams of researchers censused land birds during 452 observer-days on all of the Apostle Islands, except Madeline and Long (Figure 1). They used a standard line-transect census method (Emlen 1971, 1977) to record species occurrences and to estimate numbers of land birds found along over 2,000

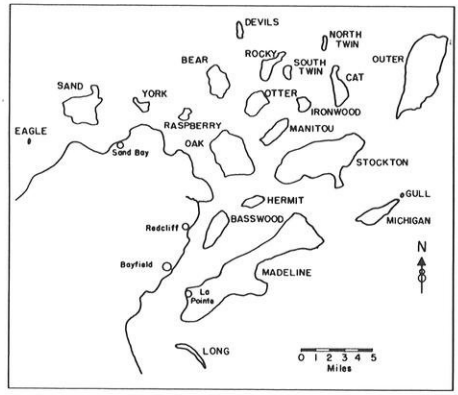

Figure 1. The Apostle Islands.

miles of transects uniformly distributed throughout the islands. These data were then used to calculate densities for each species on each island; from these density figures, the total number of individuals of each species on each island and throughout the entire archipelago was calculated.

The habitats on each island were mapped using unpublished National Park Service data prepared by D. J. Frederick and L. Rakestraw of Michigan Technological University. For each island, I determined the percentage of the island's area covered with either northern hardwood forest, aspen-birch forest, oak forest, pine forest, lowland conifer forest, open disturbed areas, surface water, or sand spits. Maps and descriptions of the bird habitats on individual islands can be found in Temple and Harris (1985).

Results

The results of this research can be viewed in several ways: (1) the effect of island size on the number of species on each island, (2) the effect of island size on the number of habitats on each island, (3) the effect of the number of habitats on an island on the number of bird species there, (4) the patterns of relative abundance of the 109 species of birds detected on the islands, and (5) contributions of individual islands to the overall bird diversity of the entire Apostle Islands archipelago. The abundance of each bird species on each of the Apostle Islands has already been reported in Temple and Harris (1985).

Island size and bird diversity.—The typical relationship between island size and the number of species on the island occurred on the Apostle Islands (Figure 2). As island area increased so did the number of breeding birds, from 41 to 94. The mathematical expression of the relationship (Figure 2) was close to the classical one described by MacArthur and Wilson (1967). In other words, the distributions of land birds on the Apostle Islands is typical of that shown by many other groups

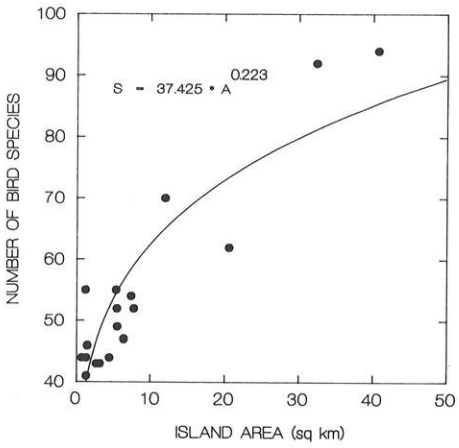

Figure 2. Relationship between island area and land bird species on the Apostle Islands.

of organisms on islands around the world.

Island area and habitat.— Large areas often include a greater diversity of habitat types than small areas. In the Apostle Islands the number of habitat types per islands is greater on large islands than on small islands (Figure 3). Only the largest island, Stockton Island, had all 7 recognized habitats.

Bird diversity and habitat diversity.— As expected there was a positive relationship between habitat diversity and bird diversity (Figure 4). But, since island area is strongly associated with both habitat diversity and bird diversity, most of this relationship is a secondary effect of island area. There are, however, a few species that were only present on larger islands because of the unique habitats present there but absent on smaller islands (e.g., Sandhill Cranes on Stockton Island's wetlands).

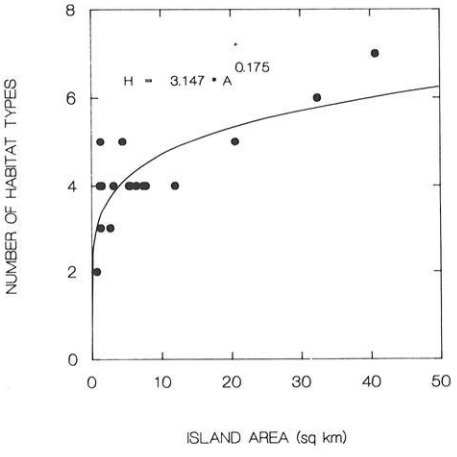

Figure 3. Relationship between island area and the number of habitat types on the Apostle Islands.

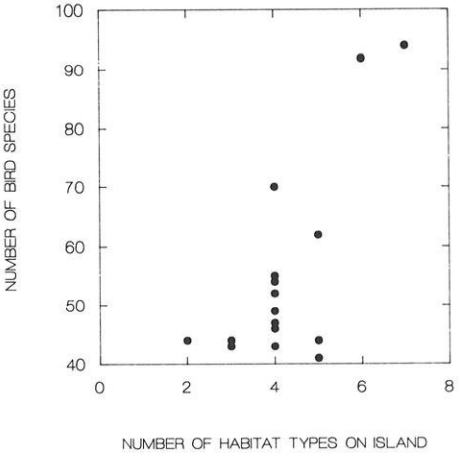

Figure 4. Relationship between number of habitat types and land bird species on the Apostle Islands.

Patterns of relative abundance.— By tallying the cumulative abundance of each species over all the Apostle Islands, it is possible to rank the 109 species of land birds from least to most abundant. As is typical of such rankings of relative abundance, only a few species are common, whereas the vast majority of the species contributing to the overall avian diversity of the Apostle Islands are comparatively rare. The 10 most abundant birds on the Apostle Islands, in descending order, are: Red-eye Vireo, Ovenbird, Black-throated Green Warbler, Black-capped Chickadee, Veery, Least Flycatcher, Blue Jay, Rose-breasted Grosbeak, American Robin, and American Redstart. Figure 5 shows that these 10 species account for 67% of the birds on Apostle Islands. The other 99 species account for the remaining 33%, each species accounting individually for only <0.01% to 2% of the birds on the islands (Figure 6).

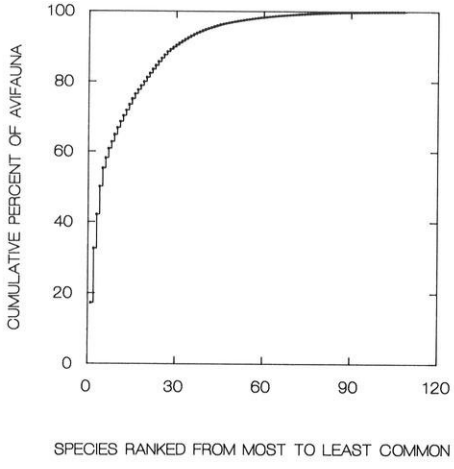

Figure 5. Cumulative percentages of the land birds on the Apostle Islands accounted for by 109 species ranked from most to least abundant.

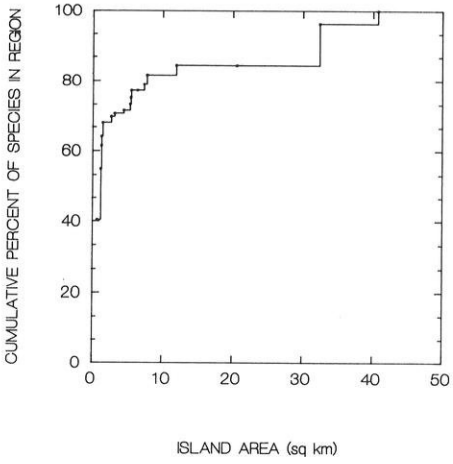

Figure 7. Cumulative percentages of the species of land birds on the Apostle Islands that are added by each island arranged from smallest to largest.

Contributions of individual islands to bird diversity.— The overall diversity of birds in the Apostle Islands archipelago is the sum of all the species found on all the islands. Each island, of course, has a different group of species, depending on the island's area and the habitats it supports. The larger islands have species that are not found on smaller islands. Figure 7 shows that the smallest island, North Twin Island, supports 41 land bird species or 41% of the total bird species in the Apostle Islands. Each successively larger island contributes new species to the overall total, with Stockton Island and Outer Island, the two largest islands, contributing 5% to the total diversity. The result is that even though the 16 smaller islands have a cumulative area of 86.6 km², their combined bird species diversity (92 species) is still lower than the diversity (104 species) supported by the two largest islands, whose combined area is only 73.1 km² (Figure 8).

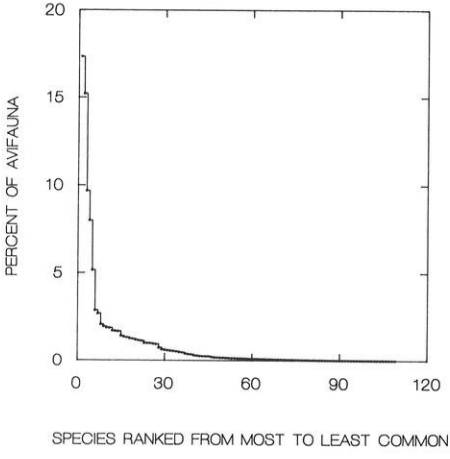

Figure 6. The percentage of the land birds on the Apostle Islands that are of each of 109 species arranged from most to least abundant.

Conclusions

Several clear patterns emerge from these results. For the birds of northern Wisconsin's mosaic of forest commu-

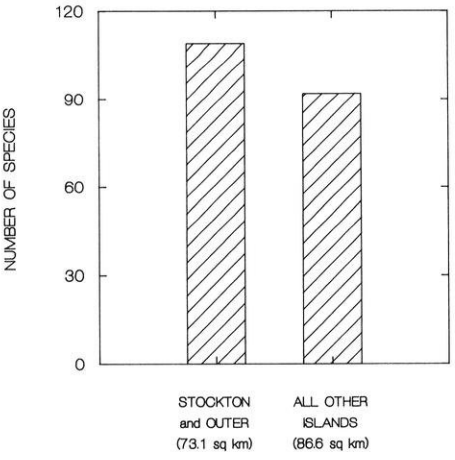

Figure 8. Comparison of the bird species found on Stockton and Outer Islands with the bird species found on all other 16 islands.

nities, there is a strong relationship between island size (i.e., the area of forest) and the diversity of birds it supports. A small part of this relationship is owing to the greater diversity of habitats within large forested areas, but most of it is the result of the area effect alone.

Another pattern suggests that a forested landscape composed of many small patches of forest (such as the 16 smaller Apostle Islands) cannot support a bird species diversity as high as that found in a few large tracts (such as the 2 largest Apostle Islands). This also suggests that forested areas need to be quite large (i.e., greater than perhaps 40 km², the size of Stockton Island) to support the full diversity of birds that are typical of the region.

Acknowledgements

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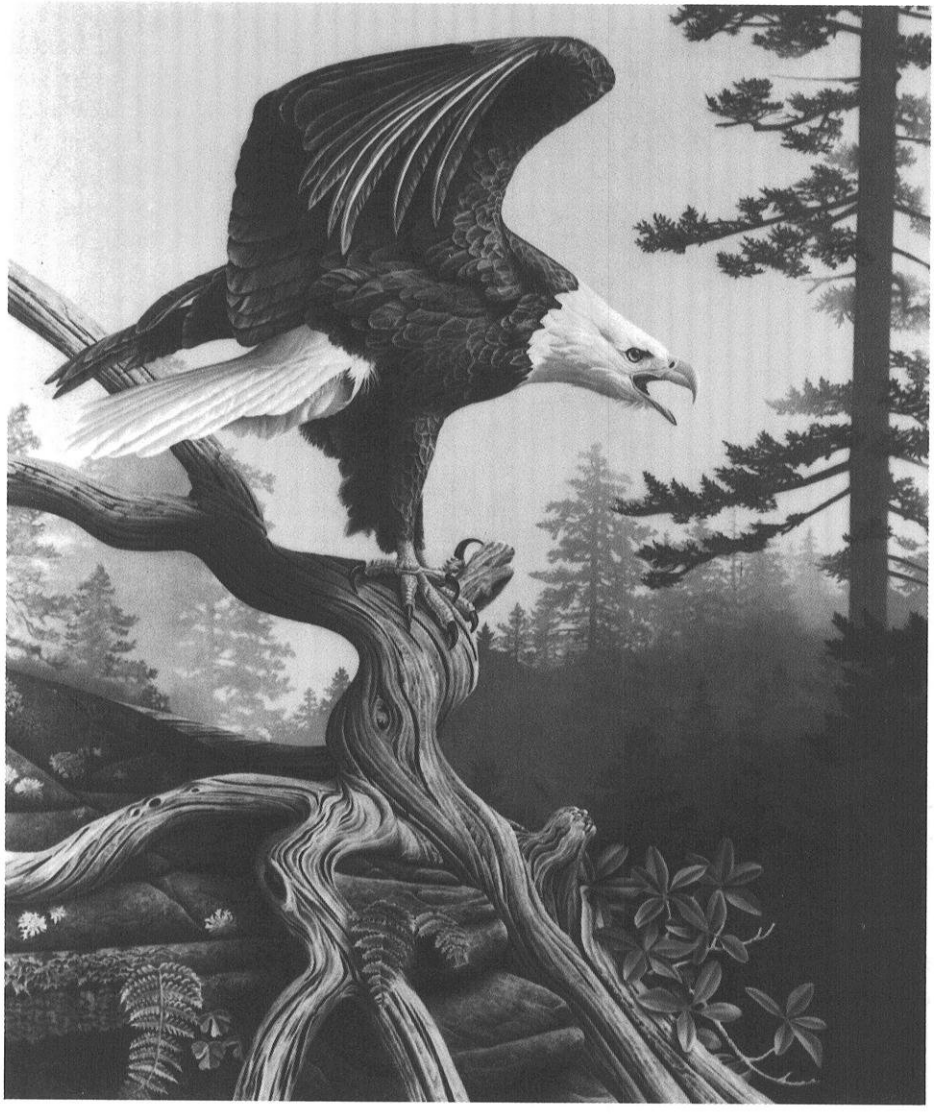
Stanley A. Temple
Department of Wildlife Ecology
University of Wisconsin
Madison, WI 53706



"Unanswered Cry" *by Jerry Gadamus* (A limited edition print reprinted with the permission of the artist and the publisher, Northwoods Craftsman, Menomonee, WI 53051).

Avian Indicators in the Chequamegon National Forest

The U.S. Forest Service has selected a group of birds to be "management indicator species" that will help in assessing the condition of their respective habitats. This paper reviews the use of management indicator species in the context of the Chequamegon National Forest.

by Rebecca L. Taylor

The U.S. Forest Service is mandated by the National Forest Management Act of 1976 to maintain viable populations of vertebrates within the National Forests. To measure their success toward this goal and to measure the health of their forests, the Forest Service is required to use "management indicator species." Implicit in this requirement is the assumption that maintaining viable populations of the chosen indicators will ensure viability of the represented ecosystem. Unfortunately, the Forest Service's choice of indicator species for the Chequamegon National Forest is inappropriate, and it has been critiqued by Kuhlman (1986). Although the Forest Service has acknowledged shortcomings in their management plans, they are still in the process of revising them. Because the major shortcomings in the Forest Service's plans have already been delineated, this paper will not further that critique. Instead, it will discuss the use of management indicator species to monitor the health of an ecosystem, and suggest a more appropriate set of avian indicator species than those put forth by the Forest Service.

In addition to criticisms of the Forest Service's use of management indictor species, the most controversial aspect of their management plan for the Chequamegon National Forest has been their lack of attention on the maintenance of unfragmented, old-growth forests. Therefore, this paper will concentrate on the use of avian indicators to monitor late successional forest types, and unfragmented forest conditions. Specifically, I discuss the appropriateness of using indicator species to monitor habitat quality, and the suitability of birds selected as indicators. I also recommend candidate bird species to be used as indicators of late successional forest type and unfragmented forest conditions in the Chequamegon National Forest.

An indicator is "an organism or ecological community so strictly associated with particular environmental conditions that its presence is indicative of the existence of these conditions." Thus, an indicator of any particular forest type should rely so heavily on the habitat that the organism's existence be virtually impossible in the absence of that habitat. An additional implication in the use of indicator species is that the chosen species can be used as an early warning system. It must be sensitive enough to habitat changes that its population reflects a negative change before serious damage is done to the entire ecosystem. Therefore, an effective indicator species must not only be sensitive to environmental perturbation, but also be so specifically associated with its habitat that a change in its population be indicative of a change in that habitat. Indeed, the Forest Service's definition of a true ecological indicator (a subset of management indicator species) is in accordance with these ideas.

A myriad of problems arise in the application of this concept. First, species respond to many factors in their environment, and it is difficult to sort out the causes of population change even in species that are specifically associated with a single habitat type. For example, Hathaway (1989) suggests the use of the Cape May Warbler as an indicator of mature and overmature spruce, spruce/fir, and fir, while Norse et al. (1986) state that Cape May Warblers are far more responsive to fluctuations in insect populations than they are to forest management practices. Numerous sources (e.g., Terborgh 1989, Landres et al. 1988) have discussed the confusion surrounding the use of migratory species, such as the Cape May Warbler, as indicators. Migratory species use multiple habitats by definition, confounding the interpretation of their population responses.

A second problem involves monitoring the chosen indicator species. Usually the parameters monitored are either presence or absence, or density. These are not always the most accurate measures of population health and habitat suitability (Van Horne 1983). For instance, Johnson and Temple (1986) found that the densities of some nesting birds actually increase in marginal habitat. Monitoring reproductive success would be a much more sensitive measure of habitat quality, and would also circumvent the dilemma of breeding ground versus wintering ground effects. Unfortunately, for birds this requires considerably more effort than a simple survey, and much of the appeal behind indicator species is that they are supposed to be a relatively easy way to monitor the health of an ecosystem. This type of approach might be more appropriate for other organisms, such as trees, where reproductive success can be inferred from the presence of various size classes. In the case of trees, it is probably necessary, as well, since adult individuals might persist for hundreds of years even in the complete absence of reproduction.

Even if an indicator species is appropriately monitored and the causes of its population change accurately determined, a third problem exists. It is extremely difficult to extrapolate from a change in one species' population to effects on an entire community or ecosystem. Although this technique has been effective in the case of environmental contaminants, it has generally

failed when applied to communities or ecosystems (Landres et al. 1988).

Finally, management activities may well be directed narrowly at the indicator species, hampering its ability to indicate environmental change, and the whole process may be circular.

Although the problems inherent in indicator species are serious, certain characteristics can enhance the value of indicator species. Fry et al. (1986) recommend using taxa from as many classes as possible, and both Fry et al. (1986) and Landres et al. (1988) suggest maximizing the number of species chosen. Because species respond to so many aspects of their environment, the inclusion of a large and diverse number of indicators is the only reasonable way to attempt to ascertain the health of an ecosystem. Although considerable variation among indicators is expected, any trends among these species are likely to be of consequence to the entire ecosystem, or at least to large segments of it.

In accordance with the above ideas, I have examined the appropriateness of various indicators for the Chequamegon National Forest. Bird species have often been used as indicators, and are attractive as such for several reasons. Many species are not only sensitive to change, but relatively well studied, as well. Furthermore, high visibility and audibility (especially for territorial males) make them relatively easy to census. The large numbers of amateur birdwatchers, as well as professional ornithologists, make organizing a census far easier than for any other class of organisms. For example, the Forest Service, in conjunction with the Wisconsin Society for Ornithology and a large volunteer effort, hosts an annual bird census in the Nicolet National Forest. Finally, several long-term, annual bird censuses (Breeding Bird Survey, Breeding Bird Census, Christmas Bird Count) provide possible data bases to which population data may be compared.

Although it would be convenient to a priori select specific species to indicate specific habitat changes, this is a tenuous proposal at best (Morrison 1986). However, as a whole, birds provide a good warning system for environmental change. It would probably be best to monitor all breeding bird populations in the Chequamegon in accordance with the techniques used for the Breeding Bird Survey (Robbins et al. 1986). Ideally, population changes should then be compared to areas similar to the Chequamegon, but in more pristine condition. Unfortunately, large tracts of undisturbed habitat in Wisconsin are rare or nonexistent. At the very least, population changes in species could be compared to changes at a national level. However, habitat destruction and fragmentation is almost universal, and these comparisons would only indicate if the Chequamegon is better or worse than average. Another approach to this dilemma is to make comparisons within the Chequamegon itself. Unbroken tracts of forest could be compared with more fragmented habitat, and likewise, old-growth with younger forest. This requires the maintenance of large tracts of undisturbed forest, a practice not in the current Chequamegon plans. Kuhlman (1986) has proposed such tracts of forest, known as "diversity maintenance areas," and their creation would be beneficial not only to maintaining forest diversity, but also to monitoring it.

Although picking a single species as

an indicator of habitat quality is unsound, it is possible to examine groups of species with characteristic responses to environmental phenomena. One such set of species are birds that require unfragmented forest. Table 1 lists breeding forest birds of the Chequamegon that are probably negatively affected by fragmentation (i.e., their abundance and fitness decrease). Significant declines in this group are likely to represent inadequacies in the habitat. It is important, even within this subset of species to group and compare smaller subsets of species. For instance, trends in resident and migratory populations could be compared, in order to determine what proportion of the decline is a result of problems in breeding habitat versus winter habitat. Unfortunately, this may lead to spurious correlations, as most of the residents are generalists and the migrants tend to be specialists. Although explaining population changes in migratory birds is extremely difficult, they should be considered; otherwise, several species that seem especially susceptible to fragmentation would be disregarded.

Table 1. Characteristics of breeding Chequamegon Forest birds that are probably negatively affected by fragmentation (from compilation by Stanley A. Temple).

Species	Characteristics[1]
Northern Goshawk	A, C, D, P
Red-shouldered Hawk	A, C, D, S
Broad-winged Hawk	A, C, D, S
Spruce Grouse	A, B, P
Barred Owl	A, C, D, F, P
Long-eared Owl	A, C, D, F, P
Red-bellied Woodpecker	A, B, F, P
Yellow-bellied Sapsucker	A, B, S
Pileated Woodpecker	A, B, C, D, F, P
Eastern Wood-Pewee	A, B, F, G, H, S
Least Flycatcher	A, B, E, G, H, S
Ruby-crowned Kinglet	A, B, F, S
Veery	A, C, F, G, H, S
Swainson's Thrush	A, B, F, G, H, S
Hermit Thrush	A, B, F, G, H, S
Wood Thrush	A, B, E, G, H,S
Solitary Vireo	A, B, F, G, H, S
Yellow-throated Vireo	A, B, E, G, H, S
Warbling Vireo	B, E, G, H, S
Red-eyed Vireo	A, B, F, G, H, S
Cerulean Warbler	A, B, F, G, H, S
Black-and-White Warbler	A, B, F, G, H, S
American Redstart	A, B, E, G, H, S
Ovenbird	A, B, F, G, H, S
Connecticut Warbler	A, B, E, G, H, S

[1]A = Typically associated with forest fragments much larger than its home range size. B = Tends to remain in forest fragment containing its territory. C = May be present in forest fragments smaller than home range, but only if other fragments are nearby and can sum to a normal home range. D = Moves regularly between forest fragments; home range can be comprised of several separate fragments. E = Tends to frequent edges; most territories and home ranges include some edge. F = Tends to avoid edges; most territories are located in forest interior. G = Reproduction impaired near edges because of brood parasitism. H = Reproduction impaired near edges because of nest predation. P = Permanent resident. S = Summer resident.

Among migratory species, a knowledge of wintering range and habitat would be useful in sorting out possible effects of the non-breeding season on population trends. Among species in Table 1, some are more vulnerable than others to disturbance on the wintering grounds. For instance, Least Flycatchers and Ovenbirds can tolerate a high degree of deforestation in their winter habitat, and both Ovenbirds and American Redstarts seem to do well in coffee plantations, a habitat that is likely to remain intact. Black-and-White Warblers are distributed throughout Mexico, Central America, the Antilles, and much of northern South America (Terborgh 1989). Although these species probably fare better in pristine environments, they should not be as drastically affected by tropical deforestation as the majority of birds that are more restricted in

range and habitat use. A comparison of these winter generalists to the more specialized species could provide a handle on the proportion of change attributable to overwinter mortality. Even among the more restricted species, comparisons could be made. Some tropical habitats are under more pressure than others, and their inhabitants more susceptible to decline. Unfortunately there is a paucity of data on the wintering ranges and habitats of neotropical migrants, as well as difficulty in assessing land-use patterns south of our border. It is far easier to monitor both bird populations and land use if the migrants stay within the borders of this country. Two of the species listed in Table 1 do winter in the Southeast Coastal Plain of the United States: the Hermit Thrush and the Solitary Vireo. In these cases, there is at least a better chance of identifying the degradation of wintering habitat and its associated population decreases.

Although Verner (1983) recommends looking only for declining population trends in order to conserve money, increasing population trends may provide as much information as decreasing trends. In a similar vein, it is useful to monitor not only species that are indicative of the conditions of interest, but also the species associated with antithetical conditions. Table 2 lists breeding forest birds of the Chequamegon that are probably affected positively by fragmentation (i.e., they show an increase in abundance and fitness). Analysis of their population trends, in conjunction with an analysis of species in Table 1, may provide additional insights into habitat changes. In addition, there is one nonforest bird that deserves particular attention: the Brown-headed Cowbird. It would be far more productive to monitor both cowbird populations and populations of birds that are negatively impacted by brood parasitism, than to only monitor the latter populations and then try to decide if it is brood parasitism or one of a host of other effects causing a decline in interior birds. In this case, increasing cowbird numbers could be of the utmost importance.

Table 2. Characteristics of breeding Chequamegon Forest birds that are probably positively impacted by fragmentation (from compilation by Stanley A. Temple).

Species	Characteristics[1]
Ruffed Grouse	A, C, D, E, H, P
Eastern Screech Owl	C, D, E, P
Great Horned Owl	C, D, E, P
Red-headed Woodpecker	C, D, E, S
Blue Jay	C, D, E, P
Nashville Warbler	B, E, S

[1]A = Typically associated with forest fragments much larger than its home range size. B = Tends to remain in forest fragment containing its territory. C = May be present in forest fragments smaller than home range, but only if other fragments are nearby and can sum to a normal home range. D = Moves regularly between forest fragments; home range can be comprised of several separate fragments. E = Tends to frequent edges; most territories and home ranges include some edge. F = Tends to avoid edges; most territories are located in forest interior. G = Reproduction impaired near edges because of brood parasitism. H = Reproduction impaired near edges because of nest predation. P = Permanent resident. S = Summer resident.

Finally, I add a note of caution concerning the use of birds to monitor habitat fragmentation. Although numerous birds are sensitive to fragmentation, to use them as indicators for an entire forest, their population changes would have to be representative of changes occurring throughout the habitat. This would imply the same mechanisms for fragmentation effects

on all species. This is clearly not the case. Although brood parasitism by cowbirds is a serious threat to many neotropical migrants, a major problem for edge-sensitive plants is herbivory by White-tailed Deer. It would be an egregious error to state that a forest large enough to maintain a viable population of Black-and-White Warblers would therefore be sufficient for Canada Yew (*Taxus canadensis*).

Although there exists a distinct set of birds that disappear as forests become more fragmented, it is considerably more difficult to find a unique set of birds associated with seral stage. Morrison (1986) states, "Studies by avian ecologists have shown that although certain types of birds tend to reach maximum abundance in certain seral stages, there is extreme overlap in numbers and distribution among the seres. Thus birds appear to be poor indicators of specific forest types relative to more direct measurements of the vegetation present." Although Kuhlman (1986) expresses concern for maintaining old-growth plant communities in Wisconsin, Stanley A. Temple (personal communication) does not believe that there is a distinctive bird community associated with mature or an old-growth Wisconsin forest. In addition, responses of these species to seral stage should be examined in the Chequamegon Forest itself. Landres et al. (1989) points out that a species' response in one geographic region will not necessarily hold true in another area.

I have found five species on the "Chequamegon Checklist of Birds" which may be associated with late successional forests, and deserve further research. Although there are undoubtedly others, my own perusal of the literature has revealed conflicting opinions. According to Ehrlich et al. (1988), Cerulean Warblers prefer mature deciduous forests, Spruce Grouse prefer mature or old-growth coniferous forests, and Blackburnian Warblers also prefer mature coniferous forests. Michael Mossman (personal communication) also mentions the Blackburnian's affinity for mature conifers, although Douglas Mason (unpublished data) indicates that they can occur if only a few large conifers are embedded in another forest type. Pileated Woodpeckers have a known affinity for riparian woodland and, because they require standing snags, are often found in mature forest. Temple et al. (1979) predicted from the results of habitat ordination in mixed hardwood-conifer forest on the Apostle Islands that the abundance of Pileateds would increase with increasing basal area of trees. It is not at all clear, however, that Pileateds need old forest *per se*; it seems that snags are the primary factor. Temple et al. (1979) also expected Solitary Vireo populations to increase with increasing basal area of trees. Although these represent possible avian indicators of late successional forests, data in the literature tend to be ambiguous or conflicting, suggesting that birds are simply not good indicators of seral stage.

Monitoring habitat quality is certainly not as simple and clear-cut as outlined by the Forest Service. My analysis highlights the complex nature of assessing environmental change. If the U.S. Forest Service is to maintain the biotic diversity of their forests, then they must approach this task with management tools that are more sophisticated than the "management indicator species" approach.

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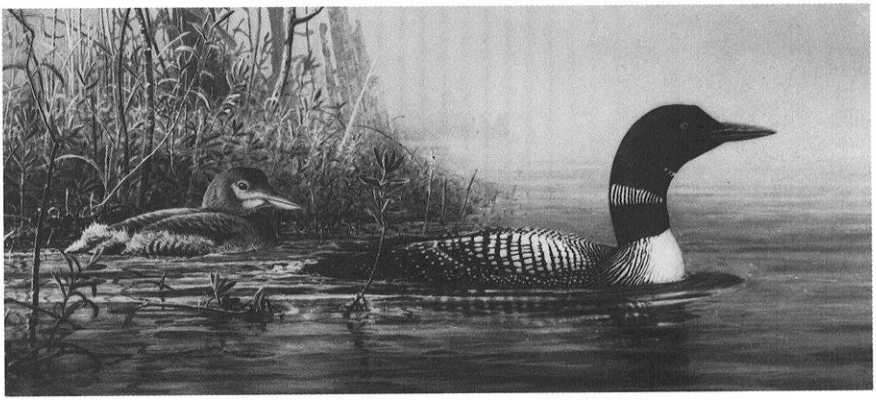
Rebecca Taylor
Department of Wildlife Ecology
University of Wisconsin
Madison, WI 53706



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Francis Zirrer: Unheralded Naturalist of the North Woods (Part 3)

by Sumner W. Matteson

This article concludes a 3-part series (Matteson 1990a, 1990b) on Austrian-born naturalist Francis Zirrer, who lived for much of 40 years, 1928–68, in northwestern Wisconsin. His letters to ornithologist A.W. Schorger during 1934–1949 and 8 feature articles in *The Passenger Pigeon* between 1944 and 1956 have provided the bulk of materials for this series on his work and life.

In 1944, at the age of 58, Zirrer began to write earnestly about what he had learned during many years afield in northwestern Wisconsin. In the spring of that year he published his first feature article, titled "Bittern," in *The Passenger Pigeon*. Through the efforts of Schorger he had become a member of the Wisconsin Society for Ornithology and the Wisconsin Academy of Science, Arts and Letters. He had also joined the Wilson Ornithological Society.

With his physically disabled wife, Zirrer lived a very quiet life in a small cabin in what today is the Kissick Alkaline Bog Lake State Natural Area near Hayward. His isolation did not preclude him from reaching out to the scientific community with comments and questions raised by his own observations. When not attending to the needs of his wife, he was filling notebooks with observations of wildlife and corresponding with Schorger, ornithologist/wildlife artist Owen Gromme, mammalogist H.H.T. Jackson, and Smithsonian Secretary Alexander Wetmore.

Zirrer delighted in writing to Schorger and Gromme with what he believed were new bird breeding records for Wisconsin. Some times, according to Gromme and Schorger, he did indeed have new records (Matteson 1990a, 1990b). An interesting and somewhat confusing account, however, involved the Northern Saw-whet Owl, a species that had not been documented as nesting in the state since Hoy found juveniles at Racine in 1852 (Kumlien and Hollister 1903). In a 21 May 1944 letter to Schorger, Zirrer asked for nesting information: "The breeding status of the Saw-whet Owl? [The WSO] Checklist is not very clear; it lists it as a 'rare winter visitant; accidental summer resident'."

In a *Passenger Pigeon* article that

Kissick Alkaline Lake Bog, where Francis Zirrer's cabin was located (*photo by Sam Moore*)

same year Zirrer (1944) discussed nesting Saw-whets. For some time he did not know the identity of the owl and was intrigued by "various queer noises and calls coming from the nearby bog. Among these there was one resembling the tinkling of a little bell. 'Ting, ting, ting' it came, twenty or perhaps thirty times in succession, then a short pause and another string of 'tings.' " This was in late January. "On February 6, when the sound came nearer I began to realize that the caller must be a bird, for the call emanated from a new direction after each pause. No mammal, with the sole exception of the bat, could have covered the distance in such a short time." He continues:

> "On numerous nights I walked into the bog as far as I could follow an old logging road. Although the winter had been almost snowless, the last two days of February brought a considerable amount of snow and March was also quite snowy. Walking in the snow was difficult and while attempting to come nearer to the caller I broke through the ice into many deep holes filled with mud and water, got thoroughly soaked and finally had to quit. . . .
>
> "On May 2, after many futile attempts to locate the birds, I was about ready to quit searching when I remembered that on my way home, some distance from that old logging road, there is an old half-dead cedar with several cavities in it. The hope of finding the owls there was scant, however, for the tree is about one-fourth of a mile from the courting territory of the owls. Just the same I investigated. Looking up to the cavity, which is about 20 to 25 feet above the ground, I took the axe and rapped. I had barely touched the tree when in the opening above appeared a little round

head! I was at the nesting site of the elusive little saw-whet owl.

"The nesting tree, a tall partly hollow cedar with just a few green branches in the middle of the trunk which, at the nesting cavity is about a foot in diameter, reaches with its dead top way above the surrounding trees. Since it is the tallest tree for several hundred yards around it serves, especially in summer, as a watch-tower for numerous birds such as blue-jays, crows, ravens, various hawks, large owls and many others. The great pileated woodpecker is often seen clinging to it; flickers and various other woodpeckers chase one another in circles around its dead top above the nesting cavity without apparently disturbing the owls. The hole appears to be an old flicker hole of long ago before the surrounding trees grew tall enough to obstruct the view and shade the entrance. The tree like most cedars is slanting and the nesting cavity is on the lower side of the trunk. . . ." (Zirrer 1944)

Schorger apparently sent him information on nesting by the Saw-whet, and on 7 July 1944, Zirrer wrote back:

"I greatly appreciate the information given and thank you sincerely. I have no access to a good library and my own, though occupying about 35 feet of tightly packed shelf space and otherwise very good, is far too small for every purpose.

"In a way I am surprised that so little is known about this owl in Wisconsin as, according to Bent, its breeding range extends far more southerly. That the bird, collected by Hoy, was hatched in his neighborhood I do not doubt at all, but in his days Wisconsin was a primitive land and birds found suitable nesting localities everywhere. If the bird is, at least nowadays and in Wisconsin, an inhabitant of bogs, then there is a reason for its apparent scarcity. How many people do tramp through those thickets? Very few. Then the bird is probably a very early serenader. Ours here began with its song January 26, and was not heard after the 17 of March.

"In normal winters, when [the] temp. drops to 30 or more below zero, who on earth would stay evenings in the open and wait for its song to start.

"The song, however, though not very loud carries on a windstill night very far, at least half of a mile. . . . The call, from which it derives its name, is not frequently heard. For identification purpose[s] I do not depend on it, for I have heard other owls utter a similar call at times."

But was the owl that Zirrer heard in fact a Saw-whet? Schorger apparently thought so . . . until he read Zirrer's article. On 2 November 1944 he sent Zirrer a note:

"I have read with great interest your paper on the Saw-whet Owl in the last number of *The Passenger Pigeon*. You do not have proof that the first owls heard were not Richardson [now called Boreal Owl]. I think that they were though I have heard one but once give the characteristic 'ting, ting, ting.' This was in the extreme northern Minnesota in May. Your description of the flight song is very similar to that given for Richardson by Seton." [Peterson's (1980) description of the Boreal Owl's voice: "Like a soft high-pitched bell or dripping of water; an endlessly repeated 'ting-ting-ting-ting-ting-ting,' etc." For the Saw-whet: "Song, a mellow whistled note repeated mechanically in endless succession, often 100–130 times per minute: 'too, too, too, too, too, too,' etc."]

Zirrer's response was swift. On 6 November he wrote:

"Your letter gave me something to think about. If you are right, and it is perfectly well possible that you are, then

my article is for the cat; I have listened to the Richardson's owl and found the saw-whet nesting.

"I have practically no literature on these two birds excepting the work of Bent. Reading it I was at first firmly convinced that the bird was Rich's. . . . Reading further, however, what Bent, quoting William Brewster, has to say about the similarity of the call of the saw-whet to the tang of the Bell Bird of Trinidad and his reference to Audubon . . . I naturally began to doubt that my bird [was] Rich's and when finally I found the saw-whet nesting I, logically, thought that the bird I had listened to was also a saw-whet, although it was too dark to permit an identification as to color and markings. Then there was another objection; both, Seton and you, listened to the bird in May and here it was Jan. and Feb. In view of all this is it not possible that the love songs of the two species are identical or very similar? I do not know, but taking into consideration that every observer quoted by Bent has another version of various calls, it might be possible."

In any event, Schorger did believe that Zirrer's nesting record was valid because he cited it in his 1951 revision to Kumlien and Hollister's (1903) text.

All of this serves to underscore the point that bird identification was challenging and difficult without the bird books and recordings that abound today. In the same vein, the meticulous Zirrer discussed the illustrations of the day of Rusty and Brewer's Blackbirds, writing in a 13 July 1944 letter to Schorger:

"I have the colored illustrations of [the Rusty Blackbird] and of the Brewer's in the following publications: Chester Reed's *Bird Guide*, the first and the second (in two volumes) Nat. Geo. Soc. birdbooks, and the plates only from Forbush's *Birds of Massachusetts*, besides the recent edition of Audubon. [The illustrations] in *Bird Guide* are not much, still they show the Rusty in uniform color and the Brewer's with bronze or purplish head and neck. The Brewer's in the first N.G.S. birdbook is of nearly uniform color, but the same bird in the second N.G.S. birdbook is portrayed with a bronze or purplish head and neck. The Rusty in the same book is reasonably good, but the female is too black, too much like the male. The best portrait of the Rusty is in Forbush. . . . Here the bird is an exact replica of the bird [found] here."

Zirrer first saw Rusties in his bog in June 1942, but "not knowing much about their status in Wisconsin I did not pay much attention to them. . . . This year they appeared here early, April 11, but they were not much in evidence until 10 of May, when 3 pairs of them appeared in our garden. After this date and until the 2 of July they were here daily—in fact almost always" (letter to Schorger, 13 July 1944). Keenly aware of Schorger's (1931:38) writings on the Brewer's Blackbird in "The Birds of Dane County," and the rarity of breeding records for Rusty Blackbirds, Zirrer went to great lengths to convince Schorger that he had seen Rusties:

"I looked [at] them under every imaginable circumstance, with naked eyes, with glass, far and near, in bright sunshine, on a dark, cloudy day, from every angle, every side, on the ground, in the trees, in flight, walking, standing, looked at them hundreds of times, but . . . I could not see even a shimmer of purple or bronze on the head and neck;— the birds, that is the males, were uniformly black with white eye[s]. . . . The females here were of dark smoky or slaty color— and slightly, but appreciably, smaller than the males. According to these ob-

servations, illustrations and descriptions in Chapman's handbooks and elsewhere in the books, mentioned before, the birds are Rusties. There is nothing in their color that would stamp them as Brewer's. . . .

"Had I known that you were interested I would have paid still more attention to them. . . . unless I was completely mistaken, [I] could have pointed [to] their nesting spots in the bog. It was my intention to investigate, but various troubles and work have prevented me [from doing] so, until it was too late again for this season. . . ." (Letter to Schorger, 13 July 1944)

It would seem that Zirrer did indeed have Rusty Blackbirds at the bog, but Schorger apparently was not convinced. It would have been the first indication of breeding in the state since a single 1861 record by Kumlien and Hollister (1903). Schorger's (1951) revisions to Kumlien and Hollister's text for the Rusty stated succinctly: "Breeding is doubtful."

As noted here and in Part 2 (Matteson 1990b) of this series, Zirrer did not have the publications he felt he needed to understand thoroughly Wisconsin's flora and fauna. Six years earlier, near the end of a 16 January 1938 letter to Schorger, he asked for "some duplicates in your library." He enclosed a list of his books "in the English language" and said he was "embarrassed having so few." He did, however, have a number of European natural history books, including several in German and a few in "other languages dealing with the geology, flora, and fauna of the Old World, chiefly Central Europe, [the] Alps . . . and countries bordering the northern shores of the Mediterranean."

By 1943 Zirrer had begun to build an impressive library, including many publications in English (though he was still not satisfied), and he had developed a knack for picking up books here and there:

"Since you browse considerably in book stores it might be of some interest to you to hear that I have exchanged by the way of barter my volume of the 'Birds of America,' price $4.00, for 6 volumes of Bent's Life Histories, bulletins 121, 126, 130, 135, 142 and 146. That was a 'Lucky Strike!' "

A man of diverse interests, Zirrer also worked hard at cultivating a large garden—something he occasionally mentioned in his letters to Schorger during the 1940s. On 6 November 1943 he wrote:

"[This past summer I] produced 50 of each: cauliflower, broccoli, white and curly cabbage. Many of my cauliflowers weighed 4 and 5 lbs. but some were even a good deal larger, and the rest, broccoli etc., were in proportion. Further I have produced several bushels of peppers, none smaller than a large lemon, but many were nearly double. I have had potatoes, tomatoes, corn, peas, edible soy beans, lima beans, onions, radishes, parsnips, carrots, beets,turnips, Chinese cabbage, cantaloupes, cucumbers, squashes and even okra. Does your mouth water? For a while I thought of sending you a box of the fanciest and I would have, but finally I was afraid that you might say: 'What the ____!' It goes to show, however, what this soil is capable of producing. . . . Once the weeds [are] under control, which I have done very effectively, very little time and labor is required to keep the garden going."

Zirrer's life in the deep woods of northwestern Wisconsin often sounds bucolic if not idyllic, but it was, in fact, quite difficult. Much of his time was spent caring for a wife whom he de-

scribed in a 24 December 1937 letter to Schorger as a "helpless invalid, unable even to get herself a drink of water." The Zirrers were married in 1917. She had been an invalid since 1920; he blamed a surgeon (A.W. Schorger *in litt.* to R. Works, 11 July 1968) for her condition and apparently wrote a 510-page novel about the incident.

Before Zirrer moved to the Hayward area, he lived in Rusk County, and his cabin there had no running water. He walked 3/4 of a mile daily for water and also three miles once a week to retrieve his mail. But these things were accepted as part of the life he had chosen. And they offered him a chance to observe nature and perhaps to immerse himself in a world relatively free of sorrow.

A 26 September 1943 letter to Schorger paints a broad picture of Zirrer's bog world near Hayward. The reference to a rubber shortage in the following excerpt quickly reminds us of the war in progress:

> "Although I do not own a car [the] rubber shortage affects me too. Since most of our fuel is in the bog (I find that a good sized bog is botanically and zoologically the most interesting formation in Wisconsin—a regular treasure chest. Practically every mammal and bird is found . . . and botanically such numbers of rare, beautiful and interesting plants grow there that the flora of the adjoining formations appears drab and trivial in comparison.) and practically all of my tramping is done in there, I need a pair of reasonably high rubber boots. With some reluctance the rationing board allowed me a pair of boots last year and did so this year again, but they do not last long and during the summer I was largely without them. Still I have made a considerable number of very interesting observations, some of them I think new or at least not in any book I have or have read.
>
> "From now on my work in the bog consist[s] of cutting or gathering dead or dying tree[s]. Since I cannot stay away from home more than a few hours daily, the work lasts well until the end of December. The trees, mostly cedar, black spruce, and some tamarack, must be carried about 1/4 to 1/2 of a mile to dry land where they are still 1/6 of a mile from the dwelling—very hard and slow work. Even if horses were obtainable, no team can enter the bog until it is thoroughly frozen, which it is not before the end of December.
>
> "In places I tramp through about one foot of mud and water, over various debris, through the dense bog shrubbery and trees, over deep elastic sphagnum and through the matted vegetation of different grasses, rushes and sedges, some of them as sharp as a knife and tough as a wire. Some parts of my path tremble under every step; under and between the grass, shrubs, moss and roots lurk deep hidden holes full of mud and water. Suddenly one or both of my feet break through; I sink into my knees, even up to my belt sometimes. I feel icy cold water running in on the top of my boots. I try to get out as fast as possible but the tough black mud or the roots hold my feet like in a vise—or perhaps it is the bog witch or the will o' the wisp. I am lucky if by sinking in I am able to keep the balance because otherwise I take a bath and am wet all over. If this happens when my work for the day is nearly done I go home to change and get dry, but if it is at the beginning of it I do not bother. To the merry tune of sloshing water in the boots I only work harder to keep from freezing. Even when once at home I cannot change immediately—my wife and her needs come before my comfort. But I am a reasonably tough guy and used to hardships.
>
> "On my way in and out of the bog and

during my work there I see and come across much that is interesting. . . . Lifting a hollow log a number of *Peromyscus* [deer mice] scamper in all directions—some of them up the nearest tree. . . . Last winter I have also learned that the muskrats travel extensively under the snow, apparently in search of food. Coming from the direction of the pond they occasionally appear on the surface of the snow there where various channels and deepened deer trails intersect the bog. . . . With a pole I have followed their trails. Earlier in the fall I see chipmunks gather the seed of *Thuja occidentalis* [northern white cedar]. To do this they go to the end of the smallest twigs, often 20 to 30 feet above the ground. Seeing the twigs bending under some weight one expects to see a bird, but getting closer one is surprised to see chipmunks way up in the branches. And yet the seed is so small, hardly worthy of the effort.

"In Nov. 1941 I frightened a family of *Peromyscus* from their snug winter quarters in the hollow roots of a large cedar stump. Among the different seeds and nutlets stored there there was also a quantity of cedar seeds and about a pint of achenes. I took a few of the latter with me but for a long time I was not able to place them. During the periods of full moon I sit, if the sky is clear, somewhere in the bog or near the pond to watch various night creatures and listen to their calls. While sitting so about two weeks ago at [the] edge of the bog, I noticed that the fruiting heads of the *Helianthus giganteus* [tall sunflower] moved and bent down. Wondering about the cause of the movement I watched. With the help of my glass and going a little closer I saw two of these mice climbing over the tops, very probably gathering the seed. Taking some seed with me home, I compared it with the other of nearly two years ago: it was the same. The same seed . . . as long as it is soft and milky, that is from the later part of August until about the 20 of September, the favored, in fact almost the only food of Goldfinches, for which they go day after day until it is too ripe. After they cease to come, Chickadees take the rest. . . ."

Zirrer concludes his letter by extending his condolences about Schorger's son, apparently killed in the World War, and mentions his own personal difficulties:

> "I hope this senseless slaughter would end soon. I can understand, even if you do not say so, how you feel about your son. I have had and have so many sorrows myself that I sincerely feel your anxiety, and hope with you for the best. I . . . am not given to hate, but there were times that I could not even look at my German books—however, I realize now that it was not right; one must not condemn everything and everybody, although I have enough cause to do so.
>
> "This letter would have been written sooner, but since the 28 of August we struggle with death. My wife is very seriously ill. It is just this week that there is a slight improvement noticeable. Personally I have not had much sleep since."

In the late fall of 1943, Zirrer made a simple but meaningful discovery: he observed that a muskrat had gnawed a hole through the ice on his pond—something that had never been observed (or known) by Wisconsin mammalogist H.H.T. Jackson and was practically unheard of anywhere. Schorger was excited about it; he conducted a literature search and found a 1920 reference to similar behavior.

On 12 July 1944, Zirrer wrote an unpublished, 4-page article titled "The Muskrat" in which he provided ample documentation of his discovery:

> "December 5 at 6 A.M. temp. was 8 above, but it rose at noon to 40. . . .

Shortly after 3 P.M. I . . . began to carry . . . wood to the shore to be hauled across the pond later. Glancing over the icy surface of the pond which, at that particular place, is about 320 feet wide, I noticed in the middle of it a small, dark object which was not there before. Going closer I saw that it was a small muskrat, sitting on its haunches and eating something. . . . [My] first thought, however, was not the rat or where it came from but the condition of the ice. . . . Cautiously I approached the animal which, seeing me coming, vanished from sight. Gingerly, afraid to break through, I stepped nearer. In the ice there was an oval hole measuring, when I returned later with a ruler, 4½ inches in length and 3½ in width. . . . The hole was situated exactly over a large bed of [large-leaved pondweed, *Potamogeton amplifolius*]—from which the rat lived all winter. It is somewhat peculiar but the fact is that this plant does not grow anywhere near the shores of the pond; the existence of it in the pond was unknown to me until then.

"Next morning December 6, while on the way to work [to collect firewood], I found the hole closed—frozen. There was no sign of the rat being there . . . I thought that was the end, that I [had] frightened the rat away. I was mistaken, however. When I returned about an hour later, the rat was on the ice again. With more confidence in the strength of [the] ice I approached it this time. Like the day before, the rat vanished, but the supply of leftover weeds was much larger—there was quite a pile. Not to go into every detail . . . but it was first by the end of Thursday, December 9 that I began to realize that these weeds were not merely leftovers from the rat meals, that the animal was in the process of building itself a home. . . . Saturday, December 11 the ring, or rather the wall, around the hole was a little over 10 inches high, slanting slightly on the outside but overhanging considerably toward the interior, so much in fact that the opening on the top was only about 6 inches wide. From a distance the whole thing appeared like an inverted bushel basket with a rounded bottom and slightly more slanting sides, with a diameter of 22 inches at its foundation and 18 inches on the top. All these measurements were taken as carefully as possible. Next day . . . I found the opening on the top closed—the building was ready. It was plainly visible that the rat had pushed the weeds from the inside in closing the opening, precisely the way a human being would grab a handful of weeds or hay—with both ends together—and wedge it tight into a hole in order to close it."

Jackson (1961:249) summarized Zirrer's observations in his book on the mammals of Wisconsin.

On 3 December 1944, tragedy struck the Zirrer home: his wife Clara died. (Her death was incorrectly reported in Part 1 of this series as having occurred on 21 December). Zirrer wrote to Schorger of his grief on 20 December:

"I am somewhat late in answering your letter of Dec. 3, but it was not neglect. I have just passed through the most crucial period of my life: my dear wife, my most treasured friend, my faithful companion for over 27 years . . . passed away Dec. 3 and was buried in Milwaukee 6 December. Though physically almost entirely helpless, her mind was keen, quick grasping and clear to the very end, which, as a result of slight cold, came so really unexpectedly—no one, not even her doctor, suspected that the end was so near. Although I have gone through an unusual amount of sorrows and tribulations in my life, her death was the hardest blow and today I doubt that I will ever recover from it; for the time being I am completely lost, have no in-

terest in living and only wish to follow her.

"If I can stand it I shall stay here until May or June—until the Rusty Blackbirds return and nest, if they do. . . . How we had both planned for your reception to make your stay here pleasant and interesting—and now she has gone."

In the same letter, Zirrer congratulated Schorger on a paper (Schorger 1943) describing the historical occurrences and population declines of the Greater Prairie-Chicken and Sharp-tailed Grouse in Wisconsin. Zirrer used the opportunity to present his own views on the losses of bird species and disappearance of wildlife in Wisconsin.

"You have gone again through an enormous amount of work to save for the future the scattered records and bits of information of the early days of these birds in Wisconsin. To me, however, these records of past abundance and thoughtless slaughter mean only that . . . modern man is the sole cause for the disappearance and the present precarious existence of these and all other species. Kindness to all living things . . . even those where man's interest are affected, would have helped to save many form[s] of wildlife, in spite of the changing conditions and environment. There was, and still is, a big field for Christianity, that is churches, but they are not interested in it—rather the opposite."

Beginning in 1945, Zirrer wrote to Schorger less often. In a 5 May 1945 letter to Schorger he said: "Since the death of my wife . . . I have done very little field work; there is not the interest the way it used to be." This would explain the lack of correspondence. Perhaps Zirrer had served as his wife's eyes and ears, describing his observations to her in detail before committing them to letters. Without her presence, her companionship, his interest faded.

Zirrer did not correspond with Schorger again until the fall of 1946. He offered this account of the intervening period in a 25 September 1946 letter:

"It is more than a year since I have . . . written to you. From the beginning of July 1945, after moving away from Hayward, I have spent nearly eight months in Milwaukee. In the beginning of March 1946 I . . . returned to Hayward where I spent 3 month[s]. From there I went to Birchwood and now, since the last week of August, I am in Chicago.

"The purpose of this travelling back and forth was to finish and prepare—for a possible publication—a manuscript (I call it a novel), which I [had] written before moving to Milwaukee. . . . The manuscript contains about 510 pages with about 260 words to a page."

Zirrer asked Schorger to edit the manuscript and offered to pay him for his services. Schorger replied in late September (his letter is mistakenly dated 23 September 1946):

"I have just received your letter of the 25th and its contents were surprising. You are very versatile. I have wondered frequently during recent months what you were doing since I had not heard from you.

"Regarding the manuscript, I suggest that you send it on so that we can form some opinion as to what can be done with it. Mrs. Schorger has had considerable experience with manuscripts and she will be glad to read it also.

"From your letter I am sure that you realize that you have entered a very competitive field.

"The American Egrets were remarkably numerous in southern Wisconsin

during the end of the summer and I even saw one today. On the other hand the shore birds have been very scarce."

On 10 October 1946, Zirrer sent his manuscript to the Schorgers and apologized for the rough draft. By 27 October he had received the first four chapters back and Zirrer sent Schorger $20 "for the postage . . . and as part compensation for Mrs. Schorger's work and time . . . editing it." Schorger had apparently asked Zirrer's permission to share the chapters on the [Northern] Goshawk with the Kumlien Club. Zirrer, in a 27 October letter, gives Schorger permission to read it but not to "reveal its source or my name. . . . I have much more material than this on the goshawks, gathered during eight years of my thorough acquaintance with the same pair, or rather the same female. . . . If I find time I may perhaps prepare a paper on goshawks in the near future for '*The Passenger Pigeon.*' " He did indeed publish an article on goshawks in the July 1947 issue of *The Passenger Pigeon.*

Why would Zirrer choose to live in Chicago, a place so seemingly foreign to his north country abodes? It could have been that he desired an environment radically different from anything that reminded him of his wife. Although living in the city, Zirrer still caught sight of fall migrants that passed through, or died trying:

"Four weeks ago I found an ovenbird, warm still, on the pavement at the corner of Lawndale and 26th. I sent it to the Chicago Academy of Science. Not as anything of value, but I thought that it may throw a little light on the migration and the dangers to migrating birds, lost among the maze of buildings.

"Two weeks ago I noticed a small brown bird, clinging to a tall post on the 26th [street], a few blocks from the previously mentioned place, about ten feet above the pavement. I saw that it was a [brown] creeper. It flew across the street and alighted on another post, about one foot from the pavement. It permitted an approach of less than two feet, but when I . . . stretched my hand [toward] it, it flew very feebly across the street and disappeared on a building." (Letter to Schorger, 27 October 1946)

Schorger returned the $20 Zirrer had sent Mrs. Schorger. Regarding the manuscript, he wrote:

> "You have not included too much of your observations on natural history. Both of us feel that they are the best part of the MS. This is your forte and I hope that you will do much more along this line. It is my advice that you work on popular articles on natural history using the careful observations in your notebooks. . . . P.S. I do hope that you will eventually donate your notebooks to the Wisconsin Historical Society, Madison. *It would be most unfortunate if they should be lost or destroyed* [emphasis added] (letter to Zirrer, 30 October 1946).

Zirrer replied on 4 November:

> "I [do] not think that my notebooks could be of any value to [the] Wisconsin Historical Society. At any rate they would have to be re-written. As they are now, part of my notes would often [not be] understandable to anyone else."

Zirrer, at almost 61 years of age, was hardly living an easy life in Chicago. His job at a large department store apparently involved electrician duties, one of which proved quite hazardous as described in a 24 November 1946 letter to Schorger:

> "Two weeks ago I . . . contracted a bad cold. . . . About a week ago we were installing the necessary wiring for television on the roof of a big department store building, where I am employed; and the antenna had to be carried to the top of a water tank, more than two hundred feet above the street. After several employees, ex-service men, refused to

climb it, the foreman of the television company asked me to do it, which I did. Climbing itself was an easy affair, but pulling up and fastening the antenna without much support or something to hang on, and [having] both hands occupied, was an entirely different proposition. To make it worse, a strong, cold wind, accompanied by heavy misting, blew. Before long my hands were numb and my clothes wet. I was freezing and shivering. Somehow I managed to fasten the antenna and tightened the wire. . . . Once inside I actually fainted from my sick condition and exhaustion."

Of course while dangling 200 feet above the pavement Zirrer somehow made note of whatever birds were present: "During the work on the top of the tank a large flock of gulls circled above my head. Feeling quite uneasy, I was wondering if the birds were expecting, perhaps hoping for, a meal. . . ."

Zirrer did not correspond with Schorger again until 1949, but on 19 June 1947 he responded to a 20 May inquiry from H.H.T. Jackson on the status of the snowshoe hare in northwestern Wisconsin.

"I have been living in Chicago the last nine months, therefore I am unable to give as much information on the status of the Snowshoe Hare as I would otherwise.

"In 1946 I spent nearly three months, June, July and August, in a lonely wooded cabin five miles south of Birchwood. From there I visited upon numerous occasions my former haunts, the territory lying east of the Highway F to the Weirgor Creek and south to the Buck Lake and the chain of small lakes situated between the Buck Lake and the upper reaches of the Weirgor Creek. . . .

"Although the locality, with its many marshes and sphagnum bogs, is a favored habitat of the Snowshoe Hare, where, prior to the end of summer 1933, these hares were extremely abundant, I saw last year one and found droppings a few times, all of these in sphagnum.

"I can only repeat [that since] the late summer of 1933 the Snowshoe Hares have been exceptionally rare in the vicinity of Hayward and Birchwood, and they still were so last year. I have questioned a number of local gunners and trappers, but they all confirmed my observations that the Snowshoe 'rabbits' are very rare and have been so for many years previously; although of course no one remembers just how long."

After 2 years in Chicago, Zirrer had had enough of city life. In the fall of 1948 he moved back to the Hayward area "to revise, finish and re-type my manuscript, a task which I could not do in Chicago" (letter to Schorger, 2 June 1949). He found a remote location near the Totagatic River. On 15 May 1949 he wrote Schorger:

"I am living so far from my rural mailbox that it requires 5 hours of strenuous walking through a wilderness to go there and back; therefore I do not go often. An enormously interesting country, full of wildlife, but too far from everything. I have made many new and interesting observations: Gray squirrels chasing the red ones; red squirrels chasing the weasels; bald-headed eagles attacking ducks at the river; wood ducks and hooded mergansers swimming within four feet of the otters, etc."

Zirrer, ever wary of the approach of the forester's axe, was quick to notice changes in the north due to forestry practices. In the 2 June 1949 letter he also wrote:

"This locality used to be a very good, more or less primitive area of fine second and even some old growth timber,

but during the last few years most of the saleable trees [have] been cut down, leaving only the young, the useless, the dead and the dying ones.

"Many of these privately owned forties appear as if they had been stricken by a cyclone—the most reckless forest destruction imaginable. If this keeps on a few years longer, not one good tree of more than eight inch diameter will remain. This of course [has] affected the plant and animal life also. Over wide areas the flora [has] greatly changed and many of the choicest plants completely gone. Of mammals as large or larger than a red squirrel the most common is deer and porcupine. It is much easier to see five or ten deer than one red or gray squirrel. Since I [have come] here (the beginning of October 1948) I [have seen] hundreds of deer and dozens of porcupines but only one snowshoe hare, seven red and two gray squirrels. Of course where would they get the necessary food when all the mature fruit or seed bearing trees [have] been cut away. In their stead I see cottontail rabbits and striped gophers [ground squirrels] invading the woods."

One of Zirrer's more interesting bird observations involved the nesting of a pair of Hooded Mergansers. In a 15 May 1949 letter to Schorger, he wrote:

"In the accompanying parcel I am sending you eight of what I believe to be the eggs of the Hooded Merganser. I have obtained these under somewhat unusual circumstances.

"The last part of April I have noticed a pair of Pileated Woodpeckers busying themselves daily at a dead Butternut tree, but acting as secretive as they do at their nesting tree. Therefore I thought that I will have the Pileateds nesting practically in front of my door, only about 60 yards away. I was surprised that they would do so because the tree is not in a dense stand of mature trees and the cavity is apparently a very old one.

"By May 1, shortly before dark, I saw a small duck flying from the vicinity of the tree. I thought that it was a female Hooded Merganser, but I was not sure because I only had a glimpse of the bird. . . .

"May 2 I was about 60 feet from the tree watching other birds, when suddenly a female Hooded appeared about ten feet from the entrance and went in. I did not see where the bird came from. But it took only a minute or so when she shot out again and was gone. . . .

"I was puzzled. Day after day I saw the pileateds about the old tree, acting secretive—and then suddenly the Hooded Merganser. But I thought whichever it proves to be, I will have an excellent opportunity to watch it during the nesting season. . . .

"But it was not to be. May 4 in the morning, after a terrific storm with hail and flood-like rain in the night previously I found the top of the old tree down. In a puddle of rain water there were eight whole eggs and four others smashed to bits. A peckful of mattress stuffing which apparently the squirrels brought in previously protected the others from breaking. They fell from a height of about 40 feet and rolled 6 feet from where they fell.

"I blew them out as good as possible without any tools. I found them slightly incubated; tiny streaks of blood appeared in every one. According to the number (12) and the degree of incubation the birds had started to nest before or about the fifteenth of April. . . .

"If these eggs prove to be of some importance to you I want you to have them. If not please throw them away."

Schorger's response came on 21 May 1949: "I have received your letter of the 15th and the eight eggs of the Hooded Merganser. In color, shape,

and dimensions they check with the eggs of this species. Nesting data on this merganser are few and I am turning the eggs over to the University of Wisconsin with the information you furnished. This will insure safe keeping." Schorger also wrote: "Not having heard from you since you were in Chicago, I have wondered often where you were. From your letter I judge that you are living in as primitive an area as can be found in Wisconsin."

Zirrer, pleased by Schorger's response, wrote back on 2 June to say that he had "some additional material on the life history of this bird [Hooded Merganser] that might be new or at least not in any bird books." This information, unfortunately, was lost for reasons discussed later. The 2 June letter may have been Zirrer's last to Schorger; no more exist after this date in the archives at the Wisconsin State Historical Society.

> ". . . . Before long I shall move closer to Hayward and people. Here I am too far from everywhere and everything. I am not at all sociable but since _____ I cannot forget.
>
> "Thanking you for your friendly interest I am
>
> "Sincerely yours,
>
> "Francis Zirrer."

But Zirrer did continue other writings. An article for *The Passenger Pigeon*, published in July 1951, was titled "The Great Blue Heron." The introductory paragraph is stunning:

> "In the beginning of April, when northern Wisconsin woods and bogs are yet buried under great masses of powdery, hard packed, discolored snow; when atmosphere drips with misty wetness; when hardly a living creature is seen or heard, and nature itself seems to breathe hopelessness and despair; there perhaps will emerge, from the thick, grayish haze, a pair of big, dark, bluish colored birds, like an apparition from another world. The great blue heron is here again! Bridging the dreary, depressing emptiness of endless woods on great, broad wings, the birds vanish as suddenly as they have emerged, as if they have been swallowed up by the creeping fog."

Zirrer's next piece for *The Passenger Pigeon*, titled "The 'Great' Pileated Woodpecker," appeared in the spring 1952 issue. It was followed by his last submission to *The Passenger Pigeon* titled "The Great Horned Owl," in 1956. At that time he was apparently still living in the Totagatic area. Some time after this he moved back to Milwaukee, where he worked at the Krueger Lithographing Company until the summer of 1958. Then he moved back once again to the Hayward area. From here he wrote at least 3 articles for the *Milwaukee Journal* that appeared in winter and spring, 1958–1959. The first was titled "Life and Death in North Woods," in which he discussed the scarcity of summer foods and the impact on wildlife.

> "The last growing season has not been favorable for wild fruit, such as plums and cherries, berries, acorns or nuts, which, in years of abundance or normal years, help to sustain wildlife through the winter. . . . The effect of this unusual scarcity of food is noticeable throughout the woods. Small mammals, such as mice, voles, shrews, gophers, squirrels, chipmunks, hares and rabbits—the daily diet of hawks, owls and other predators—have largely disappeared; so have the predators. When there used to be an abundance of such small mammals, the hawks circled above and came within a stone's throw of the cabin, and the big and small owls used to hoot nightly. Silence reigns now. Dozens of small birds,

such as chickadees, nuthatches, [brown] creepers, hairy and downy woodpeckers, blue jays and others, even the big pileated woodpecker, frequented my feeding trays all day long. Only three chickadees and one blue jay feed there now."

Comprehending a rationale behind current deer management practices, Zirrer also wrote: "For deer . . . hard times are coming later. Unable to range the woods freely because of snow, they usually retire to bogs, where there is more shelter and food is more easily obtained. But, when the snow is too deep and the number of deer too great, the available supply of food does not last all winter, and many of them starve. If, in the present hunting season, enough of them are shot, it might enable the others to endure until better times in the spring." (Zirrer 1958a)His next article (Zirrer 1958b) in the *Journal*, on 27 December 1958, was titled "From a North Woods Diary." In this piece he discussed the opportunistic habits of animals near "human habitations" during winter. Included was advice for owners of summer homes:

"The most gentle creature in the north woods, the flying squirrel—fluffy as a handful of eider down—does not hibernate. It likes to spend the winter in a summer cottage, if there is an opening large enough to squeeze through, where it may play havoc with bedding, as do the red and gray squirrels. Owners of summer cottages must not only see that the doors and windows are tightly closed; they must also cover the tops of chimneys to prevent these otherwise attractive creatures from entering. . . .

"Other mammals which may establish winter quarters in or under dwellings include several species of weasels. Right now there is one—the little brown or Bonaparte's weasel [*Mustela erminea*]—under the floor of my cabin. I first noticed it, when still in its brown summer coat, in October; then I did not see it again. However, about two weeks ago, while carrying in firewood, I left the door ajar. When I entered with another load, I heard a noise in the attic. Thinking that it was just a deer mouse, I did not investigate. When I opened the door to step out, a streak of creamy white darted between my legs, down the doorsteps and vanished under the cabin. The last thing I saw was the black tip of the short tail disappearing underneath."

Zirrer's final published work appeared in the *Journal* on 21 April 1959. It was titled "Nature Lover's North Woods Diary" and was subtitled "Isolated Cabin Dweller Tells How He and His Bird, Animal Friends Survived Bitter Winter in Forest Near Hayward, Wis.; Spring Came Late This Year." Zirrer was 73. The article began as follows:

"This was an unusually hard winter. My poorly built cabin is getting poorer every year. With a steady fire, it is warm enough, even in the coldest weather, but at night, when the fire is low, the temperature drops quickly.

"To top it all, I ran out of wood about six weeks ago. I thought last fall that the wood I cut would last all winter. Wood is plentiful around here, but to get it when deep snow covers the ground is a problem.

"Because of the frigid temperature and heavy snows farther south, the birds were slow in returning—even the crows, which usually come before the end of February. This year the first ones—three of them showed up Mar. 15; the main body came back on April 3. About 100 crows appeared at my 'knacker's yard' where I, during the winter, dumped several hundred pounds of meat scraps. These included bear and deer skulls; fox,

skunk, raccoon and various other cadavers; deer feet, bear fat and so on—even a two-headed calf that a farmer brought to my neighbor, a taxidermist, for mounting, but later decided to abandon. The cawing crows descended on the dump and fed as if they had eaten nothing for days. Part of a bear carcass, weighing about 50 pounds, was stripped of flesh and fat in less than two days."

Most people wouldn't tolerate mice in their living room, but not Zirrer:

"The cabin . . . was the home of several deer mice—cute little beasties, glossy tawny brown above and snowy white under. They ran up and down the walls and beams better than a squirrel. Last fall, after noticing these squatters, I bought a few traps but decided not to use them. Instead, I started to place a bit of food on the floor every night. It did not take them long to discover the new bounty. They approached the food furtively at first—advanced, retreated, advanced again, hesitated, but finally grabbed a piece and ran. Before long, they became accustomed to my presence and the light burning and did not run away if I moved. Now they come, one after another, pick a piece of food, sit on their haunches like diminutive squirrels and, transferring the food from their mouths to their tiny, handlike paws, start to eat daintily. If there is more than they can eat at one sitting, they carry it away and hide it, sometimes in my boots."

Zirrer ended on a mournful note, lamenting the ongoing destruction of the forest he had come to know so well.

"Outside my cabin the forest looks empty and desolate. Before long, however, the chain saws will be back here. In spite of conservation talk, the woods are still exploited to the limit. Every tree that is not too small must go. There is hardly a day that I don't hear the distant buzzing of the chainsaw. One or two logs are secured; the rest—one-half to two-thirds of the tree—is left to decay." (Zirrer 1959)

At some point, perhaps in the mid 1960s, Zirrer decided to move back to Milwaukee to live out his remaining years. He died on 30 May 1968 at Columbia Hospital in Milwaukee. He had asked a friend, Ruth Works (with whom he had corresponded in the 1960s), to handle his affairs after his death. Historian and conservationist Walter Scott passed on a request to Schorger for information that could be included in an obituary. Scott noted that Zirrer was "an unusual man and a fine naturalist deserving of recognition" (Walter E. Scott letter to A.W. Schorger, 7 July 1968). Schorger responded to Works in a 11 July 1968 letter that is worth noting in full:

"Your request for information on Francis Zirrer reached me two days ago. During a correspondence extending over the period 1934–1949 I acquired a profound respect for his ability as a naturalist. He was a very careful observer and, if any uncertainty arose in his mind, he sought further information before reaching a conclusion. He was the first person to obtain conclusive proof of the nesting of the Goshawk in Wisconsin. This breeding record was described by O.J. Gromme (1935. *Auk* 52:15–20). As an example of his power of observation, he wrote to me that each time that the Chimney Swift deposited an egg, the edge of the nest was enlarged. He was as familiar with the mammals of his locality as with its birds. One of his letters gives very good information on the fluctuation of the snowshoe hare.

"His command of the English language would put many of our college graduates to shame. Yet, he was very reluctant to prepare his observations for publication. In this connection, in Oc-

tober, 1946, he sent me a copy of a novel which he had written and requested criticism. Mrs. Schorger and I could not find any merit in it. In fact it was a diatribe against the surgeon whom he thought had made his wife a permanent invalid through malpractice. His devotion to his wife was such that there could be no forgiveness.

"I asked Mr. Zirrer to leave his notebooks to the Wisconsin Historical Society. He replied that they were kept in such a manner that he doubted that anyone except himself could get much benefit from them. If you find that these notebooks are still among his papers, it would be a fine thing to send them to the Society as they would be of no value to any heir. Now that Mr. Zirrer is deceased, I intend to donate his important letters to the Society."

Ruth Works responded to Schorger on 27 July 1968.

"I was glad to have your letter of July 11. . . . He came to Milwaukee, when he was so sick, because he was so *fond* of a doctor he had seen here a number of times. . . .

"I've almost completed reading his 'novel,' two big typed volumes, and have found only slight reference to the medical malpractice he felt his wife suffered from. . . . I think it should go to the Historical Society. It gives so many *facts* on life in northern Wis. during the Great Depression. Not only is the wealth of wildlife in the woods described, but prices of potatoes are given, nationality groups mentioned, etc. Would you please ask the Historical Society if they would like to have it? It is beautifully typed. . . .

A thorough check of files at the Wisconsin State Historical Society has failed to produce Zirrer's "novel." As to the notebooks that so interested Schorger, they experienced a sad but perhaps predictable fate. Ruth Works explained:

"Mr. Zirrer's things were stored in a warehouse and, having no car, I had to look through the small boxes right there, using vacation time from my job to do so. I did find some notes . . . in extremely small handwriting. My impulse was to keep them, but then I thought, 'Who is ever going to try to read this?' *So I threw them out* [emphasis added]. On getting home, with the things I did save, I found your letter . . . suggesting his notes be given to Hist. Soc. I felt bad!"

Imagine these field notes—decades of painstaking observations—lost forever! It is fortunate that Schorger saved and donated his Zirrer papers to the Historical Society. These, Zirrer's few published articles, and miscellaneous references are the only records we have from one of the most diligent yet unheralded naturalists in Wisconsin's history.

Acknowledgments

I would like to acknowledge the careful reviews by John Bielefeldt and Mike Mossman of this and the previous two papers on Zirrer. Their comments and suggestions for improvement were most helpful.

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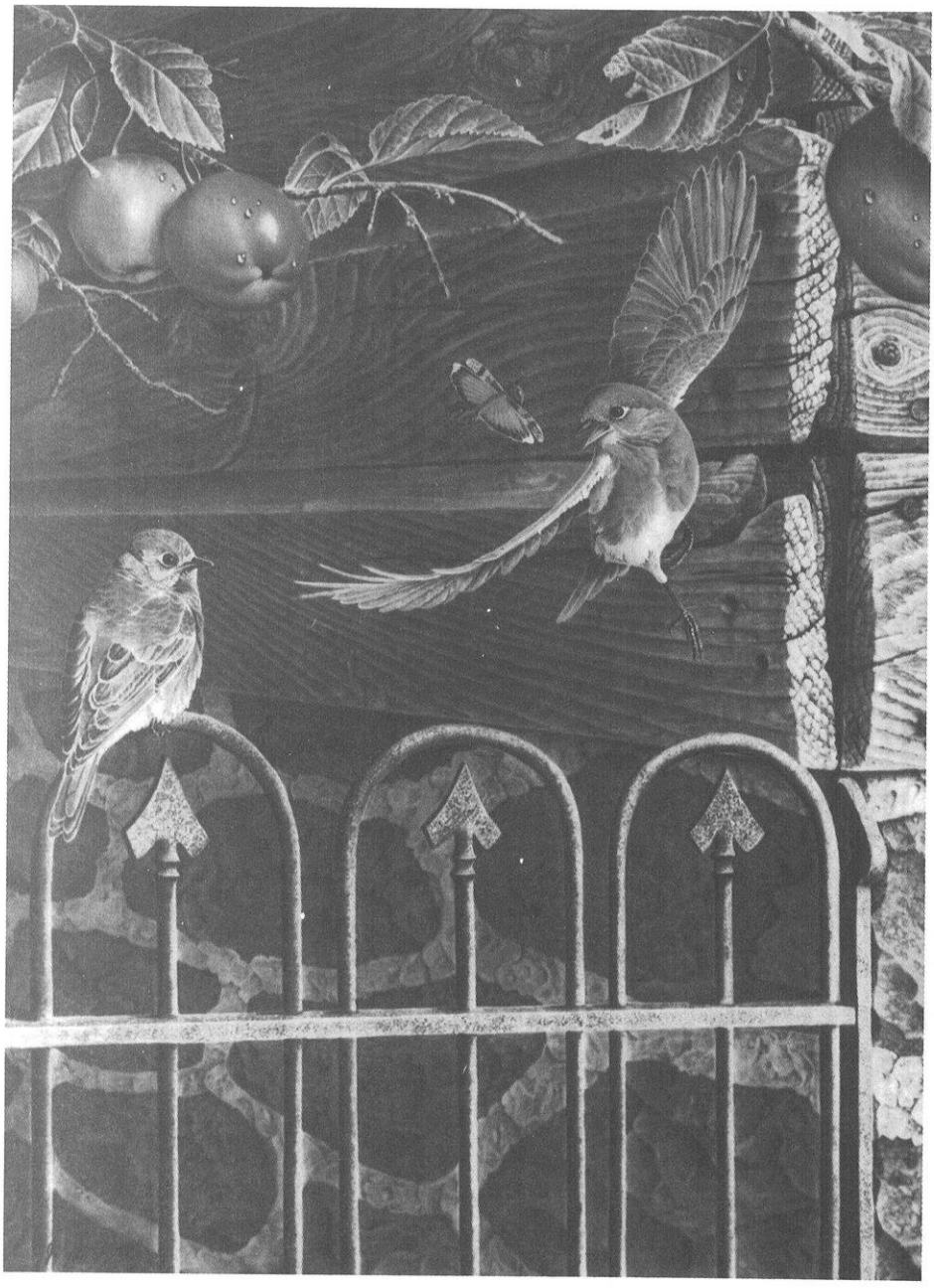
Sumner W. Matteson
Bureau of Endangered Resources
Department of Natural Resources
Box 7921
Madison, WI 53707

"Guard Duty Loon" *by Scott Zoellick* (A limited edition print reprinted with the permission of the artist and the publisher, Northwoods Craftsman, Menomonee Falls, WI 53051).



"Orchard Bluebirds" *by Jerry Gadamus* (A limited edition print reprinted with the permission of the artist and the publisher, Northwoods Craftsman, Menomonee Falls, WI 53051).

There's a New Bird in Town

by Scott R. Craven

The possibility of spotting a rare bird keeps a background birder on constant "red alert" status. Over time, some birds are able to expand their range and colonize new areas thanks to habitat changes, human activity such as bird feeding, or the intentional or inadvertent introduction of exotic species. Thus, a once rare bird can become quite common. The Northern Cardinal, Cattle Egret, European Starling, and House Sparrow are good examples. However, with the recent arrival of the House Finch (*Carpodacus mexicanus*) in Wisconsin, the whole process of a species colonizing a new region can be witnessed first hand, probably in your own backyard.

The original range of the House Finch extended from Texas to California (where it is often called a Linnet), so it does qualify as a native North American bird. However, the birds' arrival in Wisconsin did not originate with natural populations. About 1940, House Finches were captured in the West and illegally shipped to New York as cage birds ("Hollywood Finches" according to one source). The story is unclear as to how and why the caged finches were released (some say to avoid prosecution), but a wild population became established on Long Island during the 1940s. It took almost 30 years for the House Finch to spread from Long Island to Cornell University in upstate New York. After a slow colonization of urban New York, House Finch populations expanded rapidly to the north and west in the seventies.

The first scattered sightings of House Finches in Wisconsin began in the mid-1980s. In Temple and Cary's 1987 book, *Wisconsin Birds: A Seasonal and Geographic Guide*, the House Finch was listed as a rare species with records from only 5 counties. In December 1989, 339 House Finches were seen during the Audubon Christmas Bird Count in the Madison area alone! Recent observations span the width of Wisconsin and extend north to a line roughly from Eau Claire to Green Bay. Sam Robbins, author of, *Wisconsin Birdlife*, reports a few sightings extending north to Taylor and Shawano Counties. Now that it has arrived, the House Finch will likely become a permanent and perhaps common addition to Wisconsin's avifauna.

Many House Finches have probably been observed but misidentified as the more common native Purple Finch (*Carpodacus purpureus*). The birds are very similar in size, shape, and coloration. In a side-by-side comparison, the red coloration on the male's head, breast, and rump is distinctly "redder" on the House Finch and more rosy or purplish on the male Purple Finches. However, there is much variation in color. In the west, "orange" House Finches are common, and this variant has been observed in eastern populations. The females of both species are brown and could be confused with sparrows at a distance. On close examination, the heavier bill should identify them as finches. The female House Finch has a more finely streaked breast than the Purple Finch and lacks the distinctive pale streak over the eye. A House Finch may also appear "longer" than the fluffy, plump Purple Finch. At least for now, the House Finch is more common in southern Wisconsin, and the Purple Finch more common in northern Wisconsin, especially during the breeding season.

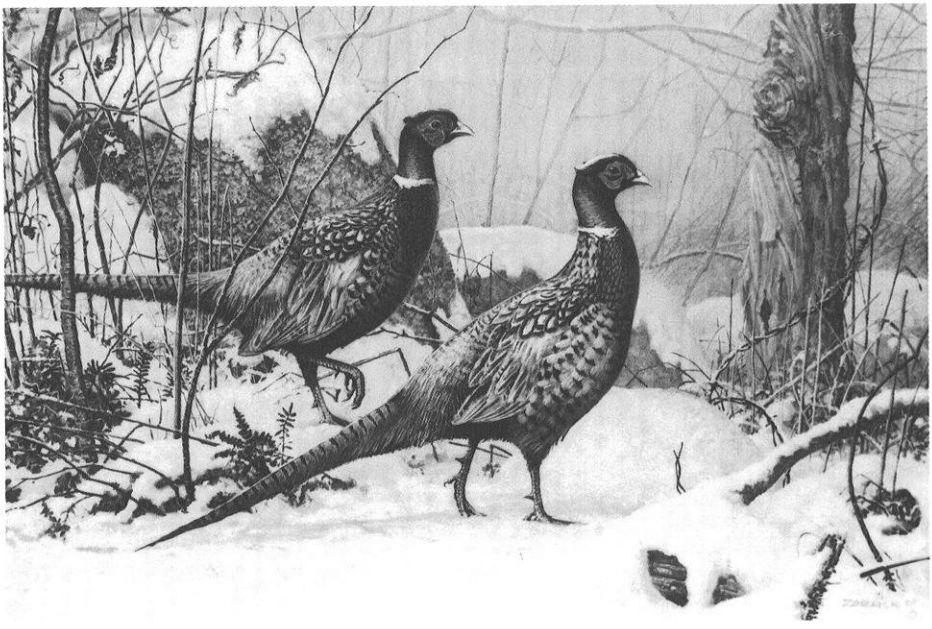
The House Finch is quite general in its habitat and nesting requirements. In the far west, it inhabits desert brushland and agricultural areas while in the east it seems to favor urban/suburban habitats. The female may select a tree, shrub, natural cavity, or building as a site of its nest made of grass, twigs, or debris. House Finches are regular visitors to feeding stations and seem to favor sunflower seeds and thistle. Natural foods include a variety of seeds, buds, and flower parts, as well as crumbs, insects, and soft fruits=mwhatever it can find in an urban environment.

In California, House Finches cause significant damage to grapes and other soft fruits and seedlings. Although Wisconsin agricultural crops differ from California's, some crops=mcherries, grapes, and perhaps apples=mcould be vulnerable. At this point, there seems to be little concern for the potential of the House Finch to become a pest in Wisconsin. The Cornell Laboratory of Ornithology was not aware of any problems in New York; nor was the U.S.D.A. Extension Service in Pennsylvania.

As for the House Finches' interaction with native species, it is a different story. In New York, the House Finch has driven the Purple Finch out of urban/suburban areas. In rural, forested habitats, the Purple Finch has been able to hold its own. There is a possibility that House Sparrow numbers have declined in New York as well, but that is poorly documented (and not necessarily bad news). Around feeders, the House Finch is not overly aggressive, at least not relative to an aggressive species like the Evening Grosbeak. However, they have a tendency to overwhelm other birds by sheer numbers. Margaret Brittingham (known to *Passenger Pigeon* readers for her work on bird feeding in Wisconsin) reported that data from Cornell University's Project Feeder Watch in Pennsylvania showed that 93% of feeders had House Finches and the average flock size was 17 birds per feeder; the highest average per feeder of any species. Furthermore, flocks of 50–60 are common, and one bander handled 3,000 different House Finches in one season at a single feeding station. Most backyard birders will likely welcome the House Finch at their feeders=mat least initially.

The next "purple finch" you observe is worthy of a closer look! If it turns out to be a House Finch, enjoy its color and song. If you observe any interactions with other species or any problems caused by House Finches, please pass them along to me. Only time will pass judgement on the new bird in town.

Scott R. Craven
Department of Wildlife Ecology
University of Wisconsin
Madison, WI 53706



"Winter Ring Necks" *by Scott Zoellick* (A limited edition print reprinted with the permission of the artist and the publisher, Northwoods Craftsman, Menomonee Falls, WI 53051).

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How Long do Birds Live?

by Stanley A. Temple

By some popular accounts, birds live for a relatively long time. One often hears reference to spectacular records, such as captive parrots that survived through several generations of a human family or seabirds that lived so long that the metal bands placed on their legs actually wore out and dropped off. But, in the real world, these exceptional cases are clearly not the rule. Most birds do not live to spectacularly old ages, but the question remains: Just how long do different birds actually live? In this essay, I shall review what we know about longevity in birds and explain how ornithologists go about studying this aspect of avian life history.

We actually have very little information on the life spans of individual birds that have been known from birth to death, except those birds kept in captivity. These captive individuals have produced most of the longevity records for birds, and their long lives should come as no surprise. Protected from predators, harsh weather, food shortages, diseases and parasites, accidents, and other hazards, these pampered individuals have set the standards of avian longevity. For example, a Siberian Crane, named "Wolf," that was held at the International Crane Foundation in Baraboo, Wisconsin, lived to be at least 83 years old; he was no doubt actually several years older because he was apparently taken into captivity as an adult. My falconry trained Red-tailed Hawk, named "Argus," lived for 28 years, establishing the longevity record for his species. But even in the protected captive environment, there are no authenticated records of individual birds living a century, despite the popular allegations of centenarian parrots.

Birds in the wild, of course, face many hazards that end their lives far sooner than in captivity. In addition, very few wild birds are known and tracked as individuals from birth to death. Even in the age of sophisticated electronic techniques, such as radiotelemetry, ornithologists are rarely able to remain in contact with individual wild birds for more than a few months at a time. So, how do ornithologists study longevity in wild birds?

The most useful approach has been to estimate the annual survival rates of

birds and then project the potential lifespan that could be achieved by a bird in a population with that annual survival rate (Botkin and Miller 1974). Survival rates are measured as a percentage, and they indicate the proportion of individuals alive at the start of a year that are still alive 12 months later. An annual survival rate of 50% would, for example, imply that over the course of a year half of the birds in the population would survive (or conversely half would die).

Ornithologists determine survival rates in bird populations in several ways, most of which involve banding or in other ways marking birds so they are recognizable as individuals. One approach is to band or mark a large number of individuals in a concentrated local population, such as a seabird colony, in one year and return a year later to census the banded individuals. There will be fewer marked birds, and the proportion remaining will equal the annual survival rate, assuming that no birds left the area and all the missing birds, in fact, died. This is a fairly specialized approach that is generally carried out by ornithologists working on a specific local population. Only a few species have had their survival rates estimated by this method.

Another approach is to record the time from banding or marking until death of many individual birds banded or marked over many years. If a large enough number of birds are banded, various individuals will be found dead and reported at different times thereafter. A profile of the time from banding to death in the population will result, and it is possible to calculate the annual rate of survival from these observations. This is the approach that is used by the Bird Banding Laboratory of the U.S. Fish and Wildlife Service (Brownie et al. 1978), and it is this type of analysis that relies heavily on volunteers to report the date on which they found a dead banded bird. Joe Hickey's classic work on "Survival Studies of Banded Birds" (Hickey 1952) relied on this type of information to calculate survival rates.

Another technique that uses marked individuals has become popular since the advent of radiotelemetry, which allows ornithologists to know exactly when a bird carrying a miniature radio transmitter dies. After a number of birds have been fitted with radios and released, they will survive for differing lengths of time. The number of deaths over the cumulative amount of time radios were worn by all individuals can be used as a measure of survival. This is the approach, for example, that Temple and Wallace (1989) used to calculate the survival rates of Andean Condors in Peru. They radiotracked 33 adults condors over a cumulative period of 367 condor-months and recorded 2 deaths. This rate of deaths indicated that adult Andean Condors had annual survival rates of 94%, among the highest rates ever recorded for wild birds.

Similarly, Brittingham and Temple (1988) color-banded Black-capped Chickadees and recorded the time from banding until the last sighting of banded individuals visiting the bird feeders at Devil's Lake State Park and several other nearby locations. They found that the annual survival rate of chickadees that visited birdfeeders was 48%.

A final, less accurate and, hence, infrequently used technique for calculating survival rates involves the examination of age ratios in samples

of birds that were all killed over a brief period of time. The proportion of the birds in the sample that are adults (more than a year old) turns out to be equal to the annual survival rate for adults (if assumptions about the sample of dead birds being typical of the entire population are met). Records of mass bird kills at television towers, like those studied by Charles Kemper in Eau Claire, or examination of game birds taken by hunters during a brief hunting season (Hickey 1955) have been used this way.

These and other methods for estimating survival rates do not directly tell us about the average or maximum lifespan for a species. But they can be used to predict what the longevity for a particular species is likely to be. The average longevity in a population is simply the inverse of the average mortality rate. If a population has an annual survival rate of 60%, the mortality rate is 40%, and the average lifespan is 2.5 years (i.e., 1/0.40).

Maximum longevity is predicted in a different way. Assume that you start with a population of 1,000 birds, all born at the same time. When would the last member of this group die? If we again used a population of birds that has an average survival rate of 60%, the population in each successive year would be 60% of the size in the previous year. After one year, 600 of the 1,000 would be alive (i.e., 1,000 × 0.6), after two years 360, (i.e., 600 x 0.6), and so on. After 13 years only one bird would remain, so the predicted maximum longevity for a bird with an annual survival rate of 60% is 13 years.

There is clearly a big difference between the average lifespan of 2.5 years and the maximum lifespan of 13 years in this hypothetical bird population. The major conclusion is that few birds live to a great age; most die young.

To conclude on a personal note, in 1982 Margaret Brittingham and I banded 162 Black-capped Chickadees at the bird feeder at my house. We calculated that the average annual survival rate for those birds was 48%. Their average lifespan was, therefore, just under 2 years, and the projected maximum longevity was 9 years. In 1990, 2 chickadees banded in 1982 were still alive, but time is clearly running out for them. The last survivor of the class of 1982 should disappear this winter. In contrast, it is possible that one of the Andean Condors Mike Wallace and I marked in Peru may still be alive in the year 2050!

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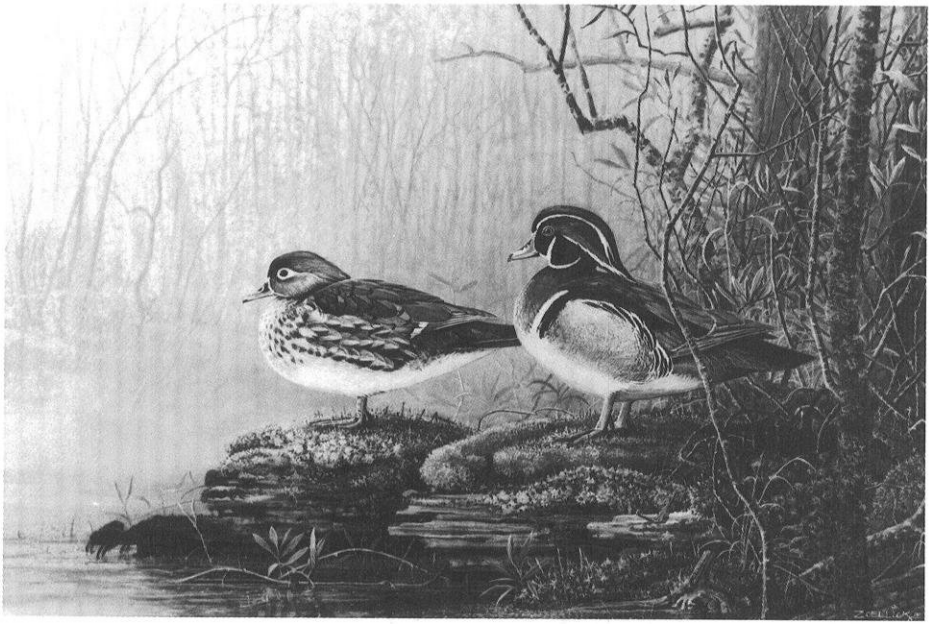
Stanley A. Temple
Department of Wildlife Ecology
University of Wisconsin
Madison, WI 53706



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Birds of Wisconsin's Deep Marshes and Shallow Open-Water Communities

by Randy M. Hoffman

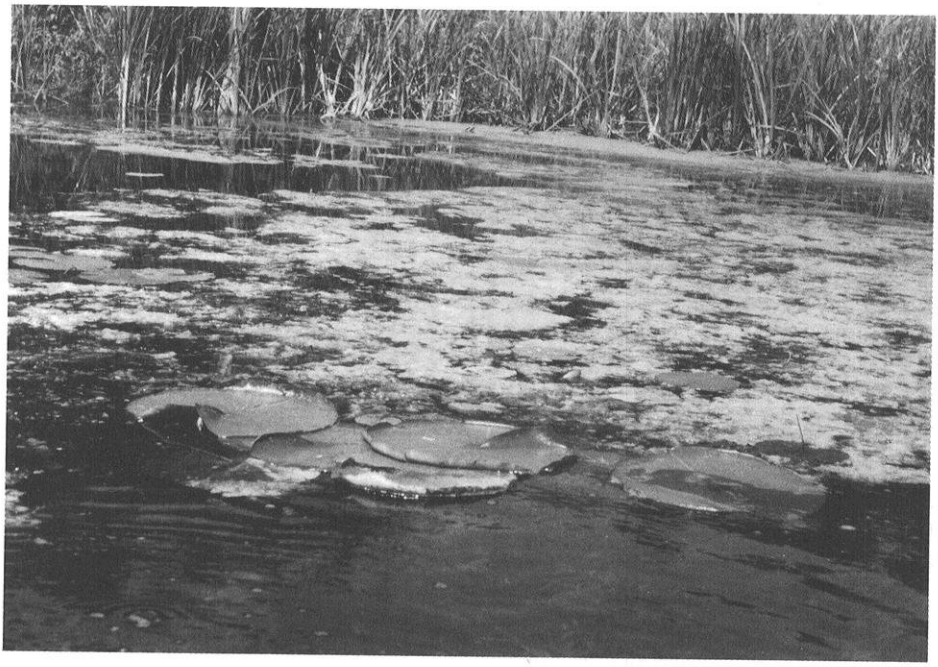
The definition of wetlands used by the U.S. Army Corps of Engineers in its regulatory program is:

> "Wetlands are those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

These wetlands, in this broadest sense, contain most of the species that Wisconsin birders want to observe. In *Wisconsin's Favorite Bird Haunts* (Tessen 1989), *every* location description includes habitat that can be considered wetlands. The reason is the extremely varied landscapes that can be called wetlands, from mud flats and flooded farm fields in Dodge County, to extensive cattail marshes at Horicon, to vast sedge meadows at Crex or Powell, to large prairie-fen complexes in the Scuppernong Basin, to open bogs in Douglas County, to conifer bog forests north of Hiles, to alder thickets along many northern Wisconsin streams, to black ash swamp swales at Woodland Dunes, to white cedar swamps along the Brule, through the floodplain forest of the lower Wisconsin River. It is easy to see why Wisconsin's wetlands provide nesting, migrating and wintering habitat for most of Wisconsin's birds.

It is also easy to see that, by referencing wetlands in this broad sense, there could be a tremendous amount of confusion generated in any wetland inventory. By realizing a need to put order into the wetland systems, several classification regimes have been developed (Curtis 1971, Stewart and Kantrud 1971, Shaw and Fredine 1971, Cowardin, et. al. 1979, Eggers and Reed 1987). In addition, another classification system was developed for the Wisconsin Wetland Inventory. See Table 1 for a comparison of how several classification systems treated the types of wetlands described in this article.

These classification systems have attempted to give some semblance of order to a complex of "wetlands." Different observers will view wetlands differently, what may appear to be a particular community type by one observer may be judged differently by an-



Shallow open-water in foreground with deep marsh in the background, Balsam Lake, Polk Co. (*Photo from Wisconsin DNR*)

other. Which system is "better" may depend upon the user and the region where they live. It is very important to realize that any classification regime involves dividing up what is really a continuum (Weller 1981).

Over the course of several years a single wetland may experience periods of very low water levels, average water levels, and very high water levels. During each of these periods the wetland could be attractive to different species. Any classification system should reflect both the long-term average and also which particular phase the wetland is in, such as emergent phase, open-water phase, draw-down phase, etc. (Stewart and Kantrud 1971).

In addition to these short cycles, a wetland may change over hundreds of years. An alder thicket may be replaced by a tamarack-black spruce forest. A cattail marsh may fill in with silt and change to a sedge meadow or conversely a hundred-year flood may rip out an existing forest and replace it with a backwater lake, which would start the successional process anew.

This paper will deal only with those communities on the very wet end of the spectrum. For purposes of this paper I am following the classification system of Eggers and Reed (1987). The primary reason for using their system here is because it emphasizes the wetland communities of Wisconsin and Minnesota. This paper will narrowly focus on the deep marsh and shallow open-water communities.

In their classification Eggers and Read describe a deep marsh as being dominated by cattails, hardstem bul-

Table 1. Comparison of wetland classification systems.

Wetland Plant Community Types of this Article	Vegetation of Wisconsin (Curtis 1971)	Wisconsin Wetland Inventory	Classification of Wetlands and Deep Water Habitat of the United States (Cowardin et al. 1979)	Fish and Wildlife Service classification (Shaw and Fredine 1971)
Shallow, Open Water	Submergent aquatic community	Aquatic bed, submergent and floating	Palustrine or lacustrine, littoral; aquatic bed; submergent, floating, and floating-leaved	Type 5: Inland open fresh water
Deep Marsh	Emergent and submergent aquatic community	Aquatic bed, submergent, and floating; and persistent and nonpersistent emergent/wet meadow	Palustrine or lacustrine, littoral; aquatic bed; submergent, floating, and floating-leaved; and emergent; persistent and nonpersistent	Type 4: Inland deep fresh marsh
Shallow Marsh	Emergent aquatic community	Persistent and nonpersistent, emergent/wet meadow	Palustrine; emergent; persistent and nonpersistent	Type 3: Inland shallow fresh marsh
Sedge Meadow	Northern and southern sedge meadow	Narrow-leaved persistent, emergent/wet meadow	Palustrine; emergent; narrow-leaved persistent	Type 2: Inland fresh meadow

rush, pickerelweed, and giant bur-reed in areas covered by standing water greater than 6 inches deep throughout most of the growing season. They go on to describe the shallow open-water community as being areas of shallow open water dominated by submergent, floating and floating-leaved aquatic vegetation.

As previously mentioned, these wetland systems form a continuum and they can fluctuate annually, oscillate around depth nodes, and gradually change over time. It was hard to decide where to draw the line for describing these bird and plant communities. Previous articles in this series have described other wetlands such as the wet prairies and fens (Hoffman and Sample 1988) and sedge meadows (Mossman and Sample 1990). This article will focus on the wetlands that are near the wetter end of the spectrum.

Emergent vegetation of deep marshes is characterized by broad-leaved cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*), hardstem bulrush (*Scirpus acutus*), softstem bulrush (*Scirpus validus*), river bulrush (*Scirpus fluviatilis*), three-square bulrush (*Scirpus americanus*), and pickerelweed (*Pontederia cordata*).

Each dominant plant species has its own preferred habitat, and the com-

position of a marsh will change with increased water depth (Curtis 1971). Broad-leaved cattail is found in almost all wetland situations. Narrow-leaved cattail is similarly found in many of the same areas as broad-leaved cattail, but it tolerates more calcareous waters (Eggers and Reed 1987) and deeper water (Weller 1988). It may form floating mats.

For an emergent, hardstem bulrush can be found in very deep water (up to 2 meters) with sandy or marly substrate and good water circulation, whereas softstem bulrush prefers more mucky and stagnant conditions. Threesquare bulrush is usually found in waters between 1 and 2.5 feet deep. Pickerelweed is found in waters less than 3 feet. It often forms large colonies in Mississippi River backwaters.

Throughout a deep marsh, there are other plants, usually of a less dominating nature. These plants may depend on more exacting conditions for establishment and growth, and, therefore, are found more sporadically throughout the state. They can be very abundant if the conditions are right. Among the marsh plants in this group are giant bur-reed (*Sparganium eurycarpum*) usually found in shallow water or floating substrates, broad-leaved arrowhead (*Sagittaria latifolia*), and other shallow water species. Giant reed grass (*Phragmites australis*) can produce large monotypic stands; wild rice (*Zizania aquatica*) can grow in dense stands and does best in clear shallow water with a slight current. Giant manna grass (*Glyceria grandis*) is more common in shallow water, and purple loosestrife (*Lythrum salicaria*), a Eurasian species, once established can totally dominate a marsh.

Scattered through a marsh where there is open water are pockets of species characteristic of the shallow open-water community. As the water depth increases, those species begin to dominate. Emergent species become more scarce with only scattered patches of hardstem bulrush or floating islands of narrow-leaved cattail left. This plant community is dominated by species exhibiting three major strategies: those with floating leaves and emergent flowers and their roots anchored in the bottom, submergent plants that are suspended under the surface, and floating plants whose entire structure floats on the surface of the water. These shallow-water communities occur in water depths of approximately 2 meters or less. Aquatic vegetation includes pondweeds, water-lilies, water milfoil, coontail, and duckweeds. Common or widespread floating leaved species include white water lily (*Nymphaea ordorata*); yellow water-lily (*Nuphar variegata*); water shield (*Brasenia schreberi*); American lotus (*Nelumbo lutea*), primarily in the backwaters of the Mississippi River system; and floating-leaved pondweed (*Potamogeton nutans*). Common or widespread submerged plants include sago pondweed (*Potamogeton pectinatus*); Illinois pondweed (*Potamogeton illinoensis*); large-leaved pondweed (*Potamogeton amplifolius*); coontail (*Ceratophyllum demersum*), an abundant plant which is tolerant of high nutrient levels and fluctuating waters; three species of water milfoil (*Myriophyllum spicatum, M. exalbescens,* and *M. verticillatum*), species that can form dense mats; elodea (*Elodea canadensis*); wild celery (*Vallisneria americana*); and bladderworts (*Utricularia* sp.), several species of free floating submerged carnivorous plants. Common or widespread floating plants include lesser

duckweed (*Lemna minor*); star duckweed (*Lemna trisulca*), watermeal (*Wolffia columbiana*), and big duckweed (*Spirodela polyrhiza*).

Deep marshes and shallow open-water systems in Wisconsin are formed in glacier-scoured basin or in backwater areas of large meandering river systems. Within the basin systems, the composition of the vegetation, aquatic invertebrate fauna, and birdlife are determined by several factors associated with the physical composition of the basin. The size and shape of the basin will have a great influence on a marsh's productivity. Factors such as soil types, ground water chemistry, acidic water deposition, substrate, islands, wave action, or carp can determine the vegetational composition and ultimately the attractiveness to specific bird species.

The numbers and species of birds utilizing a given marsh in a given year can vary greatly. Dramatic changes in vegetation can occur in the normal hydrological cycle of a marsh. During periods of extended below-normal moisture, many marshes "dry out." The bottom consolidates and oxidizes. Many plants become established during this phase, because they only germinate after all the water has disappeared and the soil surfaces are exposed to air (Buele 1979). The extent and severity of any draw-down will eventually determine the vegetative composition when a marsh returns to wetter conditions.

Obviously, some birds, such as Pied-billed Grebes, are unable to use a marsh during complete draw-down, but they may nest in numbers during high-water periods. Less obvious are some niche-specific birds, such as Yellow-headed Blackbirds, that may be totally eliminated in some years (Weller 1978). Other very adaptable birds, like Red-winged Blackbirds, will nest even during a complete draw-down.

Herbivores also exert a dramatic affect on bird populations. In Wisconsin, the primary herbivore of the marshes is the muskrat. Muskrats, unchecked by predation or trapping, can "eat out" a marsh (Errington 1963). Muskrats even under normal population conditions influence the horizontal structure of marsh. Their net effect is to break up continuous vegetation stands with open water and to increase open water-emergent edges. Several species such as Black-crowned Night-heron, American Coot, and Ruddy Duck have most of their nests within 10 meters of open water (Burger 1985). The muskrat lodges, themselves, provide a nesting substrate for Forster's Terns (Burger 1985, Mossman 1988) and Canada Goose (Buele 1979).

Most of the research and survey work that has been done on deep marshes and shallow open-water communities has concentrated on ducks and geese. This is due to the economic importance of these species compared to a species such as the Marsh Wren. Funds generated through taxes on hunting-related goods and duck stamps have allowed Wisconsin to purchase and manage vast acreages for waterfowl production and hunting opportunities. In conjunction with acquisition and management, is a research program that provides recommendations to property managers. In Wisconsin a sample of marsh-related research includes such varied topics as cattail control and management (Baule 1979), evaluation of waterfowl production areas (Peterson et

al. 1982), state-wide studies of breeding ducks and duck habitat (Marsh et al. 1973), and duck breeding ecology (Wheeler et al. 1984). This acquisition, management, and research program in waterfowl producing marshes in Wisconsin is a joint venture of Wisconsin Department of Natural Resources' Bureau of Wildlife Management and Bureau of Research.

An offshoot of this program is the tremendous amount of habitat it provides for other non-economic species. Nearly every birder in the state has visited at least one of these managed areas. Some of the better known areas include Horicon Marsh, Mead Wildlife Area, Crex Meadows and Fish Lake, Collins Marsh, Dike 17 Wildlife Area, Oconto Marsh, Navarino, Powell Marsh, Theresa Marsh, Eldorado Marsh, and the pothole region of St. Croix, Polk and Dunn Counties, to mention a few.

The waterfowl and endangered species of these and other marsh areas have been well documented. Other highly visible species, such as herons, Pied-billed Grebes, and Black Terns have also been studied. Only rarely has any attempt been made to describe all the bird species and their numbers on a marsh.

Table 2 compares the bird species recorded at 5 different marsh sites in Wisconsin. These studies show dramatic differences in birdlife between marshes, and as previously described, there are yearly differences within a marsh. A compilation of many more sites is needed to obtain a complete picture of the bird species of these communities. Two other studies in Wisconsin (Table 3) have looked in depth at the breeding birds of marshes.

Marshes dominated by cattails and bulrushes have very little vertical stratification compared with woods or shrub communities. The plants often form dense mats of vegetation that are virtually all the same height. From this perspective the marsh is rather homogeneous, but if we look at the marsh horizontally, the changes can be pronounced. Deep marshes and shallow open water communities are often thought of as part of concentric zones around a deep water body, and often they are just that.

As a person goes towards the center of the basin from the upland, they will pass through low meadows or prairies, sedge meadows, shallow marsh, deep marsh, shallow open-water community, and finally deep water. Another possibility would be going from wooded uplands to a narrow zone of shallow marsh to deep marsh, and then into the open water communities.

Even within a zone of cattails, the distribution of birds is not uniform. Some species prefer dense cattails while other prefer sparse cattails (Burger 1985).

It can be useful to look at some of the more common bird species or species groups and see where they live in a marsh. Red-winged Blackbirds are ubiquitous in our Wisconsin deep marshes. The males arrive on the breeding grounds in early spring and set up territories. Territory size can vary with habitat and can cross nearly all of our marsh zones. Marsh-nesting red-wings have an average territory about three times smaller than upland-nesting red-wings (Case and Hewitt 1983). In the marshes, after the male red-wing territories have been set up, the females arrive. The female then chooses a mate and her preferred hab-

Table 2. Comparison of birds recorded at 5 marshes in Wisconsin[1,2].

	Survey results for indicated sites:				
Species	A	B	C	D	E
Pied-billed Grebe	13			7	1
Eared Grebe	X	X	X	3	28
American Bittern	1			1	1
Least Bittern	4	1.2	0.4		
Great Blue Heron		+	+		+
Great Egret		+	+		
Green-backed Heron		+	0.4		
Canada Goose	0.7				
Wood Duck		+	+		
Green-winged Teal				0.2	
Mallard	6	+	+	4.2	0.5
Northern Pintail				0.3	
Blue-winged Teal	2	+	0.9	6.5	11
Northern Shoveller				2.7	2
Gadwall				3	20
American Widgeon					1
Canvasback				2.7	
Redhead	7			10.8	4
Lesser Scaup					1
Hooded Merganser		+	+		
Ruddy Duck	0.7			13.3	11
King Rail	0.3				
Virginia Rail	3	5.2	9.7	2	1
Sora	11	0.4	0.4		
Common Moorhen	2	0.4	0.4	+	+
American Coot	128	0.4	+	23	29
Killdeer				1	
Marbled Godwit	X	X	X		1
Common Snipe			0.9		
Black Tern	14		+		18
Willow Flycatcher		0.4	0.4		
Eastern Kingbird		0.4			1
Marsh Wren	156	4.8	4.4	21	1
Common Yellowthroat		10.7	4	14	2
Song Sparrow		2	9.7	5	
Yellow-headed Blackbird	12	5.6	10.1	153	175
Red-winged Blackbird	89	15.1	16.8	19	56
Common Grackle			2.7		

[1]At Site A Beule (1979) recorded the three-year average of nests located on a 50.6 hectare plot at Horicon Marsh. At Site B Tyser (1982) recorded the average number of birds from twenty 20-meter radius quadrats in an 80-hectare bulrush marsh. At Site C Tyser (1982) recorded the average number of birds from eighteen 20-meter radius quadrats in a 35-hectare cattail marsh. At Site D Krapu (1978) censused a 7.28-hectare cattail-bulrush marsh with water <2 feet deep. At Site E Knodel (1979) censused a 93.8-hectare shallow open-water community with emergent cattails and river bulrush.

[2]+ = present within study area but not within any quadrat. X = Species present but not a breeding bird in Wisconsin.

itat (Orians 1980). There can be more than one female within one male's territory. These harems can vary in size from more than seven in Washington (Orians 1980) to about two here in Wisconsin (Nero 1956).

Yellow-headed Blackbirds have a similar seasonal phenology. Males ar-

Table 3. Status of breeding birds on sedge marshes and Waterfowl Production Areas (WPA)[1].

Species	Sedge Marsh[2]		WPA[3]	
	South	North	South	North
Common Loon				u
Pied-billed Grebe	u	c	c	c
Red-necked Grebe				u
Double-crested Cormorant	u	u		r
American Bittern	u	u	u	u
Least Bittern	u	u	u	r
Great Blue Heron	u	c	u	c
Great Egret	u	u		c
Green-backed Heron	u	u	c	c
Black-crowned Night-heron	u	u	r	u
Canada Goose	u	u	r	r
Wood Duck	u	u	u	u
Green-winged Teal		u	r	r
American Black Duck		u	r	
Mallard	c	c	c	c
Northern Pintail		u	r	r
Blue-winged Teal	u	c	c	c
Northern Shoveller		u	r	r
Gadwall		u	r	r
Widgeon			r	r
Redhead			r	
Ring-necked Duck	u	u		u
Lesser Scaup				r
Ruddy Duck			r	r
Osprey	u			
Bald Eagle	u			
Northern Harrier		u		
Peregrine Falcon	u			
Ring-necked Pheasant	u		u	u
Yellow Rail		u		
King Rail	u	u		
Virginia Rail	u	u	u	u
Sora	u	u	c	c
Common Moorhen	u	u	r	
American Coot	c	u	c	c
Sandhill Crane	c	u	u	
Killdeer	u	u	c	c
Spotted Sandpiper	u	u	u	u
Common Snipe	u	u	c	c
Wilson's Phalarope	u	u		u
Ring-billed Gull		u		
Herring Gull	u	u		
Forster's Tern	u		u	u
Black Tern	c	c	c	c
Common Nighthawk	u			
Belted Kingfisher	u			u
Northern Flicker	u			
Alder Flycatcher	u			
Eastern Kingbird	u	u		
Purple Martin	u	u		
Tree Swallow	c	c		
Northern Rough-winged Swallow		u		
Bank Swallow	u			
Cliff Swallow	u	u		

(*continued*)

Table 3. *Continued*

Species	Sedge Marsh[2]		WPA[3]	
	South	North	South	North
Barn Swallow	u	u		
American Crow		u		
Sedge Wren	u	u		
Marsh Wren	c	c		
Gray Catbird	u	u		
Yellow Warbler	u	u		
Common Yellowthroat	c	r		
Savannah Sparrow	u			
Song Sparrow	u	u		
Swamp Sparrow	c	c		
Bobolink	u			
Red-winged Blackbird	c	c		
Yellow-headed Blackbird	c	c	u	c
Common Grackle	c	u		

[1]c = common, u = uncommon, r = rare.

[2]Data from DNR breeding bird surveys in 1985–89. North and South refer to location relative to the tension zone.

[3]Data from DNR breeding bird surveys in 1977–79. South refers to Dane, Columbia, Jefferson and Dodge Counties, North refers to St. Croix and Polk Counties.

rive first set up territories, then the females arrive and select mates and territories. In Wisconsin, yellow-heads arrive in mid–April, which is several weeks after red-wings have set territories. The larger yellow-heads will displace the red-wings over their preferred niche. While red-wings are ubiquitous over open landscapes, yellow-heads need cattails, bulrushes, giant reed grass, or shrubs surrounded by or adjacent to open water.

Other groups of birds show distinct preferences for the drier or wetter zones of a marsh. The reasons for these preferences are varied, but they add to the horizontal stratification typical of deep marshes. Least Bitterns spend most of their time over the deeper portion of the marsh primarily on the open-water edge; whereas, the American Bittern is a shore line or meadow wader (Weller 1961). Marsh Wrens utilize the cattails and bulrush; whereas, Sedge Wrens utilize the sedge meadows.

Black Terns and Forster's Terns are two species that are commonly associated with the deep marshes of Wisconsin. Both species can breed together in the same marsh. The nest sites of Black Terns are typically just barely above the water on mats of floating vegetation, such as cattail and bulrush (Faanes 1979), or cattail rootstalks (Bergman et al. 1970); higher and drier sites are used occasionally. Forster's Terns prefer higher and drier sites, utilizing floating live or dead vegetation, muskrat houses, and mud bars (Mossman 1988); however, in recent years the most common nest substrate has been artificial nest platforms. Forster's Terns and Black Terns prefer the deeper marshes of Wisconsin, with Forster's Terns being limited to those marshes with small fish. Black Terns feed primarily on aquatic insects and can utilize much smaller fish-free marshes. Both species have declined in Wisconsin, with the Forster's Tern

listed as state-endangered and the Black Tern as a species of special concern.

The number of bird species inhabiting deep marshes and shallow lakes is quite large. This is due to the very high productivity of these systems. In Wisconsin, nineteen species nest regularly over water in marshes. They are Pied-billed Grebe, Red-necked Grebe, American Bittern, Least Bittern, Black-crowned Night-heron, Canada Goose, Redhead, Ruddy Duck, Northern Harrier, King Rail, Virginia Rail, Sora, Common Moorhen, American Coot, Forster's Tern, Black Tern, Marsh Wren, Red-winged Blackbird, and Yellow-headed Blackbird. In addition, several species of ducks use these marshes for raising their broods, and other groups of birds utilize the resources of the marsh to feed their young at distant nest sites, including several species of heron, swallows, Belted Kingfisher, Eastern Kingbird, Common Grackle, and Song Sparrow.

Sites

Excellent places to observe the deep marshes and shallow water communities are quite accessible to birders. Several of the better places have been protected. *Wisconsin's Favorite Bird Haunts* (Tessen 1989) describes many places to observe the birds of these communities. Martin (1988) describes three State Natural Areas that are excellent spots for observing waterbirds.

Because there are many sites that are accessible and well described, I chose 3 sites that would best show the typical marsh structure described in the article: Rush Lake, Oakridge Lake, and Grassy Lake. Table 4 compares the bird communities of these 3 sites.

Rush Lake

Size.—1252 hectares

Location.—Southwestern Winnebago and Northwestern Fond du Lac Counties.

Access.—Public access is limited to north and south boat landings. The north access is reached by going south from Waukau on County Highway M to Osborne Road, turn right and continue to Morrisey Road (about 1.5 miles), then south to the landing. To reach the south landing go north from Ripon on County Highway E, then right on Cork Street then left (north) on Lake Street to the landing.

Site Description.—Rush Lake is the largest prairie-pothole lake in Wisconsin, and it includes both of our described communities. The lake is very shallow with an average depth of only 50 centimeters.

Emergent vegetation is dominate by hardstem bulrush and both cattails. Submerged vegetation features sago pondweed, Eurasian milfoil, coontail, and bladderwort. Nearly all of the lake is vegetated; however, the emergents have been thinned dramatically by artificially high water levels imposed by a dam.

Birds.—Rush Lake is best known for its concentration of the state-threatened Red-necked Grebes. In 1982, there were 138 nests located (Eichhorst 1985). And as recently as 1987, ninety-eight adults were recorded (T. Ziebell, unpublished data). Recent years have seen a much reduced population with only 6 adults recorded (T. Ziebell, unpublished

Table 4. Comparisons of birds recorded at 3 sites in Wisconsin.

Species	Numbers recorded at indicated site:		
	Rush Lake[1]	Oakridge Lake[2]	Grassy Lake[3]
Common Loon		1	
Pied-billed Grebe	5	8.5	15
Red-necked Grebe	6	3.5	1
American Bittern	1	+	
Least Bittern	7		
Great Blue Heron	108	2	2
Great Egret	96	1	
Green-backed Heron		4	
Black-crowned Night-heron	165	+	
Trumpeter Swan		2	
Canada Goose	6	7.5	2
Wood Duck	86	15	4
Green-winged Teal		+	
Mallard	110	11	4
Northern Pintail	1		
Blue-winged Teal	22	8	3
Northern Shoveller	2	+	
Gadwall	3	+	
American Widgeon	2		
Redhead	16		
Ring-necked Duck		+	
Hooded Merganser		1	
Ruddy Duck	46	2.5	
Osprey	1		
Red-tailed Hawk		+	
American Kestrel		+	
Ring-necked Pheasant		1	
Virginia Rail	1		3
Sora	2		2
American Coot	250	2	12
Sandhill Crane			4
Killdeer		2.5	
Spotted Sandpiper		+	1
Common Snipe			1
Ring-billed Gull	64		
Herring Gull	3		
Forster's Tern	70	+	
Black Tern	108	5	72
Mourning Dove		4	1
Black-billed Cuckoo		+	
Belted Kingfisher		+	+
Downy Woodpecker		+	
Common Flicker		3	
Eastern Wood-Pewee		1	
Willow Flycatcher		+	1
Crested Flycatcher		1	1
Eastern Kingbird		3	2
Tree Swallow		12	9
Barn Swallow		+	1
Blue Jay		4	1
American Crow		8	3
Black Capped Chickadee		+	
White-breasted Nuthatch		1	
House Wren		5	2

(*continued*)

Table 4. *Continued*

Species	Numbers recorded at indicated site: Rush Lake[1]	Oakridge Lake[2]	Grassy Lake[3]
Marsh Wren	288	3	14
Sedge Wren		+	
Gray Catbird		+	1
Brown Thrasher		1.5	
American Robin		2	2
Cedar Waxwing		+	4
Starling		14	
Red-eyed Vireo		1	
Yellow Warbler		2	2
Common Yellowthroat	6	4	1
Cardinal		+	
Rose-breasted Grosbeak		+	
Clay-colored Sparrow		+	
Field Sparrow		+	
Song Sparrow		6	7
Swamp Sparrow	42	4	18
Bobolink		1	
Red-winged Blackbird	20	47	37
Western Meadowlark		+	
Yellow-headed Blackbird	260	23	41
Brown-headed Cowbird		7	
Common Grackle	14	31	9
Northern Oriole		1	
American Goldfinch	2	4	6

[1]Number of birds recorded during one visit in 1988.
[2]Average number recorded on 4 visits, 1987–90. + means recorded but not on survey.
[3]Average number recorded on 2 visits in 1983 and 1990. + means recorded but not on survey.

data). Similar declines have taken place with Forster's Terns. Populations were formerly much higher, with the terns using emergent vegetation and muskrat houses for nesting. The population now is much smaller, and they primarily use artificial nest platforms. These nesting structures have had unusually high owl predation, resulting in virtually no Forster's Tern production recently.

Despite the shortcomings imposed by the dam, the lake is still incredibly diverse in species (see Table 3).

Oakridge Lake

Size.—72 hectares

Location.—North central St. Croix County.

Access.—Go north on State Highway 65 from New Richmond for three miles. Turn right on 220th Avenue, and go east two miles to the south side of the lake.

Site Description.—Oakridge Lake has been classified as a type V wetland, which approximates the shallow open-water community of our discussion. It has a maximum depth of three meters. The shoreline vegetation is composed of both cattail species and hardstem bulrush. The southern two-thirds of the lake has grassy uplands adjacent to the water, whereas the north has an

upland ridge dominated by oaks. Throughout the lake are scattered stands of emergent hardstem bulrush. Submergent vegetation is dominated by milfoil, coontail, elodea, and pondweeds (J. Evrard 1988).

Birds.—Birds have been recorded annually since the early 1980s with the results showing Oakridge Lake to be an outstanding shallow open-water lake for birds. Two species have highlighted these surveys. One being the Red-necked Grebe and the other, Trumpeter Swan. Red-necked Grebes have been recorded here annually since the mid 1970s. The population is small, with between one and six breeding pairs (Evrard 1988) recorded in any one year. Their future can best be described as uncertain.

A rosier story is unfolding for the Trumpeter Swan. In 1985, a swan marked with collar 80NA showed up at Oakridge lake. This bird came from the Minnesota reintroduction program. 80NA eventually paired, lost its mate, and then paired again (Evrard 1990). Finally, in 1990 there was a successful nesting with a brood of five cygnets (Evrard, unpublished data).

Grassy Lake

Size.—40 hectares

Location.—Central Columbia County

Access.—From Otsego on State Highway 16 go north on Otsego Road to the east edge of the lake.

Site Description.—Grassy Lake is formed in a shallow basin and is roughly divided in half, with a shallow sedge marsh occurring on the south half and a deep marsh occurring on the north half. The north half of Grassy Lake is dominated by dense stands of soft-stem bulrush. Other species include both cattails, hardstem bulrush, burreed, yellow water lily, white water lily, and bladderwort. The average water deep on the north half is two feet, but it has varied from six inches to four feet.

Birds.—Red-necked Grebes occasionally use this marsh for nesting; however, they have not been seen since the low water of 1989. A significant population of Black Terns has used this marsh for many years. Surveys have shown between seventy and one hundred adults use this marsh annually.

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Randy M. Hoffman
Bureau of Endangered Resources
Wisconsin DNR
Box 7921
Madison, WI 53707

The Winter Season: 1989–90

by Kenneth I. Lange

Wisconsin's weather often changes quickly and sometimes violently, but the winter of 1989–90 was especially variable. It featured one of the coldest Decembers on record (up to approximately 10 degrees below normal), yet one of the warmest Januarys (generally 12–14 degrees above normal). February was relatively mild until later in the month, when it turned very cold for a few days; the period ended with moderating temperatures. Nearly all of Wisconsin lacked a snow cover at the beginning of the period, and the relatively dry conditions continued through December. In terms of total precipitation and total snowfall, some sections of the state were above and some below normal for January and February. This variability in temperature and precipitation led Pamela Naber, the state climatologist, to describe the winter as "topsy-turvy."

Was the 2-year drought broken with the increasing precipitation in some sections in mid-late winter? Only time will tell, but it would be unprecedented in the recorded history of Wisconsin to have another year like the last two.

So how was it for birds? William L. Hilsenhoff's comments about the 1989 Christmas Bird Counts bear repeating, since they can be applied to the winter overall: "While the counts in most years are highlighted by their rarities, the 1989 counts will be remembered more for the . . . very large numbers of all winter finches, both waxwings, many hawks, Red-breasted Nuthatches, most sparrows, open country birds, and thrushes . . ." (*Passenger Pigeon* 52:3). It was, in short, a spectacular winter for birding in Wisconsin, and I expect that we will not experience such a winter again for some time.

An excellent fruit and cone crop in much of Wisconsin and presumably a poor one in boreal nesting grounds were major factors in the high and often record numbers of certain species. Here are comments from contributors: "The most notable thing about the winter was the finches [although] Robins, Cedar Waxwings, and Red-breasted Nuthatches were [also] unusually numerous" (Janine Polk, Eau Claire area); ". . . finch invasion . . . Also the open water kept a lot of ducks & geese about as well as our resident

bald eagles" (Joe Hudick, Polk County); "More pine grosbeaks than normal (?), lots of redpolls, siskins and the all winter presence of white-winged crossbills" (Robbye Johnson, Douglas County); "Best year I've seen for Pine Grosbeaks. They are still around at end of this season. Lots of White-winged crossbills, siskins, & goldfinches" (Bill Reardon, Eagle River area); "One of the best winters for the variety of winter finches and the length of time they remained in one general area" (Jeffrey L. Baughman, Northern Unit-Kettle Moraine State Forest); "an exceptional winter for late fall migrants and overwintering individuals of species which normally migrate . . . a good winter finch year" (Philip Ashman, Dane County).

The Pine Grosbeak was in record numbers on the Christmas Bird Counts, with groups of approximately 10–40 being found in January and February throughout the state. The Purple Finch was in near record numbers on the Christmas Bird Counts; after the Counts, it remained numerous in some areas and scarce in others. Red Crossbills, after the Counts, were reported for 11 counties, whereas White-winged Crossbills in January and February were reported for 25 counties and were still throughout the state at the end of the period. As with the Pine Grosbeak, it may have been a record winter for White-winged Crossbills. Redpolls were also in high numbers throughout the period, generally peaking in mid February. A number of observers, more than usual, found Hoary Redpolls, typically with other redpolls and siskins. Pine Siskins remained in high numbers throughout the period, with January and February counts of up to 850 in northern Wisconsin. The American Goldfinch, in record numbers on the Christmas Bird Counts, seemingly became less numerous after the Counts. Evening Grosbeaks were numerous throughout the period in northern Wisconsin but scarce or absent in southern Wisconsin.

The Red-breasted Nuthatch very likely was in record numbers throughout the period: the number on the Christmas Bird Counts was more than twice the previous record, and this species was still in high numbers in all sections of Wisconsin at the end of the period.

Six species of thrushes were reported for January and February. The Eastern Bluebird and the American Robin were especially numerous, with the latter species being found as far north as Douglas County. A Mountain Bluebird was found in Ozaukee County, a Townsend's Solitaire in Dane County, and at least 9 Varied Thrushes in as many counties scattered throughout the state. The Hermit Thrush, in record numbers on the Christmas Bird Counts, was found only in Milwaukee and Dane Counties after the Counts.

Both species of Waxwings were in record numbers on the Christmas Bird Counts. The Bohemian Waxwing, except for one January record for Dane County, remained north of a line from Eau Claire, Wood, Portage, Waupaca, Shawano, and Door Counties, while the Cedar Waxwing was more widespread.

The Brown Creeper was in near record numbers on the Christmas Bird Counts, and remained in at least several far northern counties throughout the period. Although Golden-crowned Kinglets were relatively scarce on the Christmas Bird Counts, they did re-

main throughout the period in at least 3 southern counties, with January and February records for a half dozen northern counties. The Carolina Wren was in relatively high numbers for the second successive winter.

A number of sparrows, notably Fox Sparrows, Song Sparrows, Swamp Sparrows, White-crowned Sparrows, and White-throated Sparrows, remained throughout the period in certain southern counties, with one White-throat in Forest County, 10 February. Snow Buntings, in record numbers on the Christmas Bird Counts, were reported for 21 counties in January and February, while Lapland Longspurs were found in 6 counties after the Christmas Bird Counts, mainly in the period, 3–18 February.

Two contributors remarked on the Mourning Dove. Janine Polk reported that wintering doves "continue to increase every year" in the Eau Claire area, and Jeffrey L. Baughman noted that the dove has become "one of the most observable winter species" in the Northern Unit-Kettle Moraine State Forest.

Several raptors were also noteworthy. The Northern Harrier, in record numbers on the Christmas Bird Counts, was found in approximately a dozen southern counties in January and February and in the Ashland area on 2 February. It was another good winter for the Merlin, with a total of 7 reported for the period. Short-eared Owls were found in January and February in several places in southeastern Wisconsin, including the Bong Recreation Area where at dusk on 13 February Daryl Tessen enjoyed watching a total of 12. Including the Christmas Bird Counts, the Northern Saw-whet Owl was reported from a total of 10 counties scattered throughout the state from the southeast to the far north.

The Northern Shrike was in below normal numbers, after 4 successive winters of normal to above normal numbers.

The Red-bellied Woodpecker continues to bear watching for range expansion, as a record number was found on the Christmas Bird Counts. This was the first winter since the 1983–84 winter when the Red-headed Woodpecker was relatively numerous and widespread, with records for 16 counties after the Christmas Bird Counts.

A total of 9 species of gulls was found during the period, including Wisconsin's fourth documented Mew Gull (discovered by Thomas R. Schultz), Wisconsin's fourth Lesser Black-backed Gull (Roger H. Sundell), and a first winter Great Black-backed Gull (Paul Sunby).

The period also included the state's first December record for Baird's Sandpiper (Janine Polk).

Late fall migration was reported for the Tundra Swan and Canada Goose. Early spring migration was reported for the following species: Canada Goose; certain ducks; Turkey Vulture, 21 and 26 February, single birds in Sauk and Jackson Counties, respectively; Bald Eagle; Northern Harrier; Cooper's and Sharp-shinned Hawks, January in the Eau Claire area, by February in other areas; Red-tailed Hawk (?); Rough-legged Hawk; American Kestrel; Sandhill Crane, 6 February, 10 in Walworth County; Belted Kingfisher, end of the period, southern and western Wisconsin; Horned Lark; Eastern Bluebird, 22 February, Polk County; Cedar Waxwing; Lapland

Longspur; Song Sparrow, end of the period, southern Wisconsin; Red-winged Blackbird, southern Wisconsin; Eastern Meadowlark, 25–28 February, southeastern Wisconsin; Rusty Blackbird, one in Walworth County, 22 February; Brown-headed Cowbird (?); and Common Redpoll, an influx in the northern half of the state in the latter half of the month.

In addition to migrants, contributors reported 2 more signs of spring: an American Robin singing in Milwaukee, 11 February (Norma Zehner), and a Mourning Dove singing and nest building in Madison, 23 February (John C. Robinson).

A total of 74 people contributed records covering 58 counties. The following 14 counties, scattered throughout the state, were not covered: Calumet, Crawford, Florence, Green, Iron, Kewaunee, Lafayette, Marquette, Oconto, Pepin, Pierce, Rock, Rusk, and Vernon.

The following common statewide species are not included in the individual species accounts: Ruffed Grouse, Great Horned Owl, Barred Owl, Blue Jay, American Crow, and Black-capped Chickadee.

Reports (1 December 1989–28 February 1990)

Common Loon.—Single birds on 1 December in Walworth (Parsons) and Dane (Ashman) Counties.

Pied-billed Grebe.—One in Dane County, 8 December (Ashman), and one on the Milwaukee Christmas Bird Count.

Horned Grebe.—One on the Newburg Christmas Bird Count, and a sick individual in Washington Co., 6 February (Diehl).

Eared Grebe.—One in Lake Geneva, Walworth Co., 1 December (Parsons).

Double-crested Cormorant.—One on the Green Bay Christmas Bird Count.

Great Blue Heron.—Throughout the period, maximum 2, Trempealeau County (Hunter), and 18 February, 1, St. Croix County (Smiths).

Tundra Swan.—Migrants, 1–5 December, in Trempealeau (Hunter), Monroe (Epstein), Winnebago (Ziebell), and Sauk (Lange) Counties. Noted in Madison during the Christmas Bird Count period, with one on the Sauk City Christmas Bird Count. Hudick found this species in Polk County, 1 January to the end of the period.

Mute Swan.—Including the Christmas Bird Counts, found in these counties: Milwaukee, Waukesha, Dane, Green Lake, Brown, Shawano, Portage, Ashland, Bayfield, and Douglas (many contributors).

Snow Goose.—Found on the Green Bay and Appleton Christmas Bird Counts, also 1–14 January, Winnebago County (Tessen; Ziebell), and 14 January, Wood County (Armbrust).

Canada Goose.—Fall migration in December, with some individuals overwintering in northwestern, eastern, and southeastern Wisconsin (many contributors). Spring migrants, 13 February, in Washington County, 2–3 thousand flying northwest (Benzer), and Monroe County, 15 (Richter). Peterson reported 7 in Shawano County, 28 February.

Wood Duck.—Throughout the period in the following counties: Milwaukee (many contributors), Shawano, 2 males in Marion (Peterson), Trempealeau, maximum 3 (Hunter), and Chippewa, 4–5 (Polk). Hardy reported this species in Price County, 27 February.

Green-winged Teal.—Only on the Christmas Bird Counts, a total of 5 on 3 Counts.

American Black Duck.—Throughout the period in 25 counties throughout the state, except for the north-central section. Maximum was 110 in Winnebago County, 14 January (Ziebell).

Mallard.—Throughout the period in 30 counties throughout the state, except for the north-central section (many contributors).

Northern Pintail.—Throughout the period in Milwaukee County (many contributors), and (a male) in Marion, Shawano County (Peterson). Also in Dane County, 10 February–end of the period (many contributors), and Ozaukee County, 17 February (Sunby).

Northern Shoveler.—Throughout the period in Dane County, maximum after the Christmas Bird Counts, 115, 1 January (Hilsenhoff).

Gadwall.—Throughout the period in Dane County, maximum after the Christmas Bird Counts, 400, 10 February (Hilsenhoff).

American Wigeon.—Throughout the period in Milwaukee County, 1–2 (many contributors), and Dane County, maximum 10, 1 January (Hilsenhoff). Swengel found one in Sauk County, 5 January.

Canvasback.—After the Christmas Bird Counts, only in Dane County, 21 February–end of the period (Hansen).

Redhead.—Throughout the period in Milwaukee County and apparently in Dane County (many contributors).

Ring-necked Duck.—One throughout the period in Shawano County (Peterson), one in Dane County, 4 February (Tessen), and one in Walworth County, 31 December–6 January (Parsons).

Greater Scaup.—Swengel found 2 on 5 December on Devil's Lake, Sauk County, where this species is noted only rarely. Throughout the period in Lake Michigan, Milwaukee-Door Counties (many contributors).

Lesser Scaup.—Throughout the period in Dane County (Ashman), and (a male) Eau Claire County (Polk). Also throughout the period (?) in Milwaukee and Ozaukee Counties (many contributors). Parsons found this species in Walworth County through 6 January, and Ziebell in Winnebago County through 14 January.

Harlequin Duck.—A female by the Madison Gas and Electric outlet on Lake Monona, Dane County, 8 December–14 February (many contributors; discovered by Al Shea). Also a female in Ozaukee County, 7–14 January (Frank; Sunby), and an adult male in Milwaukee County, 2 February (Sunby).

Oldsquaw.—Noted in Lake Michigan, Kenosha to Door Counties, apparently for the entire period (many contributors).

Black Scoter.—Ozaukee County, 1 December (JLB).

Surf Scoter.—Milwaukee County, 1 December (JLB).

White-winged Scoter.—One on the Ephraim Christmas Bird Count.

Common Goldeneye.—Throughout the period in the following localities: Lake Michigan, Kenosha to Door Counties (many contributors); Shawano County (Peterson); Winnebago County, maximum 900, 14 January (Ziebell); Wisconsin River, below dams, from central Wisconsin south (many contributors); west-central Wisconsin, from Trempealeau and Buffalo Counties to Polk County (many contributors); and the Ashland area (Verch). In Douglas County, Johnson found 3 on 1 January, and Robinson found 25 on 10 February near Gordon, while in Sawyer County Robinson found one by the Winter dam, 9 February.

Barrow's Goldeneye.—One in the Port Washington harbor, Ozaukee County, 3 January (Kurducki).

Bufflehead.—Throughout the period in Lake Michigan, Milwaukee-Manitowoc Counties (many contributors), also Waukesha County, mid January–mid February, 1 (Benzer), Dane County, 10–12 February, 1 (Hansen; Hilsenhoff), and Winnebago County, beginning of the period-14 January, 1–2 (Ziebell).

Hooded Merganser.—Throughout the period in Milwaukee County (many contributors), and Portage County, one in Whiting Park (Berner).

Common Merganser.—Throughout the period in the following localities: Lake Michigan, Kenosha-Manitowoc Counties, also Door

County, 16 December (many contributors); Shawano County (Peterson); Wisconsin River in Sauk and Dane Counties (many contributors); and west-central Wisconsin, for example Trempealeau, Buffalo, and Polk Counties (Hunter; Hudick). Semo found this species on 12 January in Douglas County.

Red-breasted Merganser.—Throughout the period in Lake Michigan, Kenosha-Manitowoc Counties (many contributors), and Dane County, 2 (Ashman; Hilsenhoff).

Ruddy Duck.—Oconomowoc Christmas Bird Count, 1, and Winnebago County, beginning of the period-14 January, maximum 4, 1 December (Ziebell).

Turkey Vulture.—21 February, one over Baraboo, Sauk County (Swengel), and 26 February, one in Jackson County (Smiths).

Bald Eagle.—Throughout the period, north to Door, Marinette, Price, Ashland, Bayfield, and Douglas Counties (many contributors). Jim Baughman noted this species in Vilas County through 12 January, and Reardon found it in Forest County, 15 February.

Northern Harrier.—A record number (96) on the Christmas Bird Counts, but throughout the period only in Sheboygan County (JLB) and possible Ozaukee County (many contributors). January records for 5 southern counties, and February records for an additional 7 counties, including the Ashland area, one on 2 February (Verch).

Sharp-shinned Hawk.—A record number (55) on the Christmas Bird Counts. After the Counts, reported in 21 counties throughout the state with migrants by the end of January and into February (many contributors).

Cooper's Hawk.—A record number (45) on the Christmas Bird Counts. After the Counts, reported in 22 counties, north to Polk, Clark, Marathon, Shawano, Marinette, and Door Counties, with migrants by the end of January and into February (many contributors).

Northern Goshawk.—After the Christmas Bird Counts, records for the following counties: Milwaukee, Waukesha, Sauk, Portage, Taylor, Sawyer, Bayfield, and Door (many contributors).

Red-shouldered Hawk.—After the Christmas Bird Counts, records for these counties: Ozaukee, 9 February (Sundell), Sauk, 5 January (Swengel), Portage, 3 February (Berner), Monroe, 15 January (Epstein), and St. Croix, 1, throughout the period (Smiths).

Red-tailed Hawk.—A record number on the Christmas Bird Counts. North to these counties, where throughout the period: Brown (Mead), Marinette (Lindberg), Marathon (Belter), Taylor (Armbrust; PR), and Douglas, 1 (Johnson). One in Door Co., 9 February (Lukes), might have been a migrant.

Rough-legged Hawk.—A record number on the Christmas Bird Counts. The usual February migration, with birds still in the following counties at the end of the period: Monroe, Dane, Fond du Lac, and Marinette (many contributors).

Golden Eagle.—After the Christmas Bird Counts, these records: Trempealeau County, an immature, 7 January (Ziebell), Monroe County, until 18 Feb., 1–2 (Epstein), and Sauk County, an immature near Sauk City, 13 February (Swengel).

American Kestrel.—North to the following counties, where found at least into January: Marinette, Marathon, Taylor, Polk, and Douglas (many contributors). Migrants or likely migrants beginning on 28 January in Door County (Lukes) and continuing to the end of the period.

Merlin.—One on both the Willard and Madison Christmas Bird Counts. Also Ozaukee County, 18 December (Green), Sawyer County, one in downtown Hayward, 31 December (Lauten & Castelein), Portage County, 3–17 February, maximum 2 (Ayers), and the Ashland area, 28 February (Verch).

Peregrine Falcon.—Milwaukee County, 7 January, 2 (many contributors), and Douglas County, 1, throughout the period in the Duluth-Superior harbor (Semo).

Gyrfalcon.—A light colored individual in Brown County, 10 January (Reed).

Gray Partridge.—Including the Christmas Bird Counts, records for these counties: Walworth, Kenosha, Ozaukee, Sheboygan, Dane, Columbia, Brown, Shawano, Clark (near

Dorchester, transplants, approximately 10, late February, PR), and Trempealeau.

Ring-necked Pheasant.—Northernmost records, these counties: Door, Marinette, Marathon, Taylor, and Douglas (many contributors).

Greater Prairie-Chicken.—Including the Christmas Bird Counts, records for these counties: Portage, Wood, Marathon, Clark, and Taylor (many contributors).

Sharp-tailed Grouse.—Including the Christmas Bird Counts, records for these counties: Douglas, Burnett, Price, and Taylor (many contributors).

Wild Turkey.—Including the Christmas Bird Counts, records for these counties: Grant, Iowa, Dane, Columbia, Sauk, Richland, Monroe, LaCrosse, Jackson, Buffalo, Ozaukee, and Winnebago (many contributors), also Marinette ("half wild"-Lindberg).

Northern Bobwhite.—Including the Christmas Bird Counts, records for these counties: Kenosha, Ozaukee, Sauk, Richland, Monroe, Jackson, Trempealeau, Eau Claire, Dunn, Chippewa, and Wood (many contributors), also Door, where the Lukes found a group of 7 on 2 December but just one at the end of the period, the first quail they had ever found here.

Virginia Rail.—One on the Poynette Christmas Bird Count.

American Coot.—Throughout the period in these counties: Ozaukee, Winnebago, Dane, and Eau Claire; from 1–5 birds, except in Dane County, where on 6 February Hilsenhoff noted 180. Also in Walworth County, 4 February, 15 (Tessen), and Milwaukee County, 17 February, 1 (Diehl).

Sandhill Crane.—6 February, 10, Walworth County (Parsons).

Killdeer.—Sauk County, 2 and 22 January (Schultz).

Baird's Sandpiper.—One in downtown Eau Claire, 28 November–1 December, on a rocky falls in the Chippewa River (Polk), the state's first December record for this species.

Common Snipe.—After the Christmas Bird Counts, these records: Manitowoc County, throughout the period, 1–2 (Sontag), Dane County, 3 February, 3 (Thiessen), Richland County, 26 January, 1 (Duerksen), Monroe County, through 18 February, 2 (Epstein), and Trempealeau County, 7 January–end of the period, maximum 5, 26 February (Hunter).

American Woodcock.—One on the Richland Center Christmas Bird Count.

Bonaparte's Gull.—Milwaukee County, 4 December, 7 (Bontly; Woodmansee).

Ring-billed Gull.—Throughout the period in these counties: Milwaukee, Ozaukee, Sheboygan, and Winnebago (many contributors).

Herring Gull.—Throughout the period in these localities: Lake Michigan, Kenosha-Door Counties (many contributors); Winnebago County (Ziebell) with 200 on 1 January (Tessen); and the Ashland area (Roy; Verch).

Thayer's Gull.—A total of 3 on the Milwaukee and Newburg Christmas Bird Counts. Later records: Milwaukee County, 11 and 18 February, 1 (Frank; Sunby), Ozaukee County, 1 January (Sundell), Sheboygan County, 17 February, 1 (Sunby), and Manitowoc County, 12 February, and adult in winter plumage (Sontag).

Mew Gull.—This species was first reported for Wisconsin in 1986, and was also found in Wisconsin in 1988. For this period, Tessen reported one in Milwaukee County, 8 December, and one (the same bird?) was observed in Milwaukee County, 7–23 January (many contributors; discovered by Schultz).

Iceland Gull.—An adult in Ozaukee County, 10 January (Sundell), a first year bird in Sheboygan County, 27 January (Sontag), a first year bird in Manitowoc County, 12 February (Tessen), and a first year bird by the Fox River in Oshkosh, Winnebago County, 23–24 February (Ziebell).

Lesser Black-backed Gull.—15 January, one in the Port Washington harbor, Ozaukee County (Sundell).

Glaucous Gull.—Johnson reported a total of 9 on 9 December in Douglas County. A total

of 3 on the Ashland, Appleton, and Woodland Dunes NE Christmas Bird Counts, with another during the count period for the Green Bay Christmas Bird Count. After the Counts, these records: Milwaukee County, 7 January (many contributors), Ozaukee County, 21 January, 2 (Sundell), Sheboygan County, maximum 2, 12 and 17 February (Sunby; Tessen), Manitowoc County, 31 December–2 February, 1 (Sontag), and Winnebago County, 23 February-end of the period, 2 (Ziebell).

Great Black-backed Gull.—10 December and 17 February, a first winter bird, south breakwater of Sheboygan harbor, Sheboygan County (Sunby).

Rock Dove.—North to these counties, where throughout the period: Douglas, Bayfield, Ashland, Price, Marathon, Marinette, and Door (many contributors).

Mourning Dove.—North to these localities, where throughout the period: Douglas County, the Ashland area, Vilas County, Marinette County, and Door County (many contributors).

Eastern Screech-Owl.—After the Christmas Bird Counts, reported from these counties: Milwaukee, Dane, Sauk, Richland, Winnebago, Brown, and Taylor (many contributors).

Snowy Owl.—After the Christmas Bird Counts, these records: Douglas County, throughout the period, 1 (Johnson), the Ashland area, throughout the period (Verch), Clark County, mid January–end of the period, at least 2 (Armbrust; PR), Winnebago County, 26 January–end of the period, 1 (Ziebell), and Door County, until 7 February (Lukes).

Long-eared Owl.—After the Christmas Bird Counts, these records: 12 January, Marathon County (Hoeft), and 11 February, Ozaukee County (Sunby).

Short-eared Owl.—Bong Recreation Area, Racine County, a total of 12 at dusk, 13 January (Tessen), and Waukesha County, throughout the period, for example Vernon Marsh (Tessen) and Scuppernong Prairie (Parsons).

Northern Saw-whet Owl.—Including the Christmas Bird Counts, records for these counties: Milwaukee, Waukesha, Ozaukee, Sheboygan, Manitowoc, Sauk, Monroe, Portage, Taylor (11 December and 15 January, PR), and Forest (10 February, Tessen).

Belted Kingfisher.—After the Christmas Bird Counts, records for these counties: Jefferson, Dane, Sauk, Monroe, Trempealeau, Sawyer, and Brown (many contributors). Migrants in Waukesha County, 27 February (Benzer), and Chippewa, Dunn, and Eau Claire Counties, end of the period (Polk).

Red-headed Woodpecker.—After the Christmas Bird Counts, records for 16 counties, north to Door, throughout the period (Lukes), Vilas, 30 December (JB), and Barron, throughout the period (Goff).

Red-bellied Woodpecker.—A record number on the Christmas Bird Counts. North to these counties: Burnett, 5 January (Lauten and Castelein), Barron, throughout the period (Goff), Taylor, throughout the period (Armbrust), Marathon, 10 December, 1 (Belter), Shawano, throughout the period (Peterson), Marinette, throughout the period (Lindberg), and Door, throughout the period (Lukes).

Yellow-bellied Sapsucker.—After the Christmas Bird Counts, these records: Milwaukee County, 27–28 January (Bontly), Sauk County, 23 January–end of the period, maximum 3, 28 February (Swengel), and Door County, through 26 December, 1 (Lukes).

Downy Woodpecker.—A record number on the Christmas Bird Counts.

Hairy Woodpecker.—The second highest number of birds on the Christmas Bird Counts.

Black-backed Woodpecker.—One each on the Solon Springs and Oxbo Christmas Bird Counts, also Bayfield County, 14 January, a male (Robinson), and Sawyer County, 14 January, 1 (Merkel).

Northern Flicker.—A record number on the Christmas Bird Counts. After the Counts, reported in 12 counties, north to Shawano, Marathon, and St. Croix Counties (many contributors).

Pileated Woodpecker.—A record number on the Christmas Bird Counts.

Horned Lark.—A record number on the Christmas Bird Counts. Migration mainly from late January through February, north to St. Croix, Sawyer, Wood, Portage, Outagamie, and Brown Counties (many contributors).

Gray Jay.—Including the Christmas Bird Counts, records for these counties: Douglas, Sawyer, Price, Taylor, Vilas, Oneida, Forest, and Langlade (many contributors).

Common Raven.—Southernmost records for Portage County (Ayers; Berner) and Monroe County (Epstein).

Boreal Chickadee.—Not found on the Christmas Bird Counts. Records for Bayfield, Sawyer, and Forest Counties (many contributors).

Tufted Titmouse.—Including the Christmas Bird Counts, found south of a line from St. Croix to Waupaca Counties (many contributors).

Red-breasted Nuthatch.—The number of birds on the Christmas Bird Counts was more than twice the previous record, and this species remained in high numbers throughout the period. As Hardy expressed it for Price County, "everywhere at feeders and in the woods this winter."

White-breasted Nuthatch.—A record number on the Christmas Bird Counts. For the period, north to these counties: Bayfield and Ashland, throughout the period (Roy), Vilas, throughout the period (JB), Forest, 16 December (Reardon), Marinette, throughout the period (Lindberg), and Door, throughout the period (Lukes).

Brown Creeper.—After the Christmas Bird Counts, northernmost reports for these localities: Douglas County, 14 January, 3 (Semo), the Ashland area, throughout the period (Verch), Vilas County, 5 February (JB), and Forest County, 19 January (Reardon).

Carolina Wren.—Relatively high numbers for the second successive winter. These reports: a total of 3 on the Racine Christmas Bird Count, apparently throughout the period in Dane County (many contributors) and Sauk County (Lange), and one in Door County in December, last reported during the count period on the Ephraim Christmas Bird Count.

Winter Wren.—A record number on the Christmas Bird Counts. After the Counts: one in Milwaukee County, 2 January (Frank), and Ozaukee County, 5 January (Robbins).

Marsh Wren.—One on the Poynette Christmas Bird Count.

Golden-crowned Kinglet.—After the Christmas Bird Counts, records for these counties: Sheboygan and Fond du Lac, throughout the period (JLB), Winnebago, through 15 January, maximum 4, 25 December (Ziebell), Sauk, several throughout the period in a large conifer plantation (Lange), Shawano, 4 January (Peterson), Portage, 27 January (Berner), Wood, 9 February, 1 (Merkel), Marathon, through 27 January (Belter), Price, through 19 February (Hardy), Sawyer, 25 February, 2 (Merkel), Polk, 15 February (Hudick), and Bayfield, 14 January, 1 (Robinson).

Ruby-crowned Kinglet.—One on the Newburg Christmas Bird Count and one during the count period on the Oconomowoc Christmas Bird Count.

Eastern Bluebird.—A record number (64) on the Christmas Bird Counts. After the Counts, reported from these counties: Green Lake, throughout the period (Schultz), Dane, throughout the period (many contributors), Iowa, 13 January (Robbins), Sauk, throughout the period (Lange; Swengel), and (presumably a migrant) Polk, 22 February (Hudick).

Mountain Bluebird.—Wisconsin's 9th Mountain Bluebird was one in Ozaukee County, 31 December–14 February (many contributors; discovered by Meid).

Townsend's Solitaire.—One in Dane County, a red cedar hillside with a spring at its base, 10 January–6 February (many contributors; discovered by Karl Legler).

Hermit Thrush.—A record number (11) on the Christmas Bird Counts. After the Counts, 2 January in Milwaukee County (Frank), and 13 January in Dane County, 1 (Ashman).

American Robin.—A record number (1047) on the Christmas Bird Counts. After the Counts, reported from 22 counties, north to Door, Shawano, Marathon, Taylor, St. Croix, and (2–20 January, 1) Douglas Counties (many contributors). Most contributors reported numbers of approximately 1–13, but in some areas the numbers were higher, for example "hundreds" roosting in a pine plantation in Sauk County (Lange via Jean Clausen).

Varied Thrush.—Found on the Wausau Christmas Bird Count, and present during the count period on the Wautoma and Sauk City Christmas Bird Counts. Also reported from these counties: Adams, Shawano, Door, Lincoln, Vilas, and Chippewa (many contributors). Apparently all were at feeders.

Gray Catbird.—One on the Milwaukee Christmas Bird Count, and one in Dane County, 1 January–5 February (many contributors).

Northern Mockingbird.—One at a feeder in Milwaukee from approximately mid January–end of the period (Bontly). First winter record since December 1985.

Brown Thrasher.—A total of 8 birds on 7 Christmas Bird Counts. No later records.

Bohemian Waxwing.—A record number on the Christmas Bird Counts. After the Counts, reported from 14 counties, north of a line from Eau Claire, Wood, Portage, Waupaca, Shawano, and Door Counties (may contributors), except for Dane County, 21 January (Robbins). Numbers varied from 1–350, with the highest numbers in Portage, Marathon, and Price Counties.

Cedar Waxwing.—A record number on the Christmas Bird Counts. Widespread throughout the period, with maximum numbers generally from 6 January–18 February (many contributors).

Northern Shrike.—Below normal numbers, after 4 successive winters of normal to above normal numbers. Reported from 34 counties throughout the state. Still in some southern counties, for example Sauk and Green Lake, at the end of the period.

European Starling.—North to these localities: Douglas County, throughout the period (Johnson), the Ashland area, throughout the period (Verch), Vilas County, throughout the period (JB), Forest County, 29 December (Reardon), Marinette County, throughout the period (Lindberg), and Door County, throughout the period (Lukes). A flock of 850+ in Jefferson County, 12 January, is noteworthy (Hale).

Yellow-rumped Warbler.—A record number (11) on the Christmas Bird Counts. After the Counts: 22 December, an injured bird in Milwaukee County (Diehl), and 13 January, Dane County (Robbins).

Northern Cardinal.—Northernmost records: the Ashland area, throughout the period (Verch), one in Spooner, Washburn County, 6 January (Robinson), Sawyer County ? (Lauten and Castelein), Price County, throughout the period, maximum 7, 20 February (Hardy), Marinette County, throughout the period (Lindberg), and Door County, throughout the period (Lukes).

Rose-breasted Grosbeak.—Three on the Grantsburg Christmas Bird Count and one on the Willard Christmas Bird Count.

Rufous-sided Towhee.—After the Christmas Bird Counts, one record, one in Door County, 31 January–end of the period (Lukes).

American Tree Sparrow.—North to these counties: Sawyer, 6 and 15 January, 1 (Robinson), Barron, throughout the period (Goff), Taylor, throughout the period (Armbrust), Marinette, throughout the period (Lindberg), and Door, throughout the period (Lukes).

Chipping Sparrow.—An immature at a feeder in Ozaukee County, 1 January (Sundell).

Field Sparrow.—A record number (11) on the Christmas Bird Counts. No later reports.

Vesper Sparrow.—One on the Bridgeport Christmas Bird Count.

Savannah Sparrow.—One each on the Green Bay, Racine, and Bridgeport Christmas Bird Counts, and 27 January, Ozaukee County (Sunby).

Fox Sparrow.—A record number (25) on the Christmas Bird Counts. After the Counts: 14

January–16 February, Dane County, 2 (many contributors), 1 January, at a feeder in Ozaukee County (Sundell), and 6 January, Washington County (Haseleu).

Song Sparrow.—After the Christmas Bird Counts, reported for Walworth Milwaukee, Ozaukee, Manitowoc, Dane, Sauk, and Monroe Counties, with apparent migrants, 21 February–end of the period, in Washington, Sheboygan, and Richland Counties (many contributors).

Swamp Sparrow.—After the Christmas Bird Counts, records for these counties: Milwaukee, 9 February (Bontly), Dane, throughout the period (Ashman), and Manitowoc, throughout the period, 1 (Sontag).

White-throated Sparrow.—After the Christmas Bird Counts, records for 7 southern and eastern counties (many contributors), and (Tessen) one in Forest County, 10 February.

White-crowned Sparrow.—A record number (17) on the Christmas Bird Counts. After the Counts, these reports: 1 at a feeder in Mequon, Ozaukee County, 17 February (Frank), an immature in a large weed patch in Dane County on 6 February where 3 were found on 1 December (Robbins), 3 in Sauk County, 23 February (Robbins), and 2 in Outagamie County, 1 January (Tessen).

Harris' Sparrow.—One on the Blanchardville Christmas Bird Count, and at a feeder in Washington County, 22 January–end of the period (many contributors).

Dark-eyed Junco.—North to these localities: Douglas County, 22 December–31 January, 1 at a feeder (Semo), Bayfield County, beginning of the period-11 December (Roy), Ashland area, throughout the period, maximum 8, 8 February (Verch), Price County (Hardy), Marinette County, throughout the period (Lindberg), and Door County, throughout the period (Lukes).

Lapland Longspur.—After the Christmas Bird Counts, reported from Ozaukee, Brown, Waupaca, Dane, Sauk, and St. Croix Counties, mainly in the period, 3–18 February (many contributors). Flock size was 30 or less, except for a group of 100+ in Ozaukee County, 1 January (Sundell).

Snow Bunting.—A record number on the Christmas Bird Counts. After the Counts, reports from 21 counties (many contributors), with the largest flocks (200+) being found in Marathon (Belter) and Taylor (Armbrust) Counties.

Red-winged Blackbird.—After the Christmas Bird Counts, records for 8 southern and eastern counties (many contributors), and (Verch) the Ashland area, 24 February. Some, for example 300 on 13 February in Walworth County (Parsons), must have been migrants.

Eastern Meadowlark.—Apparent migrants in Ozaukee County, 25 February (Sunby), and Sheboygan County, 28 February (JLB).

Western Meadowlark.—16 December, Sheboygan County (JLB).

Meadowlark species.—A total of 5 on 4 Christmas Bird Counts, and (Ayers) one in Portage County, 2 February.

Rusty Blackbird.—After the Christmas Bird Counts, these records: Dane County, throughout the period, 2 (many contributors), and a presumed migrant in Walworth County, 22 February (Parsons).

Brewer's Blackbird.—77 birds, a record number, on a total of 4 Christmas Bird Counts. After the Counts, noted only in Marathon County, 7 February (Hoeft).

Common Grackle.—After the Christmas Bird Counts, generally 1–2 birds in each of these counties: Dane, Dodge, Ozaukee, Manitowoc, Winnebago, Trempealeau, Taylor, Barron, Douglas, and Vilas (many contributors).

Brown-headed Cowbird.—After the Christmas Bird Counts, records for Ozaukee, Washington, Jefferson, Dane, and Monroe Counties (many contributors). Throughout the period in Dane County, with a maximum of 50, 21 February (Ashman).

Pine Grosbeak.—A record number on the Christmas Bird Counts, with groups of approximately 10–40 in January and February throughout the state. Still in southern Wisconsin, for example Sauk and Green Lake Counties, at the end of the period.

Purple Finch.—A near record number on

the Christmas Bird Counts. After the Counts, numerous in some areas and scarce in others.

House Finch.—Including the Christmas Bird Counts, records for 22 counties, north to Manitowoc County, Shawano County, Marathon County (a male at Belter's feeder in Wausau), Sauk County, and Grant County. For Stevens Point in Portage County, Berner reported that the number of singing House Finches and the total number of this species were the same as a year ago.

Red Crossbill.—After the Christmas Bird Counts, reported in 11 counties throughout the state, mainly in northern Wisconsin (many contributors).

White-winged Crossbill.—Reported from 25 counties in January and February and still throughout the state at the end of the period. The largest flock reported was 250 in Wood County, 9 February (Merkel); the maximum flock size in southern Wisconsin was approximately 30, except (JLB) for flocks up to 100 throughout the Northern Unit of the Kettle Moraine State Forest. It might have been a record winter for this species, as with the Pine Grosbeak and the Red-breasted Nuthatch.

Common Redpoll.—In high numbers throughout the period and generally throughout the state, generally peaking in mid February. A number of contributors, more than usual, reported Hoary Redpolls.

Pine Siskin.—Generally above normal numbers (a record number on the Christmas Bird Counts), throughout the period and throughout the state. Counts of 100 and more were reported for January–February from Bayfield, Ashland, Sawyer, Price, Marathon, Portage, Shawano, Brown, and Marinette Counties (many contributors).

American Goldfinch.—The numbers of this species appeared to decline after the record number on the Christmas Bird Counts. Throughout the state, although generally scarce in northwestern Wisconsin.

Evening Grosbeak.—Numerous throughout the period in northern Wisconsin but scarce or absent in southern Wisconsin. After the Christmas Bird Counts, southernmost records for these localities: Monroe County (Epstein) and the Northern Unit of the Kettle Moraine State Forest (JLB).

House Sparrow.—North to these counties, where throughout the period: Douglas (Johnson), Vilas (JB), Marinette (Lindberg), and Door (Lukes).

Contributors

Jim Anderson & Steve Petznick, William P. Armbrust, Philip Ashman, Loren Ayers, Jeffrey L. Baughman (JLB), Jim Baughman (JB), Dan Belter, David Benzer, Murray Berner, Homer C. Bishop, Marilyn Bontly, David & Margaret Brasser, Scott Diehl, Barbara Duerksen, Eric Epstein, Jim Frank, Alta Goff, Robert Green, Karen Etter Hale, Don Hanbury, Ellen Hansen, Maybelle Hardy, Dorothy Harmer, Judy Haseleu, William Hilsenhoff, James Hoefler, Joyce Hoeft, Joe Hudick, Thomas Hunter, Becky Isenring, Robbye Johnson, Harold Koopman, Mark Kurducki, Kenneth I. Lange, David Lauten & Kathy Castelein, Harold Lindberg, Charlotte & Roy Lukes, Bob Mead, Jerry Meid, Keith Merkel, Dwight Offord, Pat Parsons, Mark Peterson, Janine Polk, Mary J. Raile, Bill Reardon, Michael L. Reed, James A. Reis, Carol Richter, Leonard Risch (LR), Paul Risch (PR), Sam Robbins, John C. Robinson, Albert Roy, Thomas Schultz, Larry Semo, Al & Sue Shea, Jerry & Karen Smith, Charles Sontag, Paul Sunby, Roger Sundell, Scott Swengel, Daryl Tessen, Steve Thiessen, Kurt VerCauteren, Dick Verch, Melvin Wierzbicki, Winnie Woodmansee, Norma Zehner, Tom Ziebell.

Kenneth I. Lange
Devil's Lake State Park
Baraboo, WI 53913

"By the Wayside"

Eared Grebe, Barrow's Goldeneye, Gyrfalcon, Mew Gull, Lesser Black-backed Gull, Great Black-backed Gull, and Mountain Bluebird were unusual species reported during the past winter.

Eared Grebe (*Podiceps nigricollis*)

1 December 1989, Walworth County, Lake Geneva.—The sun was out, the wind was calm, and I knew the lake would be like glass. There are several stops that I make as I circle Lake Geneva to count the birds, but the numbers were down some from my previous trip. I visualized thousands and was disappointed at the low numbers. When I drove into Trinke Estates I could see no birds on the water. A Goldeneye popped up 75 feet from shore. Halfway across the lake I could see a line of birds, so, I set up the Swift Lynx 60× scope on its tripod, took my 7×35 Bausch & Lomb field glasses and set up at the end of the boat ramp next to the water. Just then a grebe popped up near the Goldeneye just off shore. My first thought was a Pied-billed but the bill was too narrow. It looked like an Eared Grebe in winter plumage, but I could not remember ever seeing them here. Better check the book—ran back to the car to get Peterson's new edition. The grebe was very obliging—just sat there preening and stretching its wings showing a white speculum. As I compared it to Peterson's book through the telescope—something was wrong. The eye was red ok, the bill was narrow with a bit of an upturn and definitely thinner than a Horned Grebe—but the head was more rounded than the picture in Peterson's book and the ear patch seemed more like a round splotched ear muff. I'd just have to check my library of books to find a picture of this bird. I checked out *Birds of Canada, Birds of Wisconsin,* Audubon's *Master Guide & Field Guide,* and finally the old worn out copy of *A Golden Field Guide—Birds of North America.* There it was! The bird on the lake—Eared Grebe in winter plumage with the roundish head and white ear muffs. I was convinced. That's when I went to mark it on my checklist and noticed the asterisks. I was excited and sure hope it is still there when I make my next trip around the lake! If I only had a camera—one that would attach to my scope—this would have been a perfect shot. Sun behind me, not a

whisper of wind, the lake like glass and the grebe so close!—*Patricia A. Parsons, Rte. 5, Box 1090, Lake Geneva, WI 53147.*

Barrow's Goldeneye (*Bucephala islandica*)

3 January 1990, Ozaukee County, Port Washington harbor.—While checking the ducks in the open water below the discharge, one immediately caught my eye. It was a partially-alternate plumage male goldeneye, but the white facial spot was elongated and the head seemed much more flat than the other goldeneyes. The distance was a bit severe and the light poor, so I got myself into a better position. With the sun behind me and the bird within 50 yards I made the following observations. The duck had a crescent shaped facial marking and unlike the Common Goldeneye males, a purple tint to the iridescent head feathers. Rather than the rounded head of the Common Goldeneye, this bird had a very steep forehead and the head was more oval-shaped. The nape of the bird sloped back very gently and contributed to this oval-shape. The dark feathers of the mantle extended forward in a wedge that separated the lighter feathers of the abdomen and breast. The plumage seemed to be in transition between basic and alternate. The belly and flanks ranged from white to light gray, the sides were charcoal gray, and the mantle was black. The head feathers were similar to a female goldeneye in that they were predominantly brown. However, they were more iridescent with a purple cast unlike the greenish hue of the partially alternate male Common Goldeneyes I saw that day. The slate-colored bill appeared more stubby than the Common's. This Barrow's Goldeneye was a loner and never associated with the Common Goldeneyes during the time that I viewed it. I watched the bird for the better part of an hour as it fed and swam in the current of the discharge. It seemed unafraid as I viewed it from as close as 30 ft. in excellent light.—*Mark Korducki, 4410 So. 21st Street, Milwaukee, WI 53221.*

Gyrfalcon (*Falco rusticolus*)

10 January 1990, Brown County, Bay Beach Wildlife Sanctuary.—On Wednesday Jan. 1990 at 8:15 A.M., a large light-colored bird of prey flew from the south side of the feeding lagoon, flushing the ducks into the water. It was clearly larger than the crows which were pursuing it.

Ten minutes later a group of 6 staff and volunteers were walking between buildings in the same area, when the bird reappeared. It made several passes over 3 areas of open water, stooping at the ducks. None of the ducks flushed into the air. At this time we were able to see clearly the pointed wings, thick neck and long, rectangular tail of a falcon. The large size in comparison with the ducks indicated that it was one of the larger species of falcon.

On the third pass it landed in a wind broken top of a small willow at the edge of the feeding lagoon. At that point it was approximately 60–70 ft. away and 15–20 ft. above the ground. It stayed on this perch for approximately 15 min. allowing for close observation.

This bird was close in size to our Red-tailed Hawk caged only a short distance away. The feathers of the back

and wings were a slaty, grey with white edges. The feathers of the head were dull white with a washed out grayish facial pattern, typical of falcons.

The feathers of the breast and belly were white with dark gray streaking. The bird had large yellowish feet. The tail feathers were dull whitish color with narrow dark barring.

All of us present agreed that there was no mistaking this bird for anything but a Gyrfalcon. At approximately 8:45 A.M., the bird flew off in a northwesterly direction, landed in a tall cottonwood. Some time over the next 10 minutes it flew off and has not been seen since.—*Michael L. Reed, Bay Beach Wildlife Sanctuary, Sanctuary Rd., Green Bay, WI 54302.*

MEW GULL (*Larus canus*)

7 January 1990, Milwaukee County, South Shore Yacht Club.—While leading a WSO field trip, I spotted this bird among a large flock of Ring-billed and Herring Gulls. Jan. 7, 1990. We had spent nearly an hour looking over this large flock of Ring-billed and Herring Gulls at the South Shore Yacht Club in Milwaukee, looking for unusual gulls. We had just finished watching a first-year Glaucous Gull, when I spotted this individual gull with a large, dark eye. I knew immediately that I had located an adult Mew Gull! I located the bird for everyone else, and we started going through all of the apparent field marks, making comparisons with the numerous Ring-billed Gulls surrounding it.

Compared with the Ring-bills, this bird was slightly smaller in size, with a medium-gray mantle which was slightly darker. The most conspicuous field mark was the dark eye—the iris appearing to be brown or grayish brown. The eye was bordered by a ring of dusky feathers, making the eye appear even larger. The bird had a more "dove-headed" appearance (more round-headed), and the white head had the winter markings of pale, dusky, diffused blotches on the face, crown, and neck.

The bill was small and tapered, perhaps 3/4 as long as the Ring-bills'. It was a uniform darkish yellow, with no dark marking near the tip. The bill was shallower vertically than that of the Ring-bills. While standing or swimming, the bird showed prominent white tertial and scapular crescents which were much more noticeable than those of the Ring-bills. In flight, the wings were "flashier" in appearance, with a broader white trailing edge, and more white in the wingtips. The legs were a darkish yellow color with perhaps a slightly greenish cast, and were perhaps 10% shorter than the Ring-bills'. We enjoyed this bird for 45 minutes, while it stood, swam, bathed, and occasionally flew about.—*Thomas R. Schultz, N6104 Honeysuckle Lane, Green Lake, WI 54941.*

7 January 1990, Milwaukee County, South Shore Yacht Club.—Tom Schultz and I were leading a WSO field-trip, Jan. 7, 1990. Our group had just finished with a break, at the South Shore Park pavilion, and were looking at gulls on the ice behind the pavilion when Tom Schultz spotted an adult Mew Gull. The following description was written in my notes: Ring-billed Gull in size (slightly smaller when compared to the many Ring-bills around the Mew Gull). Small *unmarked* yellow bill; noticeable thinner and shorter than the Ring-bill's, gonys not as pronounced.

Back color; gray, shade?? darker than the Ring-bill's. Eye color; dark, deep brownish/black (as seen through a Questar scope @ 40×). Leg color; yellow. Wing in flight; seemed longer (proportionately??) when compared to the Ring-billed Gulls and the wing tips had the large amount of white as shown in field guides. Head shape; seemed smaller, front to back, and rounder, not as flat as in the Ring-bill's. This bird was closely compared to Ring-billed Gulls of various ages but specifically to adults (same age as the bird in question). The Mew Gull was similar in size and basic shape, but as mentioned above different in subtle ways.—*Jeffrey L. Baughman, Rt. 1, Box 219, Adell, WI 53001.*

Lesser Black-backed Gull (*Larus fuscus*)

15 January 1990, Ozaukee County, Port Washington harbor.—I discovered this bird while observing a large gathering of Herring Gulls on the harbor's south breakwall. I readily spotted this bird first with binoculars and then with the scope. It stood throughout the observation as an extremely dark-backed gull standing among some two to three hundred Herring Gulls. I first assumed the bird was a Great Black-backed Gull, but noticed almost immediately that it was approximately the size of nearby Herring Gulls and perhaps a bit smaller. The color of the upper wings and back was very dark gray, and appeared black at first sight. The bird's legs were clearly yellow, contrasting with the obvious pink legs of Herring Gulls. Its bill, a deep yellow with a red gonys spot, was about the same size as its neighbors', and in overall shape, the bird did not appear as massive as would a Great Black-backed Gull. (I had observed some twenty or so Great Black-backs only eight days earlier at Dunkirk Harbor on Lake Erie, southwest of Buffalo, New York, and was thus easily able to make mental comparisons.) The bird had some pale brown flecking on the head and neck, but not as much as is often pictured in field guides.

The Lesser Black-backed Gull flew off abruptly with most of the Herrings, headed towards a fishing boat that was nearing the harbor, but did not return. When it flew, I lost it quickly, as it dropped over the breakwall to the south and did not reappear. I remained in the area for about 45 minutes, but failed to find the bird again. This bird was not as large, by comparison with Herring Gulls, as a Great Black-backed Gull would appear. Nor was its bill as strikingly long, heavy, and thick as a Great Black-back's. Finally, the yellow legs separate this species from Great Black-backed Gull as well as from the much less likely Slaty-backed Gull (for which there are, I believe, three central North American records in the last several years). The strikingly dark-gray to black mantle distinguished the bird from the Herring Gull within inches of which it was standing.—*Roger H. Sundell, N64 W5719 Columbia Rd., Cedarburg, WI 53012.*

Great Black-backed Gull (*Larus marinus*)

10 December 1989, Sheboygan County, Sheboygan harbor.—A first winter bird standing alone on the breakwater. Head whitish and underparts very light. The background color of the mantle was light, almost white

but the feathers all had dark brown centers. Did not see the tail. Legs light pink. Bill huge, long and thick and all black. Size was quite large, direct comparison not possible, probably about 2½ sdp long. Overall impression of a very light bird with a huge black bill. Viewed at 40 yards with a 20× scope.—*Paul Sunby, 7909 West Lorraine Place, Milwaukee, WI 53222.*

Mountain Bluebird (*Sialia currucoides*)

31 December 1989, Ozaukee County, Highway C 2 miles north of Highway Q.—At approximately 12:15 P.M. on Dec. 31, 1989, Steve Kupcho and I were driving south on Ozaukee County Highway C about 2 miles north of Ulao Road (Highway Q). He and I had been birding since 9:30 A.M..

I saw what I thought might be a shrike perched in the top of a small tree on the west side of the road. Since I was driving into the sun, it was difficult to observe anything more than the shape and posture of the bird as we passed. Steve also had a glimpse of the bird as we passed. He felt it did not look like a shrike.

I turned the car around and headed north toward the bird. As we got to within about 200 yards of the bird it flushed and flew toward the car. I pulled off to the side of the road. Steve saw the bird hovering above the car and noted that it had a slightly V notched tail.

The bird then flew to the north and perched in the top of a large spruce on the east side of the road. With the sun shining from our backs on to the bird, it was very evident that the head, back, wings and tail of the bird were a brilliant blue. I told Steve that I thought it was a male Mountain Bluebird.

We drove closer and continued to observe the bird with binoculars from the car.

The breast appeared a pale bluish gray that lightened as it blended into the belly. The lower tail coverets had a definite white appearance. The bill was blackish in color and was definitely the bill of an insect eater. While we watched the bird, it periodically would dart from one perch to another.

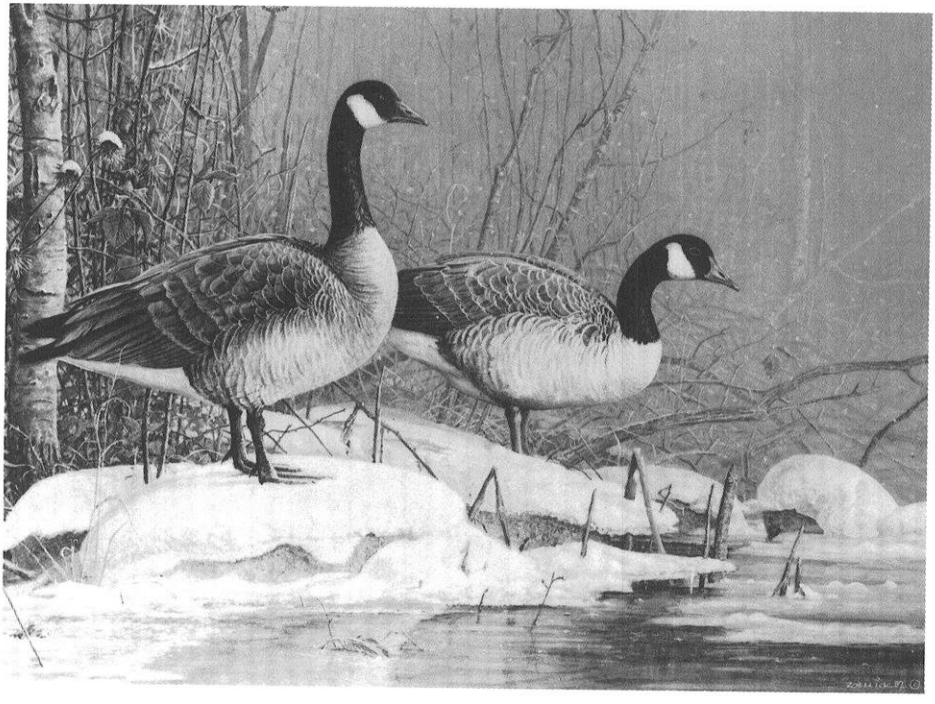
The bird always appeared to perch more like a shrike than the Eastern Bluebirds we are used to seeing. He also appeared to be slightly larger and more streamlined than the Eastern Bluebird.

The following day, Jan 1, 1990, Noel Cutright and I had the chance to observe the bird through a spotting scope. I noted that the primaries were a darker color than the rest of the back and had light edges. Noel and I observed the bird feeding on red cedar (juniper) berries. On this occasion the bird was observed as close as 10 yards and previous observations were confirmed.

I observed the bird on five separate occasions, with the final observation being at approximately 3:00 P.M. on January first. The afternoon was cold and partly cloudy but this time I was able to get a few pictures. The photos were taken with a hand-held camera and a 400 mm lens at f5.6 and 1/500 sec. The film was Kodak 200 ASA.

The habitat was primarily young growth deciduous trees intermixed with red and white cedars and surrounded by open field. A private residence (address 1972 Highway C) was located at the southern edge of what appeared to be the bird's immediate territory. This home was located on a heavily wooded lot that contained ma-

ture spruce, pines, ash and other deciduous trees. There were several feeders immediately east of the house containing niger, suet and other seed. A heavily wooded ravine ran east from the back of this lot. It contained mixed mature deciduous habitat with thick stands of cedar. This area is about one half mile west of Lake Michigan.—*Jerry Meid, 7032 Bridgeman Road, DeForest, WI 53532.*



"Canadian Mist" *by Scott Zoellick* (A limited edition print reprinted with the permission of the artist and the publisher, Northwoods Craftsman, Menomonee Falls, WI 53051).

ABOUT THE AUTHORS AND ARTISTS

Scott R. Craven is an Associate Professor and Extension Wildlife Specialist in the UW-Madison's Department of Wildlife Ecology. He is well known to naturalists around the state for his extension publications and radio shows. He is particularly interested in urban wildlife and wildlife damage problems.

Jerry Gadamus has a B.S. degree from UW-Stout where he has instructed wildlife carving classes. A pioneer in the techniques of "free band" airbrush in wildlife art, he has received many awards for his art, including the 1987 "Artist of the Year Award" from Northwoods Craftsman who publishes his art

Randy M. Hoffman is our current president. He is a biologist with the Wisconsin DNR's Bureau of Endangered Resources and The Nature Conservancy where he is in charge of managing State Natural Areas.

Kenneth I. Lange has been the Naturalist at Devil's Lake State Park since 1966. He has a master's degree from the University of Arizona. Ken has been a frequent contributor to WSO publications: as a field-note compiler and author of articles and the book, *Breeding Birds of the Baraboo Hills*. He formerly worked at the Smithsonian Institution's U.S. National Museum.

Sumner W. Matteson is a Nongame Biologist in the Wisconsin DNR's Bureau of Endangered Resources. He is the statewide recovery coordinator for several endangered and threatened bird species.

Timothy C. Schultz is part of the Schultz dynasty of talented wildlife artists. He studied at UW Center-Fond du Lac and has since won many awards for his bird art, including the 1981 Wisconsin Duck Stamp contest. His cover artwork is a limited edition print reproduced with permission of the artist and the publishers, Northwoods Craftsman, Menomonee Falls, WI 53051

Rebecca L. Taylor is a senior at UW-Madison majoring in Wildlife Ecology. Her interests are in birds of prey and bird conservation issues. She is from Cleveland, Ohio.

Stanley A. Temple is Editor of *The Passenger Pigeon* and a Professor of Wildlife Ecology at the UW-Madison. He has authored several WSO publi-

cations and has received WSO's Golden Passenger Pigeon Award.

Scott Zoellick is a graduate of the Milwaukee Institute of Art and UW-Stevens Point. He has received many awards for his wildlife art, including the 1983 Wisconsin Trout Stamp Design, the 1987 Wisconsin Great Lakes Stamp Design, and the 1987 Wisconsin Inland Trout Stamp Design.

50 Years Ago in *The Passenger Pigeon*
Excerpts from Volume 2 (1940)

The nesting attempt by a pair of Western Kingbirds near Madison in 1989 provided some excitement. The July 1940 issue of *The Passenger Pigeon* contains an article by O. J. Gromme on the nesting of this species near Beloit. The nest was constructed cheifly of grasses entwined with a few twigs and lined with several feathers. It was situated in the fork in an elm tree fifteen feet from the ground. The nest contained five eggs. The farmer stated that for the ten years that he had lived there and probably even before he came, the birds had been nesting there. The article also describes two immatures and an adult female that were collected near Nakoma in July 1927. A pair was found working on a nest near Madison by A. W. Schorger, and a pair was collected in Kenosha County in June 1935.

The June Field Notes also contain the following: "Edward Prins, 403 Park View. Age 20. Taxidermist for the Milwaukee Public Museum State Project and a member of the Dr. Hoy Nature Club. Specializing in bird banding, mounting, and photography. Prins identified 247 species of birds in Racine County. Among these were several only records as the Little Gull and the Parasitic Jaeger."

NOTICES AND ADVERTISEMENTS

Reports of WSO Committee Chairs and Officers

The 1990 Annual Convention was held in LaCrosse on May 18–20; this was a tri-state convention with the Iowa and Minnesota Ornithologists' Unions. The following WSO officers and committee chairs presented reports on their activities during 1989.

***Editor of** The Passenger Pigeon.*—*The Passenger Pigeon* featured several milestones during WSO's 50th anniversary year. Numbers 1 and 2 of Volume 51 featured full-colored covers: Passenger Pigeons by Allan Brooks and American Kestrels by Tom Schultz. At 424 pages, Volume 51 was the largest single volume ever produced by WSO, topping the previous record of 377 pages in Volume 50 in 1988. These 424 pages included 55 articles by 35 authors. Despite all these expansions, the costs of producing the journal during 1989 ($12,746) stayed within budget ($13,040) because of efficient production techniques. Advertising revenues helped to offset some expenses. The Editorial Staff of *The Passenger Pigeon* included: Thomas R. Schultz (Assistant Editor for Art). Daryl D. Tessen (Associate Editor), Allen K. Shea (Spring Field-note Compiler), Thomas K. Soulen (Summer Field-note Compiler), and Kenneth I. Lange (Winter Field-note Compiler).—*Stanley A. Temple.*

Associate Editor.—Activities during 1989 included the mailing during November of 1990 seasonal report forms (documentation, single and multi-county, short and nesting), 1990 May Day and big Day count forms, and the 1989 Christmas count form. In addition all observations received during 1989 were processed and summaries prepared for *American Birds*. Observations were then sent to the appropriate seasonal/count editor for their *Passenger Pigeon* analysis. Unique observations were forwarded to the records committee for their analysis. At times additional documentation was requested of reporters for incompletely documented rarities.

As always any sightings made in the state are requested to be sent to me. No sighting is insignificant as they all will contribute to our picture of what is happening to the various species in these rapidly changing times.—*Daryl D. Tessen.*

***Editor of** Wisconsin's Favorite Bird Haunts.*—The third edition of *Wisconsin's Favorite Bird Haunts* was completed in October, 1989. Due to an unexpected publication problem initial sales were delayed until December 1. Total cost of the book was approximately $31,500.

A BIG THANK YOU to all the people involved with the preparation of this edition. They include the authors of the articles, the artists (Thomas Schultz, Rockne Knuth, Carroll Rudy), the map artist (Rick Robbins), the secretary (Claudia Suvada), the printing company (Independent Printing of De Pere)and the various individuals and groups who made donations to help defray the cost of the book. Hopefully it will prove a worthy successor to the previous two editions.—*Daryl D. Tessen.*

Conservation Committee.—My activities have centered largely on matters of land preservation. Last summer when the Stewardship fund was before the state legislature, I represented WSO at a rally on the Sate Capitol steps, urging the state legislators to enact enabling legislation. Once this was passed, I wrote Governor Thompson in support of his endorsement, and rejoiced when the bill received his signature.

One recent outgrowth of the establishment of the Stewardship Fund has been the development of the Habitat Restoration Area plan

by Bureau of Wildlife Management personnel. I have written to BWM's director Steven Miller in support of the Glacial Habitat Restoration Area program. This is a pilot project, focusing on a large area of east central Wisconsin within which grassland species have suffered significant losses.

Areas with promising habitat are under increasing attack. I have no clearcut guidelines to use in deciding when to protest a potential loss of habitat. But at the very least, I intend to let WSO's voice be heard whenever a threat exists for an area described in "Wisconsin's Favorite Bird Haunts".

I find the plight of the Sharp-tailed Grouse in Wisconsin a matter of increasing concern. The DNR reports that fewer than a dozen of Wisconsin's 72 counties now hold viable sharptail populations, and surveys indicate that statewide breeding populations may total less than 2,000 birds. If I can determine that there is something WSO can do, I shall pursue this through the Board of Directors.—*Sam Robbins.*

Field Trip Committee.—WSO's field trips have gone very well again this year, with continuing excellent attendance. Each trip seems to turn up some particular highlights, which in the past year included: 50+ Merlins in October, a Mew Gull in January, a Townsend's Solitaire in Feb., a Lesser Black-backed Gull in March, and a Eurasian Wigeon on March 31.

The scope of WSO's field trips continues to grow, with two special new opportunities in 1991. We will be co-sponsoring two out-of-state trips—coastal and south Texas in April, and Venezuela in November! More information will be coming out soon.

Jeff Baughman and I continue to solicit any comments you may have on WSO field trips. Contact us if you wish to host a WSO trip to your part of the state for next year.—*Tom Schultz.*

Slide Sales & Loans Committee.—From 1980 through 1989, slide sales have produced a total income of $17,147.54 (includes checking account interest) with expenses of $14,223.85 for a net profit of $2,923.69. On January 1990 the inventory on hand totalled $2,204.14. Over these 10 years 402 sets and 197 additional slides were sold; 65 sets were loaned. Many of the loans resulted in sales which are listed under sales. In 1984, 1987, and 1988 every elementary school in Wisconsin received a flyer advertising the elementary edition as part of an Arbor Month promotional campaign conducted by the State.—*Stephen J. Lang.*

Membership Committee.—As of May 1, 1990, the membership consisted of 61 seniors, 601 regulars, 349 families, 105 sustaining, 14 1/4-life, 71 life, 6 patrons, 8 honorary, 5 board action, 45 library, 44 exchange, for a total of 1309, up from 1239 in 1989.

All address files are maintained and all mailing are made at W330 N8275 W. Shore Dr., Hartland, WI 53029. Please contact Membership Chairman with any problems.

A current membership listing is available from the Membership Chairman for a $3 fee.—*Alex F. Kailing.*

Records Committee.—During my tenure as chair, the WSO Records Committee has thus far reviewed records for Fall 1988 through Fall 1989, inclusive. These records encompass 40 different species and total 68, 59 of which were accepted, for an overall acceptance rate of 87%. The records bread down as follows Fall 1988: 14 records, 11 accepted, acceptance rate 79%, 11 species; Winter 1988–89 (including Christmas Counts): 17 records, 14 accepted, 82% acceptance rate, 11 species; Spring 1989: 7 records, 5 accepted, 71% acceptance rate, 6 species; Summer 1989: 15 records, 15 accepted 100% acceptance rate, 7 species; Fall 1989: 15 records, 14 accepted, 93% acceptance rate, 9 species.

One new species was added to the state accepted list, a Fulvous Whistling-Duck observed in Columbia County in early July 1989. In addition, a report of a Pomarine Jaeger from September 6, 1982 at Duluth-Superior, which originally had been rejected by the WSO Records Committee, was rereviewed upon request, and rejected a second time in April 1989.—*Janine Polk.*

Publicity Committee.—During the past year, I was unable to attend the Jul 89 and Apr 90 Board meetings because of job-related conflicts. I gave 16 bird talks during the past year in the following locations: Belgium, Friendship, Glendale, Mapleton, Mukwonago, Newburg, Oconomowoc, Port Washington, Racine, Saukville, Sheboygan, Sturgeon Bay, Sturtevant, Waukesha, Wauwatosa, and West Bend. I always discuss WSO at these programs and usually distribute membership brochures and field checklists.

WSO displays/tables were used at the Milwaukee Sports Show, Bluebird Restoration Association of Wisconsin annual meeting near Eau Claire, Havenwoods Environmental Awareness Center in Milwaukee, and Bay Beach Wildlife Sanctuary in Green Bay. WSO helped sponsor the Milwaukee Sentinel's Birdhouse and Birdfeeder Contest for the 5th year.

I again coordinated the 1989 and 1990 Honey Creek Birdathon/Bandathon. With the help of the Peartrees banding at Honey Creek and the sharp eyes/ears of the hikers, both events were very successful. The 1989 event almost netted $2000!

Twenty-three of the small membership brochure displays have been distributed to members to "house and watch over" around the state. I have 4 of these displays that are still available.

Considerable time has been spent in 1990 publicizing *Wisconsin's Favorite Bird Haunts*. About 100 organizations and potential sales outlets have been contacted and urged either to advertise or buy the book for resale. WSO can use all of your help in spreading the word about our new great book.

I need help in publicizing our field trips. Although I've promised Tom and Jeff that I will get notices to the local papers near the field trip site, it seems I just never have time. Would someone volunteer to help? I can provide a listing of newspapers from around the state and help with the kind of notice that can be sent.—*Noel J. Cutright.*

Research Committee.—My primary activities this year involved preparation of an annotated "blue list" of Wisconsin's birds which are not yet rare enough to justify endangered or threatened status, but which appear to be declining seriously. The aim of this project is to identify research priorities for projects and systematic observations. Although work has not progressed as rapidly as I had hoped, I have accumulated information from all of our surrounding states as well as from the Migratory Bird Laboratory in Patuxent, Maryland. I expect to complete a draft of the manuscript for comment by state experts in June or July before I depart for a 6-month study leave in Australia.

The Nicolet National Forest Bird Survey attracted nearly 100 participants in 1989 and appears to be on its way to surpassing that total in 1990. As part of this project I attended a biological monitoring workshop at the Chequamegon National Forest Headquarters in Park Falls during April. Methods of the Nicolet Survey are being adopted by the Ottawa and Hiawatha National Forests, and the Chequamegon National Forests likely will follow. Tony Rinaldi, Senior Wildlife Biologist of the Nicolet National Forest, has been working with me on a summary of the Nicolet Survey's methods and early results.

Although I am professionally very active in ornithological research, I have not fulfilled my own expectations as Research Chair for the Wisconsin Society for Ornithology. My absence during the last half of 1990 will not help matters in the immediate future, but I take this position seriously and hope to make a more significant contribution to the organization in the future. I appreciate the excellent encouragement that I have received from the current and past presidents, and welcome ideas from other members of WSO to help make the Research Chair a viable part of our collective mission.—*Robert W. Howe.*

Scholarships and Grants.—For 1990 five WSO Scholarships and one Steenbock Award were given. The following received WSO Scholarships: Daniel J. Lynch (Wetland Revegetation in Ozaukee County), William L. and Carolyn A. Penning (Common Tern (*Sterna hirundo*, Population Parameters at the Ashland Pier, Ashland, Wisconsin), Jeffrey Pritzl (Reproductive Limits and Production

Estimates of Forster's Terns in Natural and Artificial Colonies), Susan Will-Wolf (Correspondence Between Breeding Bird Communities and Vegetation Characteristics in Baxter's Hollow, Sauk County, Wisconsin), Amy T. Wolf (Bird Song Detection Distances in Forests of Northern Wisconsin). The following received a Steenbock Award: Janet M. Speth (An Inventory of Fossil Bird Bones of the Late Wisconsinian Glacial State).

The 1990 Committee consisted of Noel Cutright, Shan Duncan, and Charles Sontag.—*John Idzikowski.*

WSO Supply Department.—As of January 1, 1990 the Supply Department had an inventory of $13,079.70 in non-WSO books and a checkbook balance of $5,310.14. During 1989 these were $15,995.40 in receipts and $10,253.17 in expenses. During 1989 sales of WSO books totalled $5,405.50; the inventory of WSO books totalled $34,221.74 as of 1 January 1990. As of May 1, 1990, 610 of the 3rd edition of *Wisconsin's Favorite Bird Haunts* have been sold.—*Chuck Gilmore.*

THE WISCONSIN SOCIETY FOR ORNITHOLOGY

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

OFFICERS

President*: Randy M. Hoffman, 305 Fifth Street, Waunakee, WI 53597 (608-849-4502)
Vice President*: Allen K. Shea, 2202 Manor Green Drive, Madison, WI 53711 (608-274-8380)
Secretary*: Carl G. Hayssen, Jr., 6855 North Highway 83, Hartland, WI 53029 (414-966-2839)
Treasurer*: Alex F. Kailing, W330 N8275 West Shore Drive, Hartland, WI 53029 (414-966-1072)
Editor*: Stanley A. Temple, Department of Wildlife Ecology, University of Wisconsin, Madison, WI 53706 (home, 608-795-4226; office, 608-263-6827)

COMMITTEE CHAIRS

Annual Convention (1991): Thomas Erdman, P.O. Box 631, Green Bay, WI 54301 (414-435-5030)
Associate Editor*: Daryl D. Tessen, 2 Pioneer Park Place, Elgin, IL 60123 (708-695-2464)
Badger Birder*: Mary F. Donald, 6918 North Belmont Lane, Milwaukee, WI 53217 (414-352-8940)
Conservation*: Samuel D. Robbins, Jr., 14 South Roby Road, Madison, WI 53705 (608-233-3581)
Education*: William K. Volkert, Route 3, Box 35, Campbellsport, WI 53010 (414-533-8939)
Field Trips*: Thomas R. Schultz, Route 2, Box 23, Green Lake, WI 54941 (414-294-3021) and Jeffrey L. Baughman, Box 219, Adell, WI 53001 (414-626-4713)
File Keeper: Raymond K. Anderson, College of Natural Resources, University of Wisconsin, Stevens Point, WI 54481 (home, 715-824-2866; office, 715-346-3665)
Hotline (414-352-3857): Gerald DeBoer, 2406 Kinzie Avenue, Racine, WI 53405 (414-637-0393)
Lands: Gordon F. Cox, 1004 North Willard Avenue, Janesville, WI 53545 (608-752-8670)
Legal Council*: Robert W. Lutz, 50 East Main Street, Chilton, WI 53014 (414-849-2040)
Loan of Slides: Stephen J. Lang, 5613 Commanche Way, Madison, WI 53704 (608-249-5684)
Membership*: Alex F. Kailing, W330 N8275 West Shore Drive, Hartland, WI 53029 (414-966-1072)
Publicity*: Noel J. Cutright, 3352 Knollwood Road, West Bend, WI 53095 (home, 414-675-2443; office, 414-221-2179)
Records*: Janine L. Polk, 1407 Frederic Street, Eau Claire, WI 54701 (715-839-9265)
Research*: Robert W. Howe, Department of Natural and Applied Sciences, University of Wisconsin, Green Bay, WI 54301 (414-465-2272)
Scholarships and Grants*: John H. Idzikowski, 2558 South Delaware Avenue, Milwaukee, WI 53207 (home, 414-481-6840 or 414-744-4818; work, 414-229-6274).
Supply Department*: Chuck Gilmore, 115 Meadow Wood Drive, Randolph, WI 53956 (414-326-3221).

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*Members of the Board of Directors

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