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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.

A New President

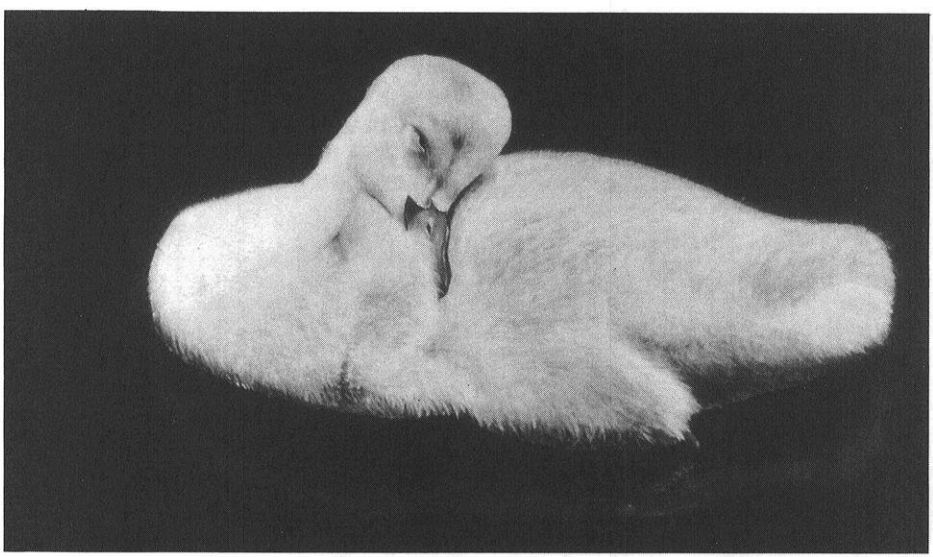
Very few things move me to put pen to paper, but a note from Becky saying that this letter was due two weeks ago quickly changed all that. The Society, by its own rules, changes leadership every two years, but this year has seen other changes in the organization of the board. Al Shea, as immediate past president, should be recognized for his enlightened leadership and dedicated service. His deft skills have guided the Society through gauntlets and hazards, and the Society has emerged ever stronger. But as Al leaves, others that have also enriched the Society follow him. Stan Temple has used his remarkable talents to change the way we think about the *Passenger Pigeon.* With a complete overhaul, the journal is now the standard for comparison. This is a wonderful tribute to Stan's professional and innovative skills. Although we knew it would happen sooner or later, Chuck Gilmore has decided to step down. Chuck has provided dedicated service to the Society through the operation of the Supply Department for more years than many of us have been members. His quiet presence and strength reached into and enriched the Society in every way. We wish each well in their retirement. Each has served as a model for us to emulate and the Society is stronger for their efforts. A very sincere and heartfelt thanks is extended to all of them.

According to Alex Kailing, the Society is in great shape and that certainly comes as no surprise. With the approval of the Honey Creek Master Plan by the members at the annual convention in Oshkosh, another jewel of the Society is given its proper place. But as one jewel is being added, another jewel from the past needs a little polish. The Scholarship Awards, when originally instituted, provided recognition and substance to a research or study project. Now, alas, compounded by inflation, the Awards are only a form of recognition as the $200 award hardly covers xeroxing costs, and in turn provides little incentive to those who would seek such awards. To address this complication of benign oversight, we considered either giving fewer awards, but of higher monetary value, or adding funds from extra mural support. We chose the latter. It is hoped that with the help of this outside funding support from various corporate and other foundations, the Society will be able to offer scholarship awards that better reflect the costs of the study or research activity.

The Society is for the pleasure and benefit of its members. It is hoped that the members also feel that their Society will work with them to enhance or increase its service. The best plans can only be realized in a supportive and engaged environment. This is how organizations are supposed to work that serve the interests of its members including those of birders. This will certainly be a learning period for me as your new president. Not to sound like so much

campaign rhetoric of a year ago, "I will try very hard to steer the Society for the benefit of the whole, and do it without raising your taxes."

President



"Cygnet" *by Brian T. Kuether*

Fifty Years with the Checklist

The 50-year history of Wisconsin Birds *is recounted by two of the original authors.*

by Sam Robbins and N. R. Barger

How many birders have gone afield with a little 4 × 7″ 32-page *Wisconsin Birds* booklet in their pocket or purse? Can it be that this, one of WSO's first publications, made its debut 50 years ago?

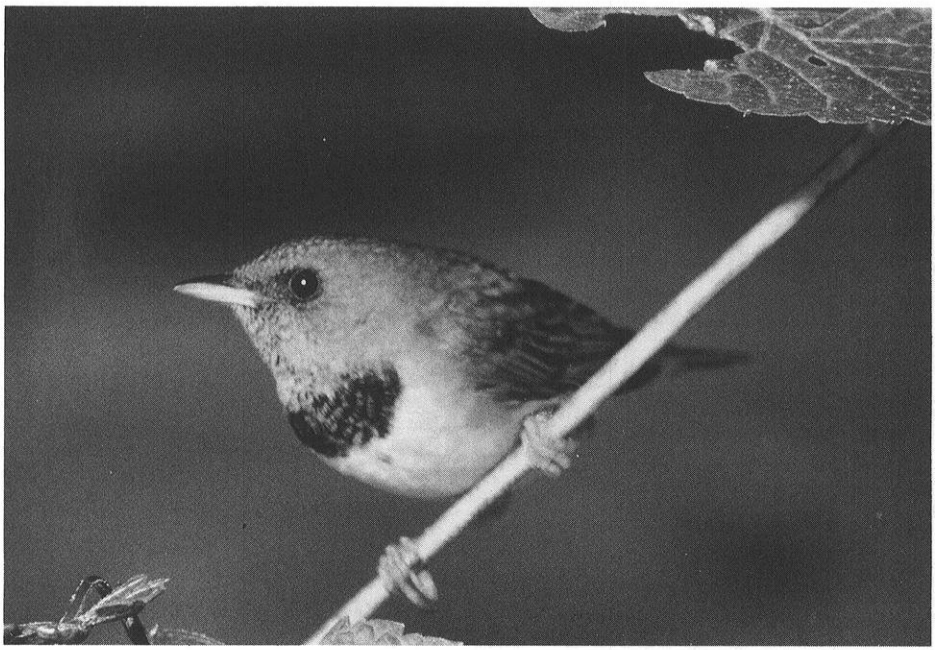
When WSO came into being in 1939, publication of pertinent material was a top priority. Following the inauguration of *The Passenger Pigeon* and the printing of a 4-page card checklist, work started on *Wisconsin Birds—Checklist With Migration Charts.*

1942 Edition

The impetus for the *Wisconsin Birds* project came primarily from Walter E. Scott, first editor of *The Passenger Pigeon.* He recruited a team that included fellow Wisconsin Conservation Department employees Earl L. Loyster and Norval R. Barger, and active field observers Elton E. Bussewitz and Samuel D. Robbins. Committee members were aware that no definite list of Wisconsin birds had been published since Kumlien and Hollister's *Birds of Wisconsin* (1903), and that had long been out of print. Team members knew that Owen J. Gromme had started work on a large state bird book, but final publication would be years away.

What was needed was a small pocket-sized pamphlet that would (1) list all species known to have visited the state, (2) indicate how common or rare each species is, and (3) tell during what periods of the year each species might be expected. If this could be done in a sufficiently concise manner, space could be allotted for record-keeping on a series of field trips.

After consulting Kumlien and Hollister, numerous magazine articles, three years of field notes published in *The Passenger Pigeon,* records from the Wisconsin Conservation Department files and the files of the Milwaukee Public Museum, and the unpublished records of the state's most active birders, the committee produced a list of 347 birds. This figure differs from the "366" mentioned in the introduction because numerous subspecies were listed even though their status "needed determination." To be listed, a species had to be verified by a specimen—either extant or described in the literature. Another 27 species—probable but lacking the necessary speci-



Mourning Warbler: "Listed as uncommon in 1942; listed as common in 1988." Photo by N. R. Barger.

men—were listed separately as hypothetical.

Status was defined largely by the terms common, fairly common, uncommon, rare, casual, and irregular. In a few extreme instances, abundant or accidental was indicated. Each species was labeled PR (permanent resident), WR (winter resident), SR (summer resident), TV (transient visitant), WV (winter visitant), or SV (summer visitant). No sharp lines of distinction were drawn between one classification and another. Committee members used their collective judgment, based largely on personal experiences.

Time lines offered a feasible way of showing the periods of the year when each species is present. With a series of twelve columns, one for each month, it was simple to draw a thin solid line throughout for a permanent resident. For a summer or winter resident, the line was solid but thin for the period when the species is normally present, heavier during the period of peak migration, and broken to indicate rare extraseasonal dates.

The lines were more easily drawn for rare species than for common ones. Published records of rarities usually gave precise dates, while records of the more common species might give arrival dates but scant reference to peak and departure information. So heavy reliance was placed on the unpublished notes of the committee members and a handful of consultants.

Should these time lines take into account variations in arrival and departure dates between the southern and

northern regions? Committee members wondered about this, but lacked information from western and northern regions. Most WSO observers, and all extant local bird clubs, were located within the "Madison-Racine-Green Bay triangle."

This factor, plus the newness of WSO as a record-collecting data bank, led to the subtitle on the front cover: "A Preliminary Check List With Migration Charts." Also featured on the bright yellow color was an attractive American Goldfinch sketch (by Barger) and an attractive price tag: 25 cents per copy.

1950 Edition

The near-exhaustion of the supply of the 1942 edition provided the urge for a new edition in 1950. This was more of a reprint than a revision. The cover was tan instead of yellow, but the title was the same ("preliminary"). The same five authors were listed, even though Bussewitz had been killed in World War II action in 1944. The charts were the same, but a short appended note pointed out the needed addition of seven names (four species, three subspecies) and the deletion of the Red-legged Black Duck and the Valley Quail. The hypothetical list remained the same. Definitive forms totaled 353; the hypothetical list numbered 27.

The main new feature of the 1950 edition was A. W. Schorger's "Bibliography of Wisconsin Ornithology." This included most of the published sources which the committee cited in 1942, plus several important new sources printed since that date. This was the first time that an extensive bibliography was made available to the average birder.

1960 Edition

By 1960 a complete revision was called for. The 5th edition of the AOU *Checklist* (1957) not only changed the names of certain species and the order in which species were listed, but also recommended a deemphasis of subspecies. A second reason for this revision resulted in the dropping of the "preliminary" term from the subtitle. As stated in the introduction: "The term 'preliminary' scarcely seems needed now. *The Passenger Pigeon* has been publishing carefully edited field notes for twenty years; the number of field observers in many parts of Wisconsin has multiplied."

Because other commitments now occupied Scott and Loyster, Barger and Robbins recruited Roy H. Lound to work on the revision. Several new species were added, including five whose documentation included photographs rather than specimens. Even so, the total number of listings dwindled to 348 because of the elimination of subspecies. 18 of these were transferred from the main charts to a list in the appendix because they were extinct or extirpated, with no state records since 1910.

Lound's presence on the committee brought some valuable input about northern Wisconsin breeding birds, a dimension that heretofore was fragmentary. Because of this, and the fact that the Christmas Bird Counts had now achieved statewide proportions, made it possible to make fuller use of such modifiers as "north" and "south" in describing the status of a given species.

The earlier editions included a map of Wisconsin showing the location of various avifaunal zones. The committee felt that a more useful state map would be one that showed the locations of favorite birding hotspots. "Wisconsin's Favorite Bird Haunts" had already started as a series in *The Passenger Pigeon.* Interest in travel was growing rapidly. So the 1960 edition featured a map pinpointing 23 locations, from Superior to Milwaukee, from the Nicolet National Forest to Wyalusing State Park.

Again Schorger contributed a bibliography, considerably enlarged because of important new works that had been published since 1950. Notable among the additions were the annotated notes he used to update the standard work by Kumlien and Hollister.

1975 Edition

One can scarcely tell the 1975 edition from that of 1960 by glancing at the cover. It is again yellow, featuring the same three authors, and Barger's American Goldfinch sketch. The subtitle now read: "A Check list with Migration Graphs" instead of "Charts."

The most conspicuous changes were made in the graphs. Newly added was a habitat column. Twelve habitat types were described, coded, and shown for each species. A second column listed summer locale for all summer residents: "all" for specie with statewide distribution, "n", "e", "s", "w", and "c" for those of limited summer range. A third column showed the same range distinctions for wintering species. By adding a third thickness to the lines on the monthly graphs, the authors used the thickness to describe the status of each species in each season. A thick line stood for "abundant" or "common"; a medium line described status as "fairly common" or "uncommon"; a thin line indicated that a species was "rare" or "casual."

The total species reached 370, a gain of 22 over the previous total of 348. Certainly no previous expansion of the state list in a 15-year interval can match this since the period of Kumlien and Hollister in the late 19th century. One-half of the gain of 22 species was based on photographic evidence. A boost in the hypothetical list from 18 to 26 also attests to more hours being spent afield by more observers.

Schorger's death in 1972, plus space limitations, led to an abridged bibliography, but the map of birding hotspots was enlarged to include 33 areas.

1988 Edition

1983 was a fateful year. Death claimed Walter Scott who originated this project. It also claimed Roy Lound, necessitating the recruitment of another team member. Stanley A. Temple joined the team, bringing with him the results of the Wisconsin Checklist Project he had collected from 431 cooperators since 1983. Until Temple and Cary published their *Wisconsin Birds: A Seasonal and Geographic Guide* (1987), information about normal migration and peak migration periods had been largely subjective. As it turned out the subjective judgments of committee members in previous editions proved to be remarkably accurate. Temple's data, however, provided needed confirmation.

The 1975–1988 period continued the 1960–1975 span of rapid growth in the Wisconsin state list. Of the 22

new species added between 1975 and 1988, 13 were elevated from the hypothetical list. The new totals: 392 established species, and 13 hypothetical.

In the 1988 edition several additional changes were made in appearance and format. On the front cover the American Goldfinch was replaced by Tom Schultz's Northern Cardinal sketch, and the color of the cover changed to an appropriate red. Instead of mapping the state's hot spots, readers were referred to Daryl Tessen's *Wisconsin's Favorite Bird Haunts.* Rather than provide an abridged bibliography, the authors recommended the exhaustive listing provided by Walter and Gertrude Scott in Robbins' *Wisconsin Birdlife.* In place of the previous ten columns for recording birds observed in field trips, the 1988 edition supplies twenty.

In Summary

The authors of this article have seen this *Wisconsin Birds* venture develop throughout its 50-year history. Their intent: to provide a great deal of information in minimal space and at minimal cost. Through the first four editions, space was limited to 32 pages plus cover. Only in the fifth edition, when the state list grew so rapidly, was it necessary to expand to 36 pages. The price jumped gradually only from 25¢ (1942, 1950) to 35¢ (1960), 60¢ (1975) and 75¢-plus-postage (1988). We believe it has accomplished its purpose for thousands of Wisconsin birders.

Whoever tackles the next edition may be dealing with a list of over 400 species.

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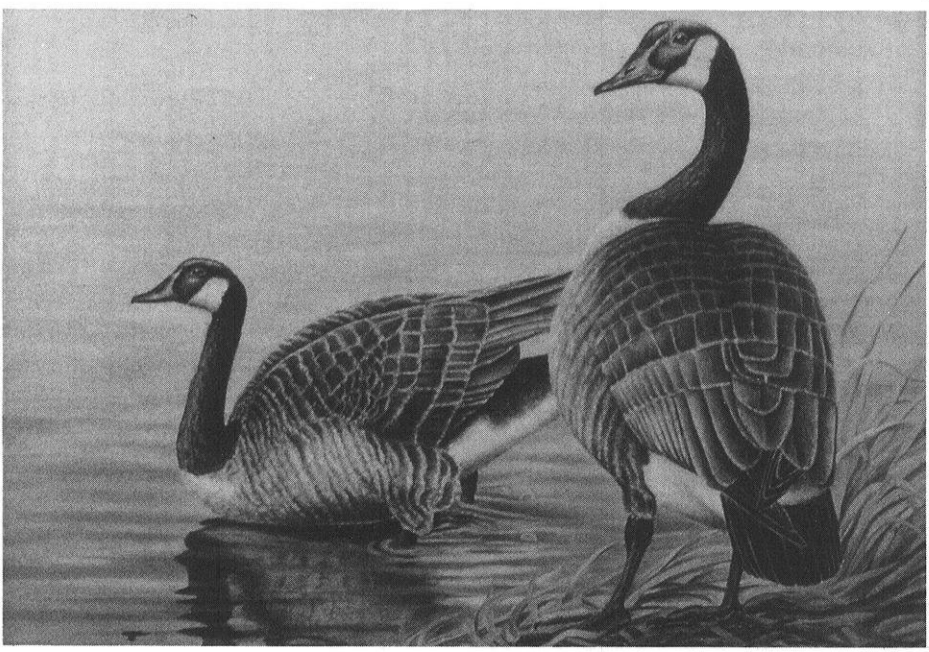

Canada Geese *by Brian T. Kuether*

Birds of Wisconsin's Northern Swamps and Bogs

by Randy M. Hoffman and Michael J. Mossman

Northern swamps and bogs have a special significance for Wisconsin birders, for they often contain rare "boreal" birds found regularly in no other natural community type in our state—species such as Palm Warbler, Lincoln's Sparrow, and Yellow-rumped Warbler. Indeed, swamps and bogs contain more of these species than do our very limited examples of boreal (upland spruce-fir) forest (Mossman et al. 1990). Over half of the northern sites described in *Wisconsin's Favorite Bird Haunts* (Tessen 1989) are swamps or bogs: the chapter on Clam Lake states that "spruce-tamaracks are often worth the extra effort"; in Douglas County bogs, "boreal birds abound both in winter and during the breeding season"; and in Forest County "the black spruce bogs seem to be the most likely homes for several of the most sought after species." Francis Zirrer (Matteson 1990) wrote eloquently of such places and their birdlife.

However, the rarity of these boreal breeding-bird species in Wisconsin is more apparent than real, because the vast majority of their habitat is fairly inaccessible to birders. These bog and swamp communities are actually quite extensive, and cover some 855,000 acres—about 8% of the northern Wisconsin landscape. Compared with other natural communities in the state, they have fared well since European settlement began in the early 1800s. Of the 2,350,000 acres that probably existed then, 36% remains today. Yet the poor access and traditionally low commercial value of northern swamps and bogs do not secure their future. Immediate and potential threats include commercial harvest of moss, the expanded use of swamp conifers for pulp, the potential exploitation of conifers and peat for power generation, and overbrowsing by mammalian herbivores.

Northern swamps and bogs comprise a wide variety of types, each with its characteristic range of structures and breeding-bird communities. An important feature common to many is the presence of peat, which forms from sedges, mosses, and other plants, the remains of which decompose poorly in their cool, wet, acidic, substrate. The degree to which peat accumulates in a wetland results from

factors such as water chemistry and flow, and strongly influences the type of vegetation that develops.

Curtis (1959) classified these communities as *open bogs, northern wet forests,* and *northern wet-mesic forests. Open bogs* are dominated by sphagnum moss (*Sphagnum* spp.) and low shrubs. These include ericaceous "heath" species such as leatherleaf (*Chamaedaphne calyculata*), Labrador tea (*Ledum groenlandicum*), bog rosemary (*Andromeda glaucophylla*), bog laurel (*Kalmia polifolia*), blueberry (*Vaccinium angustifolium, V. myrtilloides*) and cranberry (*V. macrocarpon, V. oxycoccus*). Non-ericaceous shrubs such as bog birch (*Betula glandulosa*) and bog holly (*Nemopanthus mucronata*) are sometimes present as well. Characteristic herbs include three-leaved solomon's seal (*Smilacina trifolia*), orchids such as rose pogonia (*Pogonia ophioglossoides*), grass pink (*Calopogon pulchellus*) and red ladyslipper (*Cypripedium acaule*), and the insectivorous pitcher-plant (*Sarracenia purpurea*) and sundews (*Drosera* spp.). Sedges (*Carex* spp.) and cottongrasses (*Eriophorum* spp.) are usually present as well. Open bogs often succeed gradually to wet forest, and may contain very scattered, stunted black spruce or tamarack. They sometimes grade into northern sedge meadow or sedge marsh (Mossman and Sample 1990), or alder (*Alnus rugosa*) thickets (Hoffman 1989).

Northern wet forests—are dominated by black spruce (*Picea mariana*), and/or tamarack (*Larix laricina*), and occur on lake beds, lake fringes, extensive basins, and streamside meanders. The understory flora resembles that of open bog, but with the addition or increased importance of species such as marsh white violet (*Viola pallens*), three-seeded sedge (*Carex trisperma*), tawny cottongrass (*E. virginicum*), and hare's-tail cottongrass (*E. spissum*).

Northern wet-mesic forests—grow on lake beds, river floodplains, streamside meanders and seepage slopes. They can be dominated by white cedar (*Thuja occidentalis*) and sometimes also balsam fir (*Abies balsamea*), or alternatively, by hardwoods such as black ash (*Fraxinus nigra*), yellow birch (*B. alleghaniensis*), and red maple (*Acer rubrum*). Northern wet-mesic forests often include both conifers and hardwoods. Hemlock (*Tsuga canadensis*) may also be present. Common understory plants in cedar-dominated forests are naked miterwort (*Mitella nuda*), Canada mayflower (*Maianthemum canadense*), dwarf raspberry (*Rubus pubescens*), intermediate wood fern (*Dryopteris intermedia*), sweet-scented bedstraw (*Gallium triflorum*), starflower (*Trientalis borealis*), spotted jewelweed (*Impatiens biflora*), and bunchberry (*Cornus canadensis*). In swamps dominated by black ash, common understory plants include lady fern (*Athyrium felix-femina*), spinose wood fern (*Dryopteris spinulosa*), sensitive fern (*Onoclea sensibilis*), bluejoint grass (*Calamagrostis canadensis*), marsh marigold (*Caltha palustris*), sedge (*Carex stipata*), alpine enchanter's nightshade (*Circaea alpina*), blue flag iris (*Iris versicolor*) and marsh skullcap (*Scutellaria galericulata*).

Curtis (1959) presented his open bog, northern wet forest and northern wet-mesic forest types in a simplified manner, suggesting a general, linear, successional relationship between them. Subsequent studies, summarized by Crum (1988), have classified these

communities more precisely, and have identified several successional pathways based largely on the diversity of site characteristics, history, water chemistry, and water flow. Crum and Curtis both recognized the difficulties in classifying this complex of intergrading wetland types, and their respective definitions often do not correspond with each other. However, both schemes are useful. Following is a description of those types that occur in Wisconsin, according to Crum, and their correspondence with Curtis' classification and our own classification in the series *Wisconsin Birding: The Habitat Way*.

Crum first divided wetlands into general types: marshes and sedge meadows, fens, bogs, and swamps. He defined *marshes* and *sedge meadows* as "grassy" or "reedy" wetlands that develop on mineral soil, in areas standing under water at least part of the year. These are well aerated and mineral rich, and store little or no peat. This category includes parts of Curtis' sedge meadow and emergent aquatic communities, and we have used these same Curtis categories for the avifaunas (Hoffman 1990, Mossman and Sample 1990).

Crum's *fens* are peatlands dominated by grasses, sedges, or reeds, often with some shrubs or scant tree cover. They develop only under the influence of mineral rich, well aerated water at or near the ground surface. Typically, very little peat accumulates. In northern Wisconsin, fens may succeed to bog or swamp communities. Curtis reserved the term fen for southern Wisconsin, and we discussed birds of southern Wisconsin fens in conjunction with the closely related wet and wet-mesic prairies (Hoffman and Sample 1988). Curtis apparently included northern fens in both sedge meadow and open bog communities, and because of their characteristic mixture of sedges and rushes we included them with sedge meadows. In the present paper we discuss fens only to the extent that they intermix with bog communities, as is often the case in northern Wisconsin.

Bogs—were defined by Crum as peatlands that derive water and nutrients only from the atmosphere. They are highly acidic and nutrient poor, and are dominated by sphagnum, ericaceous shrubs, and black spruce. They include Curtis' northern wet forest community type and most of his open bog type, and they are a major focus of the current paper. In Wisconsin, most bogs develop gradually as peat accumulates in a lake or pond basin, and the bog boundary thus generally corresponds with that of its basin. Their various, potential successional pathways depend mostly on water chemistry. On alkaline or neutral water bodies, the shorelines normally develop fen vegetation—usually sedges and rushes, often *Carex lasiocarpa*. Gradually, this develops a mat or quaking bog, which begins to grow from shore, over the water. Eventually, sphagnum may dominate, and may form a lawn-like mat. As peat accumulates further, it raises the mat from the direct influence of the alkaline or neutral water—the substrate becomes drier and more acidic, thus favoring the growth of ericaceous and other low shrubs. Eventually this is succeeded by a *forested bog* of black spruce and/or tamarack. Black spruce is favored by the most acidic conditions, whereas tamarack requires some influence of

mineral-rich groundwater. However, if mineral-rich water continues to dominate, due to flow or pooling, white cedar may grow, and the site could succeed to cedar swamp.

Alternatively, margins of the more acidic lakes and ponds tend to harbor sphagnum and leatherleaf, which develop an increasingly acidic mat. A narrow zone of black spruce and tamarack may form, but eventually the highly acidic substrate precludes all trees but black spruce. On either acidic or non-acidic sites, disturbances such as fire can encourage growth of balsam fir, white pine (*Pinus strobus*) or jack pine (*P. banksiana*).

Wisconsin has good examples of many variants of bog: open bogs dominated by sphagnum lawns or heath, sometimes with zones of alkaline fen; conifer forest dominated by black spruce, tamarack, or both species; various admixtures of open and forested types; and basins in which open water is surrounded by concentric zones of fen, sphagnum, heath, conifer forest, and upland forest.

Bogs along Lake Superior have some special features. These peatlands are formed in pools behind baymouth sandbars, where water flow into the lake is impeded, and some mixing occurs with the relatively mineral-rich lake water. Directly behind the bars are areas of fen vegetation, which tend to be "boggy" in areas with thick accumulations of peat. Often there are several baymouth bars, with the vegetation being more acid-loving with increased distance from the lake. The cold, mineral-rich waters of Lake Superior contribute to an unusual combination of plant species, which include those typical of the alkaline bog successional pathway, and other species with tundra affinities. Several far northern sedges are common, and in some cases they dominate the plant community.

Muskegs—are extensive bogs with stunted, usually scattered black spruce trees growing on high, dry, well-aerated deposits of peat. The sites are very acidic, and water and nutrients come only from the atmosphere. Muskegs have a simple vascular flora, with most sites containing fewer than 25 species, and black spruce is the only tree that can grow here. Typically, the most open areas are dominated by sphagnum, leatherleaf, and bog laurel, although labrador tea and blueberry sometimes prevail in areas shaded by spruces.

Some well developed muskegs present an apparent anomaly, in that the spruces decrease in size, density, and vigor toward the center of the bog. Rather than being the youngest trees on the most recently formed part of the mat, these are actually often the oldest trees, growing very slowly in the extremely acidic conditions that prevail atop the greatest accumulation of peat. The periphery of these bogs often supports a zone, termed "lagg", characterized by relatively tall spruces and a diverse ground flora, which results from mineral-rich run-off from the surrounding uplands and more acidic run-off from the bog's elevated center. Immediately adjacent to the upland, mineral rich run-off may also discourage peat formation to the extent that a moat of open water remains.

Swamps—are distinguished from bogs mainly by a periodic or constant flow of groundwater or surface water,

a relative lack of peat, and less acidic conditions. Although Curtis lumped white cedar swamps and northern hardwood swamps into a single northern wet-mesic forest community, Crum considered these as distinct types. White cedar requires a flow of mineral water, and also often occurs on calcareous substrates. Consequently, *cedar swamps* grow primarily along streams or lakes, and in depressions in glacial drift over limestone or dolomite. They usually contain many plant species characteristic of fens. They result from several different successional pathways.

Northern hardwood swamps—are dominated by black ash, yellow birch, and red maple, sometimes with an admixture of lowland conifers, especially white cedar. They grow primarily along floodplains and at stream headwaters in moraines, always on mineral soil or shallow muck (oxidized peat), with no sphagnum or substantial accumulation of peat.

In order to describe the breeding-bird communities of northern bogs and swamps, we have distinguished 7 habitat categories (Table 1) based on the definitions of Crum and Curtis, and our assessment of the habitat structures that most affect breeding-bird distribution. Thus, the first 3 community categories in Table 1 represent a structural continuum from open bog (dominated by sphagnum and/or heath, often with a sedge component), to muskeg (dominated by variously spaced, generally stunted black spruce 1–6m tall in a matrix of sphagnum and/or heath), to forested bog (a forest of black spruce and/or tamarack, generally over 6m tall, usually with both heath and shrubs in the understory). It is important to note that this is not necessarily a *successional* continuum, because muskeg is more nearly climax than transitional in nature, and may develop from forested bog as a result of peat accumulation.

The fourth column in Table 1 represents a common stage of basin bog succession in Wisconsin, in which a central pond or lake is surrounded by concentric rings of fen and/or sphagnum lawn, open bog, and forested bog. These concentric bands are often only 10–100m wide, and surrounded by upland forest. Thus, the breeding avifauna tends to be a mixture of species characteristic of open water, open bog, forested bog, upland forest, and forest edge.

The fifth column represents bogs along Lake Superior, as described above. At these sites, avifaunas are likewise affected by mixtures of wetland and upland types, as well as by proximity to Lake Superior. The last 2 columns represent the 2 fairly distinct but sometimes intergrading types of Curtis' northern wet forest, or Crum's cedar and hardwood swamps.

The most common species of open bogs are Sedge Wren, Common Yellowthroat, Savannah Sparrow, Song Sparrow, and Red-winged Blackbird. Other characteristic but less common species include Clay-colored Sparrow, Lincoln's Sparrow, Swamp Sparrow, Bobolink, Brewer's Blackbird, and American Goldfinch. This is very similar to the corresponding list for Wisconsin sedge meadow, especially northern sedge meadow (Mossman and Sample 1990). Notable differences occur with the sparrows: open bogs have relatively more Clay-colored Sparrow, Savannah Sparrow, Song Sparrow, and Lincoln's Sparrow, and

Table 1. Breeding-bird species abundance in 7 types of fen, bog, and swamp communities. A = Abundant. The average number of territorial males expected on 100 transect points is more than 100. C = Common. The average number of territorial males expected on 100 transect points is 50 to 99. FC = Fairly Common. The average number of territorial males expected on 100 transect points is 20 to 49. U = Uncommon. The average number of territorial males expected on 100 transect points is 5 to 19. R = Rare. The average number of territorial males expected on 100 transect points is less than 5.

Species	Open Bog+	Muskeg+	Forested bog+	Small bog around lake+	Lake Superior bog+	White Cedar Swamp+	Northern Hardwood Swamp+
Pied-billed Grebe					R		
Great Blue Heron	R			U	U	R	U
American Bittern	R			R	R		
Least Bittern					R		
Green-backed Heron			R		R		
Canada Goose					R		R
Wood Duck				U			
Green-winged Teal	U						
American Black Duck		R					
Mallard	R		R	U	U	R	
Blue-winged Teal					R		
Gadwall				R			
Ring-necked Duck				U			
Hooded Merganser				R			
Red-breasted Merganser					R		
Bald Eagle			R	U	R		
Northern Harrier	R	U			R		
Sharp-shinned Hawk		R	R				
Red-shouldered Hawk		R		U		R	R
Broad-winged Hawk			R	U		R	R
Red-tailed Hawk			R				
American Kestrel		R					R
Merlin	R						
Spruce Grouse			R				
Ruffed Grouse			R		R	U	U
Sharp-tailed Grouse	R						
Yellow Rail					R		
Virginia Rail					R		
Sora					R		
American Coot					R		
Sandhill Crane		R			R		
Killdeer				R	R		
Common Snipe	R			R	U	R	
American Woodcock			R	U	R	R	
Ring-billed Gull					R		
Herring Gull					U		
Black Tern				FC*			
Mourning Dove		R					R
Black-billed Cuckoo			Y	U	R		R
Yellow-billed Cuckoo					R		U
Great Horned Owl					R		R
Barred Owl						R	
Great Gray Owl		R					
Long-eared Owl						R	
Short-eared Owl	R						
Northern Saw-whet Owl						R	
Chimney Swift				R		U	R
Ruby-throated Hummingbird				U			
Belted Kingfisher			R		U		
Red-bellied Woodpecker							U

continued

Table 1. (*Continued*).

Species	Open Bog+	Muskeg+	Forested bog+	Small bog around lake+	Lake Superior bog+	White Cedar Swamp+	Northern Hardwood Swamp+
Yellow-bellied Sapsucker			R	R	R	U	R
Downy Woodpecker			R	U	U	R	R
Hairy Woodpecker		R	U	U	R	U	U
Three-toed Woodpecker		R					
Black-backed Woodpecker			U			R	
Northern Flicker		R	R	U	U	U	U
Pileated Woodpecker			R	U	R	U	U
Olive-sided Flycatcher			R	R	U	R	
Eastern Wood-Pewee		R	R	U	R		U
Yellow-bellied Flycatcher		FC	U	R	U	FC	R
Alder Flycatcher	R	U		R	U	R	
Least Flycatcher					U	R	U
Eastern Phoebe					R		
Great Crested Flycatcher		R	U	FC	R	U	FC
Eastern Kingbird	R	R		FC	U		R
Purple Martin			U		R		
Tree Swallow		FC	U	U	FC	U	
Northern Rough-winged Swallow					R		
Bank Swallow					R		
Cliff Swallow		FC		R	R		
Barn Swallow	R	R		R	R		
Gray Jay		R	R	R		R	R
Blue Jay		FC	FC	FC	FC	FC	U
American Crow		R	U	FC	U	U	U
Common Raven		U	U	R	R	U	R
Black-capped Chickadee		R	U	C	FC	FC	FC
Boreal Chickadee		U	R				
Red-breasted Nuthatch		U	FC		U	FC	U
White-breasted Nuthatch				U	R		U
Brown Creeper		R	U		R	U	R
House Wren						R	
Winter Wren		R	U	R	U	C	U
Sedge Wren	A	C	U		U		
Marsh Wren					R		
Golden-crowned Kinglet		U	C	U		FC	R
Ruby-crowned Kinglet			FC*	R	U		
Eastern Bluebird	R	R			R		U
Veery		U	C	C	C	FC	C
Swainson's Thrush			U			U	
Hermit Thrush		C	FC	FC	R	FC	R
Wood Thrush			U	U		R	
American Robin	U	U	U	FC	FC	U	U
Gray Catbird		R		R	R		U
Brown Thrasher					R		
Cedar Waxwing		FC	FC	FC	FC	R	FC
European Starling					R		
Solitary Vireo		R	U		R	U	R
Yellow-throated Vireo			R			R	R
Warbling Vireo				U	R		
Red-eyed Vireo		U	U	FC	FC	U	A
Golden-winged Warbler	R		R		R	R	R
Nashville Warbler		A	A	A	C	A	U
Northern Parula			FC		R	FC	U
Yellow Warbler	R	FC	R	FC	FC	R	R
Chestnut-sided Warbler				FC		R	

continued

Table 1. (*Continued*).

Species	Open Bog+	Muskeg+	Forested bog+	Small bog around lake+	Lake Superior bog+	White Cedar Swamp+	Northern Hardwood Swamp+
Magnolia Warbler			R		R		
Cape May Warbler		U	R		U		
Yellow-rumped Warbler		C	A	R	R	FC	R
Black-throated Green Warbler		R	U	R	R	C	
Blackburnian Warbler			R		U	FC	
Bay-breasted Warbler					R		
Pine Warbler			R		R		
Palm Warbler		C	U		R		
Cerulean Warbler							R
Black-and-White Warbler		U	FC	R	FC	FC	FC
American Redstart				R	FC		FC
Ovenbird		U	FC	FC	U	C	FC
Northern Waterthrush		U	U	R	U	U	FC
Connecticut Warbler		U	R				
Mourning Warbler		R	U	R	R	U	U
Common Yellowthroat	A	C	C	A	C	U	FC
Wilson's Warbler					R		
Canada Warbler		R	R			FC	U
Scarlet Tanager			U	FC	R	U	U
Rose-breasted Grosbeak		R	U	U	R	U	U
Indigo Bunting				R	R		U
Rufous-sided Towhee				R			
Chipping Sparrow				FC	R	U	
Clay-colored Sparrow	C	R					
Savannah Sparrow	A	A	R				
Henslow's Sparrow	U						
Le Conte's Sparrow		FC			R		
Song Sparrow	A	A	C	FC	FC	R	FC
Lincoln's Sparrow	C	A			R		
Swamp Sparrow	C	C	FC	U	C	R	R
White-throated Sparrow		C	A	FC	U	FC	U
Dark-eyed Junco						U	
Bobolink	FC				R		
Red-winged Blackbird	A	FC		C	A	R	R
Brewer's Blackbird	FC	U					
Common Grackle			R	R	U		
Brown-headed CowbirdU	R	U	FC	U			
Northern Oriole				U	R	R	R
Purple Finch		R	FC	U	U	FC	R
Red Crossbill		R					
White-winged Crossbill			R				
Pine Siskin				R			
American Goldfinch	FC	R	R	R	U	R	R
Evening Grosbeak			R	R			

* = value somewhat inflated due to high count at one site.

\+ = number of sites of each type: Open Bog-9; Small Bogs-5; Lake Superior Bogs and Fens-4; Forested Bog-9; Muskeg-7; White Cedar Swamp-11; Northern Hardwood Swamp-4.

neither of the northern sedge meadow specialists—LeConte's Sparrow and Sharp-tailed Sparrow.

The effect of burning on open bogs is illustrated by our count of adjacent tracts near Thunder Lake (Table 2), one of which had been burned the previous spring. As is often the case in open bogs, pastures, sedge meadows, and barrens in northern Wisconsin, Brewer's Blackbird appeared and became abundant immediately following burning. Savannah Sparrow increased with the thinning of shrub cover, while

Table 2. Comparison of numbers of individuals observed on breeding-bird counts and habitat characteristics on adjacent burned and unburned open bog communities at Thunder Lake, Oneida County, 8 July 1989. Each tract was surveyed using 4 "walk-5-min/stand-5-min" periods.

Bird species	Unburned	Burned
Merlin	1	0
Sedge Wren	2	0
Common Yellowthroat	4	3
Brewer's Blackbird	0	14
Savannah Sparrow	7	14
Clay-colored Sparrow	23	7
Lincoln's Sparrow	11	12
Swamp Sparrow	0	1
Song Sparrow	9	8
	Estimated % Cover	
Habitat variable	Unburned	Burned
Conifer seedling	1	0
Heath and shrub	40	20
Grass, sedge, forb	25	50
Sphagnum	19	9
Residual	15	9
Exposed peat	0	9
Dead woody	0	3
Total	100	100

the shrub-loving Clay-colored Sparrow declined. Sedge Wren seemed to decline with the disappearance of residual herbaceous cover. The more generalized open-country species—Common Yellowthroat and Song Sparrow—remained at similar densities, as did Lincoln's Sparrow, which generally occurs with equal frequency over the range of woody cover represented in the 2 stands.

When open bogs are disturbed by sphagnum moss harvest, the sphagnum and heath are replaced for at least a few years by a sedge- and rush-dominated community, often with weedy species intermixed. Savannah Sparrow and Sedge Wren remain abundant, Henslow's Sparrow increases to abundant, and LeConte's Sparrow may appear, while heath-loving species such as Lincoln's Sparrow, Red-winged Blackbird, and Common Yellowthroat decrease (Mossman and Sample 1990).

With the addition of scattered, stunted black spruce trees, the open bog community changes toward that of muskeg. To the degree that the spruces are stunted and dispersed, the open bog species remain, especially Savannah Sparrow, Song Sparrow, and Common Yellowthroat. Lincoln's Sparrow increases with the addition of conifers, and is more abundant than in any other Wisconsin habitat type. Wading birds decrease and raptors increase. Woodpeckers and flycatchers appear, and in the denser stands Yellow-bellied Flycatcher can be common. Several other forest species appear, which can be considered distinctly northern (e.g., Common Raven, Red-breasted Nuthatch, Winter Wren, Golden-crowned Kinglet, Hermit Thrush, Solitary Vireo, Nashville Warbler, Yellow-rumped Warbler, White-throated Sparrow) or even boreal (e.g., Three-toed Woodpecker, Yellow-bellied Flycatcher, Gray Jay, Boreal Chickadee, Cape May Warbler, Palm Warbler).

A comparison between muskeg and forested conifer bog avifaunas shows some predictable differences, the loss or marked reduction of open-country species such as Sedge Wren, LeConte's Sparrow, Lincoln's Sparrow, Red-winged Blackbird and Brewer's Blackbird; or the decrease in birds of semi-open habitats, such as Yellow Warbler, Song Sparrow, and Swamp Sparrow. The increase in tree height is evidently responsible for the appearance of species such as Northern Parula and Blackburnian Warbler, and an increase in Nashville Warbler. Mourning War-

bler and Golden-winged Warbler respond to the increased height and importance of hardwood shrubs, which results from comparatively less acidic conditions in forested stands. Perhaps most instructive is the relative decrease in boreal species and an increase in those birds characteristic of the mixed coniferous-hardwood biome that separates the more northerly boreal forest biome from the more southerly hardwood forest biome in eastern North America. Decreasing boreal species include Cape May Warbler, Palm Warbler, Yellow-bellied Flycatcher, and Boreal Chickadee. Increasing "coniferous-hardwood" species are many, and include Purple Finch, Veery, Swainson's Thrush, Solitary Vireo, and Blackburnian Warbler, Nashville Warbler, Northern Parula, and Black-throated Green Warbler. The increase in Ruby-crowned Kinglet indicated in Table 1 may be anomalous, for this species occurs in both muskeg and forested conifer bog in Wisconsin, usually in very acidic sites, among fairly dense black spruce at least 5m tall. Spruce Grouse is a boreal species that occurs primarily in the larger, wilder, forested conifer bogs, perhaps because of its susceptibility to hunting pressure, as well as a need for extensive habitat (Howe et al. 1992).

Figure 1 illustrates the relative abundance patterns of some representative species between open bog, muskeg, and forested conifer bog habitats.

In comparison with these examples of relatively "pure" bog habitats, the many examples of small bog complexes usually have a more diverse avifauna, although they often lack species that may require extensive tracts of open bog, muskeg, or forested bog. Small lakes surrounded by concentric rings of different bog habitats (Table 1, column 4) often provide nesting and feeding habitat for species that require open water, especially Wood Duck, Mallard, Green-winged Teal, Ring-necked Duck, and Bald Eagle. Where there are thinly vegetated, floating peat mats among or at the edges of the open water, Black Terns and Killdeer may nest and feed. Common species of surrounding fen and open bog habitat include Common Yellowthroat, Song Sparrow, and Red-winged Blackbird. These 3 species are also often common in stunted spruce and tamarack, along with Yellow Warbler, Eastern Kingbird, and Cedar Waxwing. Characteristic muskeg species that are usually missing from these small sites include Lincoln's Sparrow and Palm Warbler. If conifer forest occurs, it often contains generalists such as Great Crested Flycatcher, Blue Jay, American Crow, Black-capped Chickadee, White-breasted Nuthatch, Veery, American Robin, Red-eyed Vireo, Chestnut-sided Warbler, Ovenbird, Scarlet Tanager, and Chipping Sparrow, many of which may have territories that "spill over" from adjacent upland forest. Black-throated Green and Blackburnian Warblers are encountered mostly when adjacent uplands contain mature forest. Brown-headed Cowbirds are especially frequent where adjacent uplands are unforested, as are Rufous-sided Towhee, American Robin and American Crow.

The larger bogs in this category, or those near extensive bogs, are more likely to have conifer forest with more northern species such as Golden-crowned Kinglet and Ruby-crowned Kinglet, White-throated Sparrow, Hermit Thrush, and Yellow-rumped

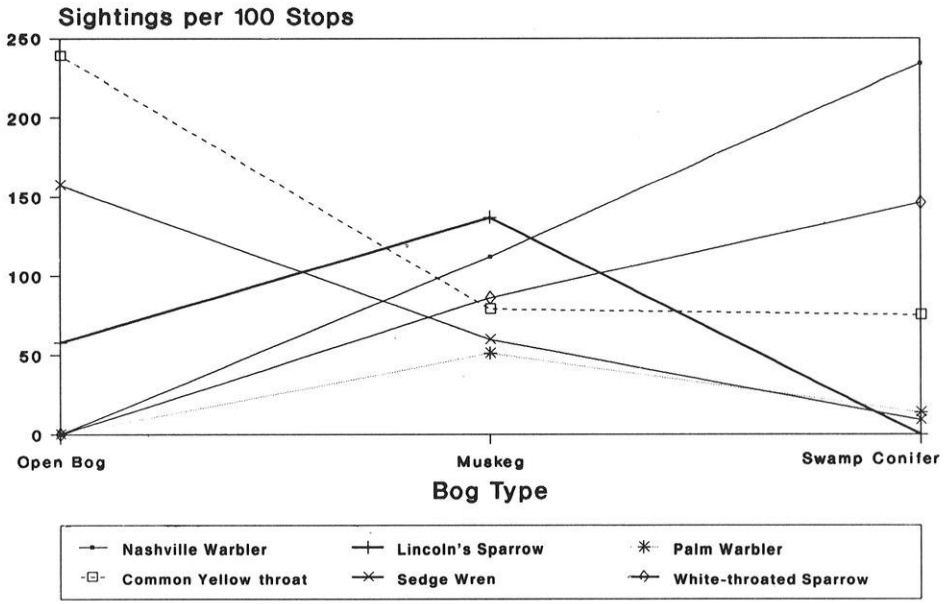

Figure 1. Mean relative frequencies of 6 breeding bird species in 3 bog community types

Warbler. Nashville Warbler is one characteristic species of forested bog that occurs frequently even in tracts as small as 10–20 acres.

Lake Superior peatlands have the most diverse avifauna of any described in this article, because of the range of habitats—pond, fen, open and forested bog, upland ridges, and Lake Superior bays—and their ecotones. Species such as Cape May Warbler, Wilson's Warbler, Bay-breasted Warbler and Tennessee Warbler whose primary range is much further north, are found in summer—- it is uncertain to what extent they breed in these sites, and to what extent they are "stragglers," whose northward migration has been impeded by Lake Superior.

The extensive influence and mixing of mineral rich Lake Superior waters behind baymouth bars has permitted the development of extensive fen and shrub communities. These usually contain common species such as Red-winged Blackbird, Common Yellow-throat, Swamp Sparrow, Yellow Warbler, and others not normally associated with bog: Common Grackle, Marsh Wren, Common Snipe, and rails.

Spruce-tamarack bog often grows in these sites, on older peats or behind an inner baymouth bar. The avifauna here resembles that of other spruce-tamarack bogs, but with a greater complement of boreal species. Although they are rare and sporadic, they provide an interesting component to diversity. Two species that have been found with surprising regularity are Bay-breasted Warbler and Wilson's Warbler. They may be breeding here. Wilson's Warbler has been found breeding in the Apostle Islands (Temple and Harris 1985) and in the Upper

Peninsula (Brewer et al. 1991) in damp, shrubby, thickets with boreal forest elements such as sphagnum, spruce, and heath—similar to its habitat in Wisconsin's Lake Superior bogs.

In eastern Canada, Erskine (1977) found that open bogs were characterized by Palm Warbler, Common Yellowthroat, Savannah Sparrow and Lincoln's Sparrow—species that are also common to abundant in similar Wisconsin sites. In areas with taller scattered spruces he found the following species appearing: Hermit Thrush, Yellow-rumped Warbler, Rusty Blackbird, Dark-eyed Junco, and White-throated Sparrow. In "bog forest" of tamarack and black spruce the species most frequently detected included Cedar Waxwing, Red-eyed Vireo, Tennessee Warbler, Nashville Warbler, and Yellow -rumped Warbler, Common Yellowthroat, Dark-eyed Junco, Chipping Sparrow and White-throated Sparrow.

How do these correspond with our forested bog bird communities farther south, in Wisconsin? Some differences are clear: Rusty Blackbird apparently nested in Wisconsin spruce bogs as recently as the 1960s, and formerly more frequently—but currently it is rare and probably breeds very rarely if ever (Robbins 1992); Tennessee Warbler evidently nests rarely in Wisconsin (Robbins 1992), but occurs in bogs only sporadically, primarily in the Lake Superior bog complexes; in Wisconsin, Dark-eyed Juncos are found only rarely in bogs, but more frequently in cedar swamps and some upland sites. Otherwise, the lists of common breeding-bird species are similar, although several species relative abundances differ between the 2 regions, with Wisconsin having relatively greater numbers of the more southerly-distributed species. For example, Nashville Warbler and Veery—species primarily of the coniferous-hardwood forest biome—are more ubiquitous in Wisconsin bogs. An exception is Red-eyed Vireo, which is common in Wisconsin bogs only where lowland or upland hardwoods are substantially intermixed. As noted above, our most nearly boreal bird communities occur in the most acidic bogs, dominated by heath and/or black spruce, especially when these are extensive.

The breeding-bird community of Wisconsin cedar swamps is dominated by Nashville Warbler, Winter Wren, Black-throated Green Warbler, and Ovenbird. Other species that are less abundant, but which are nonetheless characteristic of this community type, are Yellow-bellied Flycatcher, Red-breasted Nuthatch, Golden-crowned Kinglet, Veery, Hermit Thrush, Northern Parula Warbler, Yellow-rumped Warbler, Blackburnian Warbler, Black-and-White Warbler, Canada Warbler, White-throated Sparrow, and Purple Finch. The presence of hemlocks generally encourages Blackburnian Warbler and Black-throated Green Warbler, Solitary Vireo, Swainson's Thrush, and Golden-crowned Kinglet. An admixture of hardwood trees and especially shrubs tends to favor Canada Warbler, Veery, and perhaps Purple Finch and junco. In areas with pools and the exposed roots of tipped trees, Northern Waterthrushes often reside. Lush sphagnum favors Yellow-bellied Flycatcher, and tamarack, spruce, and fir favor Nashville Warbler. A substantial fir canopy may produce a Cape May Warbler. Winter Wren, and perhaps Black-and-white

Warbler, are more abundant in this Wisconsin community type than any other.

Not surprisingly, the breeding-bird community of northern hardwood swamps differs considerably from those of all other northern bogs and swamps, for it mainly comprises species that prefer hardwood canopy and wet, shrubby areas. The most common species are Red-eyed Vireo and Veery followed in descending order of relative abundance by Great-crested Flycatcher, Ovenbird, Common Yellowthroat, American Redstart, Song Sparrow, Black-and-White Warbler, and Northern Waterthrush. Canada Warbler is also frequently encountered, but not in such high numbers as in cedar swamps. Winter Wrens breed in northern hardwoods swamps, especially when some yellow birch and either cedar or hemlock are present. All these bird species occur more commonly in other habitat types, except Northern Waterthrush and perhaps Veery. Several other species have greater relative abundance here than in any of the other northern swamp or bog communities, especially those that prefer hardwood shrubs and saplings, e.g., Mourning Warbler, Gray Catbird, and Indigo Bunting. Cerulean Warbler is not a usual member of this forest community, but it does apparently breed in the St. Croix Ash Swamp, perhaps because this site is within an extensive, hardwood forest corridor along the St. Croix River.

Certainly, northern swamps and bogs are among the most beautiful and fascinating, but least familiar, of Wisconsin's plant-animal communities. Yet many of the best and most extensive examples are really not so inaccessible as they might seem—for birdwatchers willing to get their feet wet. They hold unique rewards for the visitor in search of rare boreal birds or unusual plants, or for anyone wanting to understand ecological relationships or simply experience another of Wisconsin's diverse natural environments. The following sites, and others described in *Wisconsin's Favorite Bird Haunts,* are worth a visit in any case.

Description of Sites

The following 7 sites exemplify northern Wisconsin's swamp and bog communities. Some, like the Upper Brule, also include a mixture of other habitats, which is reflected in larger bird lists. Data are presented in Table 3.

SCOTT LAKE–SHELP LAKE NATURAL AREA

Size—272 acres within the Shelp Lake Unit of the Headwaters Wilderness area, Nicolet National Forest.

Location—Western Forest County.

Access—From Three Lakes, take Hwy 32 east and south 5 miles, then east on Forest Road 2183 (Scott Lake Road) 3.5 miles to a small parking area. Follow the hiking trail and boardwalk, as directed by the sign.

Description—Scott and Shelp lakes are scenic wilderness lakes with remnant stands of pine and hemlock on the west shore of Shelp Lake and between the two lakes. The upland forest is dominated by hemlock, with sugar maple (*Acer saccharum*), basswood

Table 3. Maximum number of individuals recorded on breeding-bird surveys at 7 bog and swamp natural areas in Wisconsin.

Species	Scott*-Shelp Lake	Bark Bay*	Kissick Bog*	Upper Brule*	Gobler Lake*	Miscauno*	St. Croix Ash Swamp*
Common Loon		3			2		
Pied-billed Grebe		1					
American Bittern	1						
Least Bittern		1					
Great Blue Heron	3	3					1
Green-backed Heron		1		1			
Canada Goose		4					
Mallard		6	1	2			
Blue-winged Teal		4					
Ring-necked Duck			4				
Hooded Merganser			1				
Osprey	1						
Bald Eagle	1	1					
Red-shouldered Hawk							1
Broad-winged Hawk			1			1	
Spruce Grouse			2				
Ruffed Grouse		1		1		2	
Yellow Rail		1					
Virginia Rail		2					
Sora		1					
American Coot		1					
Sandhill Crane		2					
Killdeer		3					
Common Snipe		7					
American Woodcock		1	3	3			
Ring-billed Gull		2					
Herring Gull		6					
Black-billed Cuckoo		5	1	3			1
Yellow-billed Cuckoo		5	1	3			1
Great Horned Owl		1					
Barred Owl						2	1
Long-eared Owl						1	
Chimney Swift			1				
Belted Kingfisher		2	1	1			
Red-bellied Woodpecker							2
Yellow-bellied Sapsucker							2
Downy Woodpecker		2	2	1			1
Hairy Woodpecker				1			1
Black-backed Woodpecker			2				
Northern Flicker	1	4		2			1
Pileated Woodpecker		3		2			1
Olive-sided Flycatcher	1			2			
Eastern Wood-Pewee		3		1		3	3
Yellow-bellied Flycatcher	1		2	7	1	3	
Alder Flycatcher		11		4			
Least Flycatcher		4					
Eastern Phoebe		4					
Great Crested Flycatcher	1	5	1	2	1	5	7
Eastern Kingbird	2	9	1		2		1
Purple Martin		3					
Tree Swallow		24	3	1			
Northern Rough-winged Swallow		6					
Bank Swallow		2					
Cliff Swallow		1					
Barn Swallow		2					
Gray Jay	1			2	1		

continued

Table 3. (*Continued*).

Species	Scott*-Shelp Lake	Bark Bay*	Kissick Bog*	Upper Brule*	Gobler Lake*	Miscauno*	St. Croix Ash Swamp*
Blue Jay		5	5	5	2	25	3
American Crow		16	2	1		4	1
Common Raven	1	4	1	2		9	
Black-capped Chickadee	2	3	7	3		42	3
Red-breasted Nuthatch	2	1		3	2		
White-breasted Nuthatch		1	2			7	4
Brown Creeper	1			5		4	2
Winter Wren				6	2	9	4
Sedge Wren		34		2			
Marsh Wren		1					
Golden-crowned Kinglet				3		25	
Eastern Bluebird		2					
Veery		8	13	8		17	8
Swainson's Thrush			4			2	
Hermit Thrush	2	3	4		3	2	1
Wood Thrush			4			1	
American Robin	1	5	2	26	2	15	1
Gray Catbird				1			
Brown Thrasher			1	1			
Cedar Waxwing		2	4	4	2		8
Solitary Vireo		3	2	1		2	
Yellow-throated Vireo			1				
Warbling Vireo		1					
Red-eyed Vireo	2	11	7	5	1	2	14
Golden-winged Warbler		1		1			
Nashville Warbler	3	20	29	15	1	18	4
Northern Parula		1	11	12			
Yellow Warbler		17	1			3	
Chestnut-sided Warbler	3	6	3	1		3	1
Magnolia Warbler		1		1			
Cape May Warbler			8			3	
Yellow-rumped Warbler	3	1	3	2	2	17	
Black-throated Green Warbler		1		2		22	
Blackburnian Warbler	1			1		8	
Pine Warbler		4		3			
Palm Warbler		1			4		
Cerulean Warbler							3
Black-and-White Warbler	5	5	4	3		6	1
American Redstart		12				7	
Ovenbird	2	7	15	3	1	17	7
Northern Waterthrush		2		3			
Connecticut Warbler				1	3		
Mourning Warbler	2	2	2	1		4	
Common Yellowthroat	3	22	8	7	1	2	4
Canada Warbler				3	1	2	3
Scarlet Tanager		2	2	2		6	6
Rose-breasted Grosbeak		2		7		3	1
Indigo Bunting		1					3
Chipping Sparrow	1	1	3		1		
Le Conte's Sparrow		5					
Song Sparrow	2	23	6	5	24		1
Lincoln's Sparrow		1			19		
Swamp Sparrow	2	37		4			
White-throated Sparrow	5	3	17	8	4		1
Bobolink		3					
Red-winged Blackbird	4	202			3		
Brewer's Blackbird		2			5		
Common Grackle		3					

continued

Table 3. (*Continued*).

Species	Scott*-Shelp Lake	Bark Bay*	Kissick Bog*	Upper Brule*	Gobler Lake*	Miscauno*	St. Croix Ash Swamp*
Brown-headed Cowbird		7		1	1		
Northern Oriole		1					
Purple Finch	1	2	5	1		12	
White-winged Crossbill			1	1			
American Goldfinch		4	2	1			1
Evening Grosbeak		1		2			

* = Number years surveyed: Scott-Shelp Lake-5; Bark Bay-8; Kissick Bay-4; Upper Brule-10; Gobler Lake-4; Miscauno-4; St. Croix Ash Swamp-3.

(*Tilia americana*), yellow birch, white spruce (*Picea glauca*), and white pine; and sparse, patchy shrub and ground-layers. The lakes are less than 5 feet deep, with light brown acid water and muck bottoms. Water lilies are the dominant aquatic plants. Around Shelp Lake is a floating bog mat with acid-loving plants. The remainder of the site is a mixture of conifer swamp and forested conifer bog.

Birds—Data in Table 3 are from counts restricted to the area immediately adjacent to Shelp Lake. Across the road, in the old-growth hemlock stand, a different set of species can be found.

Many of the bird species are characteristic of spruce-tamarack forest and open bog encircling a lake. Nashville Warbler, Common Yellowthroat, Red-winged Blackbird, Black-capped Chickadee, Ovenbird, and White-throated Sparrow are common. Also found regularly are less characteristic species such as Gray Jay, Bald Eagle, Osprey, Chestnut-sided Warbler, Black-and-White Warbler, and Olive-sided Flycatcher. Because of this site's proximity to other lowland conifer communities, other birds from Table 1 may occur here occasionally.

BARK BAY SLOUGH

Size—470 state-owned acres within a 1170-acre lake-fen-bog complex.

Location—Northern Bayfield County.

Access—From Herbster, go northeast on Hwy 13 for 2 miles, then north and west on Bark Bay Road, 0.5 mile to a boat landing. The best access to the sandspit and bogs is by boat or canoe.

Description—The natural area consists of portions of a large bog and fen that was once a part of Bark Bay but is now separated from the open lake by two well-developed beach ridges. Between the baymouth bar and the old beach line, about 0.25 mile inland, are an estuary of open water and a floating fen mat. A small unnamed stream drains the northwest portion of the bog, providing an inlet and outlet to the baymouth bar lake before it joins the Bark River at the east end of the bog and fen. A variety of plant communities and natural features is included within the area. The baymouth bar beach is 1 mile long and 50 to 150

Figure 2. Pond, ridge, fen, and open bog along Lake Superior. Big Bay Natural Area, Bayfield County. (*photo by Cliff Germain*)

feet wide. It rises only a few feet above the fluctuating water level of Lake Superior. Portions of the baymouth bar have a plant cover of blueberry, bearberry (*Arctostaphylos uva-ursi*), alder, sweet gale (*Myrica gale*), and beach grasses. Flora of several subtypes occupy the slough periphery. Most extensive is the floating fen created by the interwoven rhizomes of many sedges and acid-loving plants. The baymouth bar lake is a hard water drainage lake with a maximum depth of 8 feet. There is a good pike-panfish fishery.

Birds—The effects of Lake Superior waters and the resultant development of extensive fen vegetation is reflected by the avifauna. There is a significant component of fen and marsh species, such as Red-winged Blackbird, Sedge Wren, Swamp Sparrow, Common Yellowthroat, Yellow Warbler, Common Snipe, bitterns, herons, and rails. There is also an extensive shrub area, as evidenced by high numbers of Alder Flycatcher. The open lagoon is used by swallows, ducks, loon, and gulls. In recent years, rare northern sedge meadow birds such as Yellow Rail and Le Conte's Sparrow have been found in the fens that result from the mineral rich waters. Additional diversity is due to the development of a forested conifer bog with its typical species. Baymouth bars vegetated with pines and hardwoods harbor additional birds including Pine Warbler, American Redstart, Red-eyed Vireo, and Chestnut-sided Warbler. Finally, the diverse

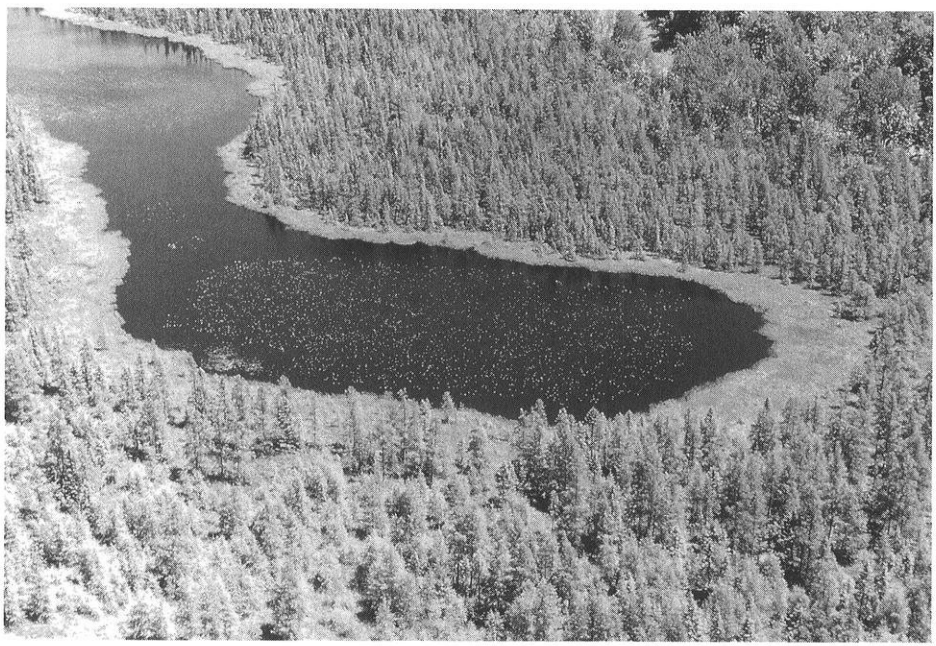

Figure 3. Concentric bands of open bog, forested bog, and forested upland. Dory's Bog, Washburn County. (*photo by R. Moran*)

spectrum of species is completed by the occasional boreal warbler—such as the Bay-breasted—which may or may not be nesting.

KISSICK ALKALINE BOG LAKE

Size—The 135-acre State Natural Area lies within the 940-acre Kissick Swamp Wildlife Area.

Location—Western Sawyer County.

Access—From the intersection of Hwys 77 and 27, and County Hill Road in Hayward, go west on County Hill Road 2.5 miles to the south edge of the natural area. An access road leads north 0.25 miles to a landing on the west shore of Kissick Lake.

Description—This State Natural Area contains a wilderness bog lake with an extensive open bog/fen and northern wet forest. An apparent pH gradient exists in the bog mat, varying from a typical acid shrub bog on the south edge to a more alkaline and sedge-dominated fen at the north edge. Water seems to flow north but no channel exists. This pH gradient fosters plant diversity: more than 100 vascular plant species, including 14 orchids. The 10-acre lake has a maximum depth of 4 feet. The fishery consists of minnow species. Resident amphibians are leopard and green frogs and American toad.

Birds—This is the bog studied a half century ago by Francis Zirrer. The

Figure 4. Forested bog. Upper Brule River Natural Area, Douglas County. (*DNR photo*)

bog's incredible diversity, which amazed Zirrer (Matteson 1990) is still evident today. It is due to the alkaline successional pathway of lakeside fen, through extensive spruce tamarack bog to white cedar swamp. This habitat diversity and the site's extensive acreage have produced one of the most diverse bog avifaunas in the state.

Common species are almost exactly the same as the composite for the forest conifer bog. Nashville Warbler, White-throated Sparrow, Ovenbird, Veery, and Northern Parula are the most abundant species. Uncommon Wisconsin species such as Black-backed Woodpecker, Swainson's Thrush, Cape May Warbler, and Spruce Grouse are surprisingly easy to encounter. The lake itself adds to the overall diversity by providing habitat for many water-related birds.

UPPER BRULE RIVER

Size—182 acres of State Natural Area along the Bois Brule River and within the Brule River State Forest.

Location—Douglas County.

Access—From the intersection of Hwys A and P north of Solon Springs, go north 2.6 miles on Hwy P, then east on Stone Chimney Road 1.9 miles to a parking area. Take an angler's access to the southern boundary.

Description—The Upper Bois-Brule River features a segment of the outstanding cold water Bois Brule River and its associated alder thickets, swamp conifer, and swamp hardwoods. This upper reach of the Brule has an entirely different character than

Figure 5. Open bog and forested bog. Big Bay Natural Area, Bayfield County. (*photo by Bill Tans*)

the portion below Stone's Bridge. Here the river meanders sluggishly through a bog with a wide alder zone. North and west of the alders is an area of conifer swamp dominated by white cedar, balsam fir, and spruce; south and east is a hardwood swamp dominated by ash. Bobcats are sometimes seen and often heard.

Birds—The avifauna of this forest conifer bog reflects the high diversity associated with stream corridors, streamside communities, and upland ecotone (Gates and Giffen 1991). Sixteen warbler species have been recorded. The most common are Nashville Warbler, Northern Parula, Common Yellowthroat, Pine Warbler, Black-and-White Warbler, Ovenbird, Northern Waterthrush and Canada Warbler. Other common nesters are Yellow-bellied Flycatcher, Alder Flycatcher, Blue Jay, Brown Creeper, Winter Wren, Veery, American Robin, Rose-breasted Grosbeak, and White-throated Sparrow. Regular, but decidedly uncommon nesting species are Gray Jay, Olive-sided Flycatcher, Golden-crowned Kinglet, Golden-winged Warbler, Magnolia Warbler, Connecticut Warbler, and White-winged Crossbill.

GOBLER LAKE

Size—470 acres of State Natural Area within a 1500-acre muskeg owned by Oneida County.

Location—Southwest Oneida County.

Figure 6. White cedar reproduction within herbivore exclosure, Miscauno Cedar Swamp Natural Area, Marinette County. (*photo by G. Birch*)

Access—From the intersection of Hwys Y and 8 in Bradley, go north and west on Hwy Y, 4.5 miles to a 90° corner, then west on Flowage Road 1 mile, and north on Old 8 Drive 0.9 mile. Then take Kelly Lane north and west 5.4 miles to Burrows Lake Road, then east 0.3 mile to the southwest corner of the site.

Description—Gobler Lake is a 20-acre, muck-bottomed bog lake with slightly acidic water of moderate transparency and a maximum depth of 8 feet. Surrounding the lake is an open bog muskeg, dominated by sphagnum and sedges with scattered stunted black spruce and white pine. The muskeg contains dwarf mistletoe (a parasite on black spruce), several ericaceous shrubs, pitcher plant, sundews, sedges, three-way sedge (*Dulichium arundinaceum*), beak rushes, and cotton grasses. To the south and west is an esker wooded with white pine. The wild character is compromised only by the road, which follows the esker to the south of the lake.

Birds—Gobler Lake and its bird life are fairly representative of a large black spruce muskeg. Because most of the bird surveys have concentrated around the lake, the species associated with the lake are represented in the count summary more so than those found in the 1500 acres of black spruce muskeg.

Despite this bias, the summary gives a sense of muskeg bird life. Lincoln's Sparrow, Song Sparrow, Palm Warbler, Hermit Thrush and White-

Figure 7. Open bog, grading into muskeg. Gobler Lake Natural Area, Oneida County. (*photo by Bob Read*).

throated Sparrow are common. Brewer's Blackbirds have shown an affinity for this site. Further investigation may show high densities of Nashville Warbler, Yellow-rumped Warbler, Connecticut Warbler, Winter Wren, Gray Jay, and Canada Warbler. Boreal Chickadee has been observed in summer and may prove to be a common nester.

MISCAUNO CEDAR SWAMP

Size—555 acres.

Location—Northern Marinette County.

Access—From the intersection of Hwys 141 and Z, 16 miles north of Wausaukee, go east on Hwy Z 1.5 miles to access right-of-way, then south 0.25 mile to the west end of the site.

Description—Miscauno Cedar Swamp is a northern wet-mesic conifer forest of white cedar, balsam fir, and black spruce at the headwaters of the south branch of Miscauno Creek. Timber varies from nearly pure stands of pole-sized white cedar to mixtures of white cedar, balsam fir, and black spruce with some black ash and elm along the stream. Tamarack snags indicate a former forest of this species. The groundlayer is rich in small orchid species along with one-flowered pyrola (*Moneses uniflora*), bunchberry, starflower, bluebead lily (*Clintonia borealis*), gaywings (*Polygala paucifolia*), Canada mayflower, and several fern species. In the numerous headwater

Figure 8. Heath of open bog mat beside open water, with muskeg and wooded island in background. Gobler Lake Natural Area, Oneida County. (*photo by Bill Tans*)

springs is a rich flora of mosses and lichens.

Birds—This cedar swamp was chosen as a example because of its large size and accessibility. There are many other Wisconsin cedar swamps with older trees; however, they are mostly small in acreage or on private land. Miscauno offers a look into a fairly typical white cedar swamp avifauna. Common white cedar swamp birds found at Miscauno are Black-capped Chickadee, Golden-crowned Kinglet, Black-throated Green Warbler, Nashville Warbler, Veery, Blue Jay, Ovenbird, and Yellow-rumped Warbler. Several species uncommonly found in small cedar swamps have been found regularly at Miscauno: Long-eared Owl, Swainson's Thrush, Wood Thrush, Cape May Warbler and Canada Warbler.

ST. CROIX ASH SWAMP

Size

254 acres of swamp hardwoods within Governor Knowles State Forest.

Location—Southwest Burnett County.

Access—From the intersection of Highways 48 and 70 in Grantsburg, go west 4 miles on Hwy 70, then south on River Road 2.3 miles, then west and south on Fish Lake Road 2.4 miles to an unmarked parking area at the southwest corner of the site.

Description—St. Croix Ash Swamp parallels the St. Croix River and features a range of forest types from

Figure 9. Northern hardwood swamp at Spider Lake Ash Swamp, Ashland County. (*photo by Eric Epstein*)

mesic uplands adjacent to the St. Croix River, through extensive low swamp, to droughty uplands on the sandy plain above the river valley. The hardwood swamp is composed of basswood, black ash, American elm (*Ulmus americana*), yellow birch, white oak (*Quercus alba*), red maple, and scattered white cedar, balsam fir, and white pine. On the forest floor small pockets of water lie between mossy hummocks. The side of the river valley is steep and rises nearly 100 feet above the swamp. Small spring-fed streams and seepages have eroded small pockets and tributary valleys in the wooded river valley wall, providing diverse microhabitats. The flat sandy uplands are wooded with young oaks. The primary soils are Omega sand, Cathro muck, Rifle mucky peat, and Emmett loamy sand.

Birds—This site contains all the common ash swamp birds such as Red-eyed Vireo, Ovenbird, Veery, Scarlet Tanager, Great Crested Flycatcher, White-breasted Nuthatch, Brown Creeper, Canada Warbler and Common Yellowthroat. Apparently, because it is within an extensive, north-south forested river corridor, it has souther species such as: Red-shouldered Hawk, Cerulean Warbler, Red-bellied Woodpecker, and Yellow-billed Cuckoo.

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Bald Eagle *by Brian T. Kuether*

McKay of McKay's Bunting: a Native of Appleton, Wisconsin

The career of naturalist Charles Leslie McKay, a native of Appleton, is documented.

by Barbara and Richard Mearns

From the summer of 1881 until the early spring of 1883, Charles Leslie McKay sent natural history collections from Alaska to the Smithsonian Institution in Washington D.C. His base was Fort Alexander, now Nushagak, on the north side of Bristol Bay, where he served in the United States Signal Corps. Since the keeping of meteorological records was only a part-time occupation, signal officers of the more remote stations were selected by Professor Spencer Fullerton Baird (1823–1887) the Secretary of the Smithsonian Institution, who chose young men with a good knowledge of natural history and the ability to collect and prepare specimens. From McKay, Baird received 340 bird specimens, 23 species of mammals and 123 species of plants, as well as fishes, minerals and native artefacts. Among the birds were the skins of an undescribed bunting from Nushagak: an adult female shot on 16 November and an adult male taken on 10 December 1882.

In 1884, in the *Proceedings of the U.S. National Museum,* Robert Ridgway published the original description of this new species, calling it *Plectrophenax hyperboreus,* McKay's Snow Bunting—now McKay's Bunting. Ridgway concluded his paper by noting that "The vernacular name of this new species is bestowed in memory of Mr. Charles L. McKay, who sacrificed his life in the prosecution of natural history investigations in Alaska, and in whose collections the new species was first noticed." McKay had drowned on 19th April 1883 while crossing Nushagak Bay in a native one-man canoe during a storm.

Until recently, McKay remained an obscure collector, associated only with Alaska and the Smithsonian Institution; his date and place of birth and his activities prior to his service with the Signal Corps, were unknown to biohistorians. While researching *Audubon to Xantus, The Lives of Those Commemorated in North American Bird Names* (Mearns and Mearns 1992) we endeavoured to learn something about McKay's origins. Our first attempts proved to be frustrating; the National Archives reported that they could not trace McKay's service record and Alas-

kan sources only provided information about his travels there. However, after a second enquiry to the National Archives we received a photocopy of McKay's entry in the *Descriptive Book of the Signal Corps 1860–1889* which gave the following details: age 25 years 11 months; height 5 feet 11½ inches; complexion fair; eyes grey; hair brown; enlistment 28 March 1881, Washington D.C.; term 5 years; place of birth Appleton, Wisconsin.

Now armed with McKay's place of birth, and hoping to obtain an obituary, we wrote to Milwaukee Public Library who were unable to help us, but they kindly sent our letter on to Appleton Public Library. Barbara J. Kelly, Reference Services Supervisor, searched the *Appleton Post* but did not find an obituary. Nor could she find any mention of McKay in the local histories in their collection. However, she found mention of McKay in an article entitled "David Starr Jordan in Wisconsin" in the *Wisconsin Magazine of History* (Kellogg 1933–34). During 1873–1874 Jordan (1851–1931) was Principal of the Appleton Collegiate Institute, where he taught science and modern languages. Kellogg mentioned that McKay was one of Jordan's students and was the son of Scottish emigrants who came to America around 1850 and settled in the country near Appleton.

Jordan proved to be the key we needed to unlock the story of McKay's early life. In his autobiography, *The Days of a Man* (Jordan 1922) Jordan mentioned that his pupil had developed "real scientific ability" and had followed him to Indiana University. Enquiries at the university produced a photograph of McKay and a four-page obituary from the *Indiana Student,* written by Jordan. It began:

> Ten years ago, the writer had charge of the "Appleton Collegiate Institute," in the city of Appleton, Wisconsin. Among my pupils were three brothers, in whom I took much interest. They were sons of a Scotch farmer, living three miles from the city, in a farmhouse near the beautiful Lake Butte des Morts. They used to rise very early in the morning, feed the horses, cattle and sheep, milk the cows and attend to the thousand little duties known to farmboys as "the chores," and after this, they used to walk three miles through the snows of the North Wisconsin winter to take their places in classes with the city boys, who had no other duties than to eat, sleep

and dress themselves, before going to school.

One of these three boys in particular, Charles McKay, showed a remarkable aptitude in his studies, especially in German and in Zoology.

Before the end of the year, he had risen to the front rank in literary studies, and had moreover learned the names and ways of all the birds and most of the fishes along the Fox River. His life, hitherto, had been confined entirely to the range of the farm and the fireside, not a bad range however for a boy of eighteen, if the fireside is presided over by a wise mother. He had never been out of the county and had never seen any other city than Appleton.

I remember well his first trip on the cars, when I took him with me on an excursion in search of birds and fishes to the Suamico River in the north pine woods of Wisconsin. We found our first "new species" on that occasion, and otherwise had a most enjoyable time.

His natural woodcraft and his liking for all out-door things, seemed to him, as to me, to point out for him the career of a naturalist, and now a naturalist he resolved to be.

McKay left the Appleton Collegiate Institute in June 1874 when the school closed down, just three years after its foundation. He carried on with farmwork for a couple of years, then entered the Natural History Department at Cornell University, at Ithaca. He continued his studies at Butler University, Indianapolis, and at Indiana University (at both of which he was again taught by Jordan), graduating from the latter as a Bachelor of Science. During the early months of 1881 he worked as an assistant with the U.S. Fish Commission in Washington D.C., before signing up with the Signal Corps in March; in June he left for San Francisco and from there embarked immediately for Alaska, presumably arriving at Nushagak some time during the summer. McKay's obituary gives 21 April 1855 as his date of birth and so we now know that he died just two days before his twenty-eighth birthday.

It may be that descendants of McKay's brothers still live in Wisconsin and that letters from Alaska are still in the family's possession. We would be delighted to hear from anyone who can tell us more about C. L. McKay; it would be particularly interesting, for us, to know which part of Scotland his parents came from.

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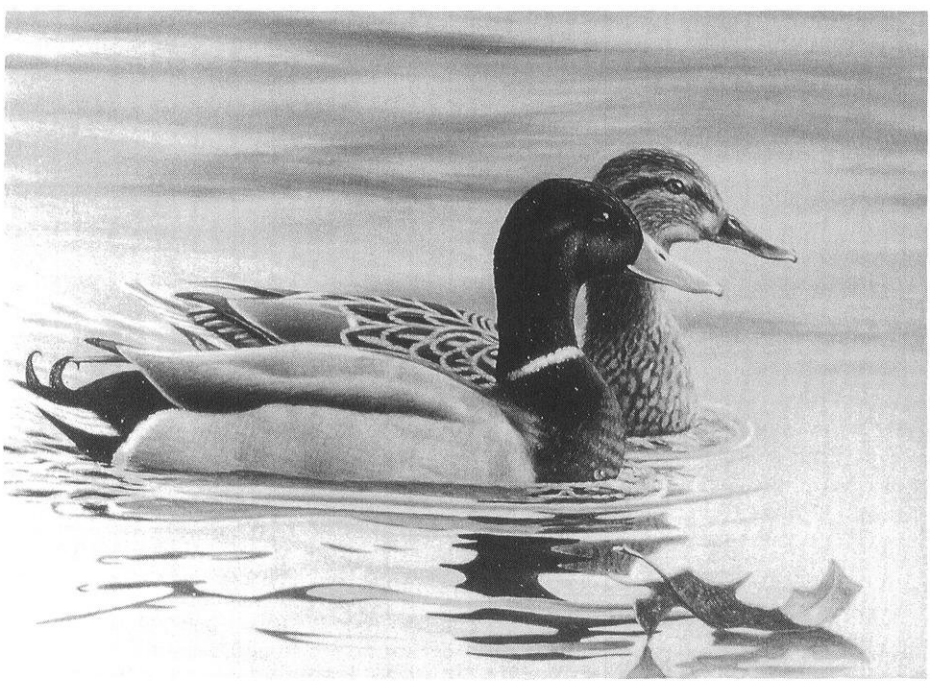

Mallards *by Brian T. Kuether*

Breeding Records for Northern Saw-Whet Owl and White-Winged Crossbill in Southeastern Wisconsin

Breeding records, historical and contemporary, for Northern Saw-Whet Owl and White-winged Crossbill in Southeastern Wisconsin are documented

by John Bielefeldt and Robert N. Rosenfield

Both of the following records were obtained in conifer plantations in the Southern Unit of the Kettle Moraine State Forest (hereafter SU) near Eagle, Waukesha County.

On 15 May 1990, we found a dead Northern Saw-whet Owl (*Aegolius acadicus*) in juvenile plumage in a small white pine grove (T6N R17E S34). Most of the marginal wing coverts were still partly sheathed and the bird was presumably hatched locally. The specimen was deposited with SU headquarters at Eagle.

Previous breeding evidence for this owl in southeastern Wisconsin is slight. Hoy (1852) collected a juvenile near Racine in July 1852, perhaps the same Racine specimen cataloged as "July 1859" in the U.S. National Museum (Anon 1943 [= A. Wetmore, Scott 1979], Schorger 1944). Kumlien and Hollister (1951) stated that it certainly bred in Jefferson County in the mid 1800s. Follen's (1981) review of Wisconsin breeding records listed the Milwaukee Public Museum as authority for an "immature" in Milwaukee County on 25 July 1903. Mueller (1936) saw adults whose behavior suggested nesting in Waukesha County in June 1936. Follen (1981) also cited *Passenger Pigeon* 15:178 (1953) as reporting "4–5 eggs" in Milwaukee County on 11–27 July 1953, but the original reference records 2–6 birds of unspecified age (not eggs) on those dates. Robbins (1991) showed no summer records since 1960 for southeastern counties.

The fledgling we found was undecayed and its plumage was unmatted; it apparently died between 12 May (after an all-day rain) and 15 May. Assuming incubation and nestling periods of 27–28 and 33–34 days, respectively (Cannings 1987), we estimate that the clutch from which this bird hatched was initiated in early March.

Nesting phenology of the Northern Saw-whet Owl in Wisconsin is poorly

known. Four of the state's five reported nests with eggs were discovered 13–26 April (Follen 1981) but the fifth had eggs on 18 March and nestlings were near fledging age on 8 May in Wood County (Follen and Haug 1981), a chronology that suggests laying dates similar to those estimated for 1990 in Waukesha County. Nestlings as early as 19 April in Trempeleau County (Follen 1981) and 24 April in Marquette County (O. Gromme, *Passenger Pigeon* 29:44, 1967), or fledglings as early as 4 May (in 1980, W. Volkert pers. comm.) and 1 May (in 1981, T. Schultz and W. Volkert, *Passenger Pigeon* 29 44:33, 1982) in Fond du Lac County and 27 May in Sawyer County (Zirrer 1944), also indicate that eggs may sometimes be laid in March over a large part of the state. Early March egg dates have been reported at similar latitudes in Idaho (Marks et al. 1989) and British Columbia (Cannings 1987).

* * * * *

Robbins (1991:597–598) has described the White-winged Crossbill (*Loxia leucoptera*) as a rare summer resident in northern Wisconsin. Although commenting that it "undoubtedly . . . nests more frequently in the state," he listed only one confirmed case of breeding, in Oconto County on 6 April 1894. In 1993 we discovered the state's second reported nest in a 14 ha white spruce plantation in Waukesha County (T5N R17E S30), approximatley 300 km south of the "resident" range depicted in popular field guides (e.g., Peterson 1980).

A singing male crossbill in fully adult (after second year) plumage was noted in this plantation on 28 February. Both members of a pair were seen visiting a nest in a sapling spruce on 14 March, but we did not climb to the nest or linger nearby to determine stage of breeding because of low ambient temperature (−12° C). Returning in milder weather on 18 March, Bielefeldt found the female incubating four eggs. A male was present on 21 March (A. Moretti, pers. comm.) but the nest was empty with a fragment of one eggshell beneath the tree on 27 March, when no adults were seen.

The nest was well-concealed at the base of a whorl of branches about 1.5 m below the topmost spire of a 6 m spruce. The nest tree (11 cm in diameter) stood 2–5 m from its two nearest neighbors on the edge of a small grassy opening in the plantation.

White-winged Crossbills apparently initiate nesting at almost any season of the year in response to abundant seed production by conifers (usually spruce), which provide nearly the entire food supply of breeding birds and nestlings (Benkman 1990). Because of bill structure, they forage most efficiently on conifer cones with thin and relatively short scales (such as white spruce), especially if cones are beginning to open and shed seed (Benkman 1987).

Our 1993 nest record occurred in a similar context: a heavy (but ultra-local) cone crop in this 14 ha plantation, the SU's only sizable patch of white spruce. Cones were opening and seed littered the snow. Conifer plantations elsewhere in the SU (ca. 1200 ha) are dominated by stouter-coned white and red pines with meager amounts of Norway spruce; cone crops in the winter of 1992–93 were modest in the last two species and nil in white pine.

In the Red Crossbill (*L. curvirostra*),

opportunistic nesting in the SU (pers. obs.) and other areas beyond the "typical" breeding range (e.g., Bohlen 1978) often seems to be preceded by large local or regional incursions of autumn and winter birds. Such an incursion did not occur locally in 1992–93. No crossbills other than the nesting pair were detected in this plantation; no White-winged Crossbills and only one small flock of Red Crossbills were seen elsewhere in the SU during November through March. Another case of extralimital breeding of White-winged Crossbills in Utah (Smith 1978) was also associated with locally heavy crops of spruce cones in the absence of a regional crossbill incursion.

The extensive conifer plantations of the SU were established for forestry purposes but the two nesting records presented above exemplify the unanticipated value of these 20–50 year-old stands as bird habitat. We have recorded approximately 50 species of breeding birds in these plantations (Bielefeldt and Rosenfield in prep.) including not only conifer associates (or conifer obligates such as crossbills) but also species more typically ascribed to deciduous woodlands such as Acadian Flycatcher (*Empidonax virescens*) (Bielefeldt and Rosenfield 1992).

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SKETCHES

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TOUR TO THE LAKES,

OF THE CHARACTER AND CUSTOMS OF THE

CHIPPEWAY INDIANS,

AND OF INCIDENTS CONNECTED WITH

THE TREATY OF FOND DU LAC.

BY THOMAS L. McKENNEY,

OF THE INDIAN DEPARTMENT,

And joint Commissioner with his Excellency Gov. Cass, in negotiating the Treaty.

ALSO,

A Vocabulary

OF THE

ALGIC, OR CHIPPEWAY LANGUAGE,

FORMED IN PART, AND AS FAR AS IT GOES, UPON THE BASIS OF ONE FURNISHED BY THE HON. ALBERT GALLATIN.

"Thus fare the shiv'ring natives of the north,
And thus the rangers of the western world."..... *Cowper.*

ORNAMENTED WITH TWENTY-NINE ENGRAVINGS, OF LAKE SUPERIOR, AND OTHER SCENERY, INDIAN LIKENESSES, COSTUMES, &c.

ROSS & HAINES, Inc.

Title page from McKenney's (1827) *Sketches of a Tour.*

H. R. Schoolcraft and Natural History on the Western Frontier, Part 4: Indian Agency Years with Thomas McKenney

by Michael J. Mossman

The year was 1821, and James Monroe had begun his second term as president. The expanding Union acquired Missouri as the 24th state, and the Spanish territory known as Florida. John James Audubon was in southern Louisiana tutoring gentrified young women and pursuing his new ambition to paint all the birds of North America.

Henry Schoolcraft spent the first part of the year in Albany, New York, hurriedly writing and publishing his narrative of the 1820 expedition. On 3 July he arrived once again in Detroit, this time to accompany territorial Governor Cass on a tour through the young states of Indiana and Illinois, and to convene an Indian treaty at Chicago. They travelled by canoe with a crew of French-Canadians along the west shore of Lake Erie, up the Maumee River, down the Wabash to the Ohio, overland to St. Louis, then up the Mississippi and Illinois rivers to the vicinity of Chicago. His narrative, *Travels in the Central Portions of the Mississippi Valley* (1825), deals mostly with Indians, history, and geology, less so with pioneers, towns, and landscapes, and very little with flora or fauna. The following quotes are all from that text, beginning with an account along the Maumee of the explorers' curse, the mosquito:

> Of the numerous little inconveniences and the peculiar state of irritability caused by these voracious insects, and their disagreeable buzzing, it would be impossible to convey an adequate conception to one who has never passed a night in one of these dark and humid forests, surcharged with the ample mass of decomposing vegetation. We have often experienced this petty species of torment, particularly in our attempts to journalize the day's remarks: or when fatigue and hunger have made refreshment and quietude both necessary and grateful.

Schoolcraft was awakened one foggy morning by the "cheerful notes of the robin and gray linnet [?]", and near Fort Wayne he frequently observed Blue Jays, Pileated Woodpeckers, and Passenger Pigeons. On the portage to the Wabash, Schoolcraft and Cass approached an Indian village at dusk:

> We stood on an eminence in a prairie . . . Twilight in the wilderness is always impressive; and the tranquility and sense

of loneliness which this hour brings with it, is calculated to inspire a deep feeling of that immeasurable and humiliating distance, which separates man from his Maker. Left thus without the ordinary means of refreshment, nothing now remained but to pass a night in an Indian wigwam.

Although I had been much accustomed to the inconveniences incident to journeying in new and unsettled countries, and personally explored no inconsiderable portion of the Indian territories, it had never before become necessary to solicit the hospitality of the Indians for a night's lodging. . . . As there was no light within the lodge but that produced by a glimmering fire, we preferred sitting in the open air enjoying a moonlight view of the village—of the scattered grove of lofty oaks, beneath which it is situated, and of the broad sloping prairie in front—chequered with groupes of Indian horses at feed. Some of these horses were provided with bells, whose "drowsy tinkling" could be occasionally heard. A dark line of woods bounded the prospect in that direction, from whose recesses the loud and monotonous notes of the whipporwill (Caprimulgus Virginianus) "came soften'd from below."

The next day "our attention was frequently arrested by the great number of birds which appeared to enliven our otherwise solitary ride. Among these the mock-bird (Turdus Polyglottis) and passenger-pigeon served to remind us of Cisalleghanian latitudes."

On 11 July along the Wabash,

> Two or three species of the Unio [mussel] were this day collected. Frequently, the tall and lime-white sycamore, with its scanty foliage, appears upon the banks, and this tree, which is ever present upon the richest alluvions of the western country, occurs more plentifully as we proceed toward the south. The turkey, bald eagle, fish hawk [Osprey], and buzzard (Vultur Aura) [Turkey Vulture] often appear, to enliven this part of the river; and we observed several species of the duck.
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> As the time approached when we began to think of a suitable spot for encampment, we met several canoes of Indians, principally Pottowattomies, . . . out for the purpose of decoying deer by means of a torch-light placed in the bow of their canoes. The deer, who seek the river at night to allay thirst and eat their favorite moss, or to escape the insects which so greatly annoy them, are dazzled with the light, and keep their eyes attentively fixed upon it until it floats silently within shooting distance. This method is denominated fire-hunting, and, we are told, is practised with great success at this season of the year. The light which they employ is prepared from the wax separated from wild honey. This wax is poured in the hollow stem of the miegia macrosperma or cane [*Arundinaria gigantea*, obviously transported from the southern U.S.], through which a strip of cotton cloth has previously been drawn, to serve the purpose of a wick. Two or three of these canes placed together form a flambeau which emits a brilliant light.

On the 13th, in the "sandbars and islands . . . are found considerable numbers of turtle's eggs; which are sought with great avidity by the natives. The manner of hunting them is by sharpening a stick and searching in the sand or among the small pebble-stones. In one spot we discovered seventeen eggs of the round kind, and in another, six of an elongated form. These eggs are sometimes scratched up by the raven (Corvus Corax)."

Downriver from Terre Haute, he wrote:

> Among the forest growth, on the bottom lands, blackwalnut, hagberry, spice-

wood, and papaw are conspicuous; and the branches of these trees are often interlaced with the vine. Upon the prairies, oaks predominate; but the immediate margin of the river is skirted with an almost unvaried growth of cottonwood (Populus Angulata *Nuttal*) and willow.

We first saw the perroquet (Psittacus Carolinensis) [Carolina Parakeet] about Terre Haut; and this bird is thence frequently seen to enliven the landscape. In the course of the day we caught one of these showy birds, which had been pounced upon by a hawk. The flock from which it was struck happened that moment to be passing over us; and it fell into the water quite near. The wound it had received was very slight, and it soon recovered; and by its cries attracted great numbers of its kind to follow.

Approaching the Ohio, Schoolcraft and Cass came upon the Harmony commune—8 years old, neat and prosperous like no other frontier town they had ever seen, with several sections of cropland carved from the fertile wilderness. The community was abstaining from sex because "the society is not able to support the charge of raising children in its incipient state". When Schoolcraft noted that "the consequences of this austerity are unequivocally marked in the appearance of the females", he apparently only meant that none were pregnant. He and Cass viewed here a famous limestone slab marked with the fossil impressions of crinoids and echinoderms, and a convincing set of supposedly Paleozoic human footprints. Had he visited here a few years later, Schoolcraft would have certainly looked up Thomas and Lucy Say: he the brilliant, unassuming naturalist and father of American entomology and conchology, and she an accomplished naturalist, artist, and scientific illustrator. The couple lived here during 1826–34.

Schoolcraft crossed the sparsely populated prairies, savannas, and woodlands of southern Illinois by stagecoach.

[The first prairie] has some small clumps of oaks, or rather oases, which are all that the eye finds to rest upon in searching over the unvaried surface of ripened grass. . . . In passing over these prairies and witnessing the thousands of acres of native herbage which annually rises and falls, uneaten and uncut, the mind is insensibly carried back to that period when they were animated with herds of the deer, moose [this is doubtful], elk, and buffalo, or Illinois cow. It is but a few years since this last-mentioned animal was quite common on these plains; and there are many men living, still hale and active, who have chased herds of them over the now cultivated and improved parts of Kentucky. There is not now an animal of this species existing in a native state between the Ohio and the Mississippi, and before the lapse of many years it will only be known in the recesses of the Rocky Mountains and upon that immense desert-plain . . . extending along the eastern base of these snowy eminences. . . .

The eye soon becomes satiated with spreading fields of grass, bounded by interminable lines of distant woods. And there is a feeling of desolation connected with a journey over one of these unvaried plains, for which it may be difficult to assign a satisfactory cause. . . . The absence of animated nature, so remarkable as it is during the heats of noon, is undoubtedly one of the causes of this vacuity. We occasionally observe the bones of the bison and elk bleaching upon the sand, to remind us that these animals were once abundant. The red [white-tailed] deer is also rapidly diminishing, and is now seldom seen by the traveller along this track; and the smaller

quadrupeds generally confine themselves to the margins of the streams or the recesses of the forests. To these situations the existing species of birds also retire. The eagle and vulture, and other large species, who require animal food, either decrease with the game or follow them in their migrations; and the same observation may be applied to the wolf, panther, and other carnivorous animals once so numerous here. Could the pious Marquette or the intrepid LaSalle return to view these deserted plains, once teeming with the abundance and variety of animated nature, they would raise up their hands in astonishment at the surprising changes which a comparatively short period has effected, and the rapid destruction which has more particularly attended the race of the larger quadrupeds. It could scarcely have been anticipated that these immense herds of animals would so soon have been swept away before the irresistible tide of emigration, or that this tide itself would have passed over these admired and extolled prairies, to fix and expand itself beyond the Mississippi, without leaving greater evidences than we can perceive of its track. . . .

Although the scenery of this part of the Illinois presents no grand or strikingly diversified features, the agreeable and often sudden transition from forest to prairie, the profusion of flowering plants which beautify the surface of the latter, and even the slight changes in the colour and mineral characters of the soil, constantly tend to keep awake attention.

Schoolcraft recognized the importance of fire and large herbivores in maintaining the prairies, and further hypothesized that, in sandy areas, "the soil of these prairies has been destroyed by repeated fires in times past; as it is known the natives were in the habit of setting fire to them, for the convenience of hunting and other purposes." He thought the uncultivated tracts should now be planted to trees.

He crossed the wide alluvial prairie known as the American Bottom, with its many Indian mounds, and over the "stagnant and pestiferous channel of Cahokia creek" to the east bank of the Mississippi. Across the river stood lines of barges and steamboats, and St. Louis, "Gateway to the West": "We think it a prospect possessed of the noblest features, and exciting ideas of the extent of the Republic; the overbearing magnitude of the western country, and the grandeur and impetuosity of its streams, which fills the mind with pleasing anticipations of its future march to power and opulence, and physical and intellectual supremacy."

Schoolcraft paused at St. Louis, then spent 6 days revisiting the nearby Missouri lead-mining district. Meanwhile, the voyageurs had completed the arduous ascent of the Mississippi, from the mouth of the Ohio to St. Louis. "A Chippewa canoe was a novelty in this part of the Mississippi, and attracted some attention on their landing. Being asked if they did not find the navigation very difficult, *Ah, mon Dieu*, replied one of the canoemen, *C'est le diable*."

Schoolcraft visited with Missouri Governor William Clark, delighting in his stories of the Lewis and Clark expedition, and his natural history and Indian museum. He left on 3 August with the voyageurs, who had difficulty moving upstream while dodging floating timber and counteracting the eddies "in which the clear green of the Mississippi appeared to be struggling for mastery with the opaque and slimy Missouri." They stopped to meet Cass, who had travelled overland from St. Louis. "While detained here, one of

the canoemen killed a fowl of the gull kind, of the usual size, but having its head, neck, wings, and body covered with feathers of unspotted whiteness—a bird which is very common along this part of the Mississippi. We here found the black and red raspberry (rubus) abundant." Once again, we are left to wonder about Schoolcraft's observations: Was this merely an adult Herring Gull, an immature or winter-plumaged *Sterna*, or something more exotic? Did he mean that this "white gull" or gulls in general were common here?

They began ascending the Illinois River in a heavy fog on the 5th. It was lined with aquatics and floodplain hardwoods, and presented almost no current against their progress. "The aquatic plants which are now so plenteous will probably diminish when the river comes to be frequently navigated by large vessels, and its banks yield to cultivation and improvement. For notwithstanding the disadvantages which we have mentioned, the lands must settle. They are too fertile to be long neglected with our increasing population. . . ."

The next night:

> We . . . encamped on a moist shore among noxious weeds—the lowness of the banks and the wide margin of rushes and broad-leaved water plants rendering it difficult to approach the land, and after we had effected a landing, to find a spot sufficiently dry to spread our blankets on. This furnished an additional motive for abridging our stay as much as possible, and we embarked on the following morning as soon as the dawning day permitted our canoemen to descry the proper channel. . . . The spot selected was an open elevation, checkered with a few scattered oaks, and would have well repaid the inquietudes of the preceding night, had not the various insects which abound along these humid shores annoyed us so incessantly. Against this annoyance the common mosquito bar is not a complete protection; for there are numerous hard-shelled insects which will penetrate the foldings of a bed and spread themselves over all parts of the covering, so that it is not uncommon on first awaking in the morning to behold within very circumscribed limits a collection of these insects that would delight an entomologist.
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> About nine o'clock in the morning we came to a part of the river which was covered for several hundred yards with a scum or froth of the most intense green colour, and emitting a nauseous exhalation that was almost insupportable. We were compelled to pass through it. The fine green colour of this somewhat compacted scum [resembled] that of verdigris. . . . I directed one of the canoemen to collect a bottle of this mother miasmata for preservation, but its fermenting nature baffled repeated attempts to keep it corked. . . . While we were detained a few moments by this appearence, a deer was observed on shore, but we were not successful in the efforts made to kill him. This animal is still abundant in this very thinly settled part of the country, and may often be surprised along shore, early in the morning and in the evening.
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> The waters of [Lake Peoria] are beautifully clear, and as they are well stocked with fish, . . . they afford the natives a fine theatre for exercising their skill in throwing the spear; an exercise in which, standing on the gunwales of their canoe, they exhibit great dexterity, and show off their slender forms to much advantage. We witnessed this sport at several points in the lake as we passed along, and we frequently saw the fish darting through the pellucid water beneath us. Towards the upper part of the lake, its shores are commonly lined with rushes, and we collected here a number of uniones [mussels] of a pretty large size.

As darkness approached, a mist began to rise upon the water, and we soon found ourselves enveloped by so dense a vapour that it became impossible to discern the proper course. After being exposed on the lake for several hours in this state of uncertainty, we made the western shore at a late hour at night. . . .

The country lying between Fort Clark [Peoria] and Chicago presents to the eye so pleasing and beautiful a succession of forest and prairie, so handsomely diversified in its surface, and in general so finely watered and so delightfully elevated, that scarcely any thing need be stated in abatement of its superlative beauty and exuberant fertility. . . .

The principle objects of culture are Indian corn and potatoes. The inhabitants do not appear to be sensible to the advantages of gardens. Pasturage for cattle is spontaneous, and makes the articles beef and pork comparatively cheap. The woods in many places afford an abundance of wild honey. . . . Of game and fish, we should judge from a hasty visit, there is no scarcity, and some variety. The Virginia deer is common to the forests and prairies of this stream in its entire length; and it is not uncommon on approaching a habitation to see a haunch of venison suspended against the side of the house or hanging upon a contiguous tree. We found the duck [?] and mallard, black duck, and brant [?!] in great numbers upon all parts of this stream. It is also well stored with the cat and buffalo fish, and the gar, besides some other species which are more esteemed. The first-mentioned species are not generally eaten in the summer months. But when taken among other fish, are sometimes given as food to hogs, who are known to devour them. This latter observation corresponds with one still more remarkable, that has been made at Michilimackinac and at the Sault of St. Mary, where, during certain seasons of scarcity, the domestic cow has been known occasionally to feed upon fish, and even evinced a greediness in devouring them.

Among the lesser land animals and birds which frequent the banks of the Illinois, the turkey, prairie hen, and hare [probably cottontail rabbit] may be mentioned. The otter, muskrat, and raccoon are also still taken by the Indians, and contribute in a great measure to their support, the skins being sold to the traders and the flesh taken as food. The beaver, which has so greatly diminished in all parts of America, within a few years, is now rarely found in this stream or its tributaries.

The last leg before Chicago Schoolcraft and Cass covered by horseback,

> over the same pleasing succession of prairies and groves which have characterized the whole country from Peoria lake. . . . Fields of prairie frequently spread before the eye like the boundless expanse of the ocean, and the vision is as soon limited. The eye passes over this unvaried surface, often "glancing from earth to heaven" without finding any prominent object to fix upon. Its apparent boundary is the horizon. This monotony of prospect would soon become tiresome, were it not occasionally relieved by small streams of clear water, by limited forests of timber, and by gentle elevations in the surface, which serve to stimulate attention. . . . The sudden starting of a prairie-hen, or "whirring pheasant" [Greater Prairie-Chicken] from the heath, or the bounding of a deer on the distant plain, are circumstances which the memory seizes upon in the common dearth of local interest. So vigorous a growth of grasses and flowering plants covers these plains, that in several places we found them to overtop our shoulders, sitting on horseback—a proof, if any proof were wanting, of the strength and richness of the soil.

At the Des Plaines River they investigated a petrified tree, "among the

more perfect and striking instances of vegetable petrifactions imbedded in rock." They reached Chicago on 14 August, and soon convened the treaty negotiations. Cass was tenacious in procuring a cession of some 5 million acres in the southwestern section of present-day Michigan, despite poignant protests by Potawatomi chiefs. Schoolcraft later noted, regarding the cession,

> All the gentlemen with whom I have since conversed respecting the character of the grant have expressed themselves in terms of high approbation of the qualities of the soil, the nature and growth of timber, the general face of the country, and its adaptation to the purposes of agriculture and grazing. They speak with admiration of the exuberance of the growth of native grasses which covered the prairies at this season, the pleasing aspect which many parts of the country derive from the frequent occurrence of small lakes only a few miles in circumference, and above all, of the clearness and purity of the water which rises in this portion of our Western Country, and traverses its surface in the form of innumerable small rivers, brooks, and springs.

While at Chicago Schoolcraft was "seized with bilious fever . . . of the worst bilious type"[1] and consequently he did not leave until well after the negotiations had concluded. He arrived at Detroit on 6 October, and continued to Albany.

The remainder of the fall and winter Schoolcraft spent with correspondence, journal entries, scientific societies, trying to secure future government positions, completing his geological report from the 1820 expedition, and rebuffing criticisms of his recently published *Narrative Journal*, which he considered "to be based in a petty spirit of fault-finding, uncandid, illiberal, and without wit, science, or learning." Furthermore,

> My experience is that he who would rise, in science or knowledge, must toil incessently; it is the price at which success sells her favors. During the last four years I have passed not less than ten thousand miles, and in all this time I have scarcely lain down one night without a feeling that the next day's success must depend upon a fresh appeal to continued effort. My pathway has certainly not lain over beds of gold, nor my pillow been composed of down. And yet my success has served to raise the envy and malignity of some minds. True, these have been small minds; while a just appreciation and approval have marked the course of the exalted and enlightened.

Among Schoolcraft's "exalted" was Benjamin Silliman[2], who continued to encourage Schoolcraft to submit material for his *American Journal of Science*: "Any of your scientific or miscellaneous observations, which you may see fit to intrust to the pages of the journal, I shall be happy to receive, and trust they would not have a disadvantageous introduction to the world." (Schoolcraft 1851:72)

Schoolcraft presented a paper to the American Geological Society regarding the fossil tree, and Silliman published it (Cass and Schoolcraft 1822). In an effort to nourish his reputation,

[1]This and all subsequent Schoolcraft quotes in Part 4 are from his *Memoirs* (1851).

[2]Silliman (1779–1864) was a poet, scientist, publisher, doctor, founder of the Yale Medical School, and leader of the early American scientific community.

Schoolcraft solicited responses from public figures, and published them in the *Journal* (5:23–25. 1822) as well. Among these were letters from 3 former U.S. Presidents, which reflect a society less complex and technocratic than today's, when the natural sciences were perhaps more tangible to nonscientists, and indeed more relevant to commerce and politics.

From John Adams: "I thank you for your memoir on the fossil tree, which is very well written, and the conjectures on the process of nature in producing it, are plausable and probable. It is the most remarkable exemplification of petrification that I have ever met with, although I have seen many that I thought curious. I once lay a week wind-bound in Portland road in England. . . . "

From James Madison: "The present is a very inquisitive age, and its researches of late have been ardently directed to the primitive composition and structure of our globe, as far as it has been penetrated, and to the processes by which succeeding changes have been produced. The discoveries already made are encouraging; but vast room is left for the industry and sagacity of Geologists. . . . It may be expected that this hemisphere, which has been least explored, will yield its full proportion of materials toward a satisfactory system."

And from Thomas Jefferson: "It is a valuable element towards the knowledge we wish to obtain of the crust of the globe we inhabit: and its crust alone is immediately interesting to us. We are only to guard against drawing our conclusions deeper than we dig. Mr Schoolcraft is entitled to the thanks of the lovers of science for the preservation of this fact."

In May of 1822, Schoolcraft accepted a position as Indian Agent at Sault Ste. Marie, Michigan Territory. In July of that year he arrived with a large military contingent to establish a new Indian agency and a military fort.

> Besides this sudden influx of population, there were followers and hucksters of various hues who hoped to make their profits from the soldiery. There was not a nook in the scraggy-looking little antique village but what was sought for with avidity and thronged with occupants. Whoever has seen a flock of hungry [Passenger] pigeons, in the spring, alight on the leaf-covered ground beneath a forest, and apply the busy powers of claw and beak to obtain a share of the hidden acorns that may be scratched up from beneath, may form some just notion of the pressing hurry and bustle that marked life in this place.

Schoolcraft was stationed here for the next 11 years, during which time his interests shifted from geology and natural history to Indian studies. Besides his substantial responsibilities for Indian-related affairs throughout much of the Michigan Territory, he researched Indian languages and mythology, was active in local politics and the temperance movement, served as a territorial legislator and judge, helped establish the Michigan territorial library and Michigan State Historical Society, and wrote and published considerably.

In 1823 he married Jane Johnston, daughter of the trader James Johnston and the Chippewa matriarch Oshaguacodaywaygua ("The Woman of the Green Prairie", called "Susan" by her husband), who had quelled Chippewa hostility against the 1820 expedition at the Sault. Jane and her mother were essential to Schoolcraft's developing

knowledge of the Chippewa people, his eventual fame as an authority on the tribe, and his efficacy as an agent of the government. Following the death of their first child in 1827, Schoolcraft developed an obsessive Calvinist faith. He was away from home for long periods on business and politicking trips to Detroit and the East, and on excursions into the Territory. His tenure at the Sault was plagued by political squabbling, exacerbated by his thin-skinned, peevish pomposity. His own view of his life during this period is captured in his *Memoirs* (1851); and Bremer's (1987) biographical treatment for this period is thorough and insightful.

During these years, Schoolcraft's writings only occasionally referred to flora and fauna, for instance: a discussion of the mountain ash (*Sorbus americana*); a note that Chippewas did not eat crows or vultures; the importance of and methods of harvesting wild rice, whitefish, and maple sugar.

Isolation from his "refined society" was difficult for Schoolcraft, especially during the long winters. As he described during his first November at the Sault:

> The last vessel for the season has departed—the last mail has been sent. Our population has been thinned off by the departure of every temporary dweller, and lingering trader, and belated visitor, till no one is left but the doomed and fated number whose duty is here, who came here to abide the winter in all its regions, and who cannot, on any fair principle or excuse, get away. They, and they alone, are left to winter here. Of this number I am a resigned and willing unit, and have endeavored to prepare for the intellectual exigencies of it, by a systematic study and analysis of the Indian language, customs, and history, and character. . . . All the rest of the United States is a far-off land to us. For one, I draw around the fire, get my table and chair properly located, and resort to my books, . . . let the storm whistle as it may.

Winters ended with maple sugar season. In late March 1823 he wrote:

> It is now the season of making maple sugar from the rock maple by the Indians and Canadians in this quarter. And it seems to be a business in which almost every one is more or less interested. Winter has shown some signs of relaxing its iron grasp, although the quantity of snow upon the ground is still very great, and the streams appear to be as fast locked in the embraces of frost as if it were the slumber of ages. Sleigh and dog trains have been departing for the maple forests, in our neighborhood, since about the 10th instant, until but few, comparatively, of the resident inhabitants are left. Many buildings are entirely deserted and closed, and all are more or less thinned of their inhabitants. . . .
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> The ornithology of the north is very limited in the winter. We have the white owl [Snowy Owl], the Canada jay, and some small species of woodpeckers. I have known the white partridge, or ptarmigan [Willow Ptarmigan], to wander thus far south. This bird is feathered to the toes. There are days when the snow-bird [Snow Bunting or Dark-eyed Junco] appears. There is a species of duck, the *shingebis*, that remains very late in the fall, and another, the *a-a-wa*, that comes very early in the spring.
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> The *T*[urdus] *polyglottis*, or buffoon bird [Northern Mockingbird] is never found north of 46° N. latitude in the summer. This bird pours forth all sorts of notes in a short space of time, without any apparent order. The thrush, the wren, the jay, and the robin are imitated in as short a time as it takes to write these words.

That spring Schoolcraft learned that

he had been passed up for the command of an exploratory expedition to the Red River, Lake Winnepeg, and Lake Superior. The position went to Stephen Long instead.

On 7 April 1823, Schoolcraft encountered an unfamiliar bird. His journal for that day reads, "During severe winters, in the north, some species of birds extend their migrations farther south than usual. This appears to have been the case during the present season. A small bird, yellowish and cinereous, of the grosbec species, appeared this day in the neighborhood of one of the sugar-camps on the river below, and was shot with an arrow by an Indian boy, who brought it up to me. The Chippewas call it *Pashcundamo*, in allusion to the stoutness of its bill, and consequent capacity for breaking surfaces."

He sent the specimen to the Lyceum of Natural History of New York, where it was inspected by naturalist William Cooper[3], who also received the following description of the same species from an observer northwest of Lake Superior:

> At twilight, the bird which I had before heard to cry in a singular strain, and only at this hour, made its appearance close by my tent, and a flock of about half a dozen perched on the bushes in my encampment. They approached so near, and were so fearless, that my canoe-men attempted to catch them, but in vain. I recognised this bird as similar to one in the possession of Mr. Schoolcraft, at the Sault Ste. Marie.
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> Its mournful cry about the hour of my encamping (which was at sunset), had before attracted my attention, but I could never get sight of the bird but on this occasion. There is an extensive plain and swamp through which flows the Savannah River, covered with a thick growth of sapin trees. My inference was then, and is now, that this bird dwells in such dark retreats, and leaves them at the approach of night.

Cooper (1825) described this new species, and in naming it the Evening Grosbeak he chronicled the chance circumstances of its discovery rather than its true habits. He placed it in the oversized genus *Fringilla*, yet recognized its relationship with other large-billed finches within the subgenus *Coccothraustes*--the latter term referring to the ability to crush or shatter seeds or fruit pits. He noted, "It is a little singular that the meaning of the Chippewa name should so nearly coincide with that of the subgenus . . . "

For the specific name he chose *vespertina*, in reference to the bird's supposed evening activity—an erroneous assumption that prevailed in the ornithological literature for several decades until further northwestern exploration and settlement, and the species' eastward range expansion brought naturalists into more frequent contact with it. But by then the association had been fixed eloquently by a new genus name, *Hesperiphona*: *phona* meaning "sound" or "call", and *Hesper* alluding both to "the evening" and to "the west, where the sun sets". It thus captured the mystiques of the bird's assumed habits as well as its range beyond the western frontier. Today its genus is considered by different authorities to be either *Hesperiphona* or *Coccothraustes*, but the species remains *vespertina*.

[3]William C. Cooper (1798–1864) helped found the Lyceum. The Cooper's Hawk was named in his honor. His son James was the pioneer California ornithologist now commemorated by the Cooper Ornithological Society.

On 14 April, with spring "gradually advancing", and most woods still holding deep snow, "The *T*[urdus] *migratorius* or robin made its appearance. The Indians have a pretty tale of the origin of this bird and its fondness for domestic scenes." In this legend, according to Schoolcraft (1851), a young man in quest of a vision was kept fasting unreasonably long by an overbearing father. In the process, the son took the form of a robin, vowing to express his love for his family and their descendents by bringing them joy near their dwellings.

On 2 May, "The yellow sparrow, or bobolinkin, appeared this day in the woods." What was this? This habitat and early date would be unusual for the open-country Bobolink, also known as "Bob Lincoln," but evidently never as "yellow sparrow."

On 30 May 1824 Schoolcraft took a canoe trip to Tahquamenon Falls along Lake Superior, with a crew of Chippewas:

> They traveled along in the Indian manner, talking and laughing as they pleased with each other, and with the interpreter. Nothing could have been better suited to obtain an insight into their manners and opinions. One of their most common topics of talk was the flight of birds, particularly the carnivorous species, to which they addressed talks as they flew. This subject, I perceived, connected itself with the notions of war and the enemy's country.
>
> On one occasion after we had entered Lake Superior, and were leisurely paddling, not remote from the shore, one of the Indians fired at, and wounded a duck. The bird could not rise so as to fly, but swam ashore, and, by the time we reached land, was completely missing. A white man would have been nonplused. Not so the Indian. He saw a fallen tree and carefully looked for an orifice in the under side, and, when he found one, thrust in his hand and drew out of it the poor wounded bird. Frightened and in pain, it appeared to roll its eyeballs completely round.

In the summer of 1825 Schoolcraft travelled with Cass to Prairie du Chien to attend a treaty with several tribes of the Michigan Territory, primarily to establish tribal boundaries. He was particularly impressed with the attire of the Sioux:

> A kind of war flag, made of eagles' and vultures' large feathers, presented quite a martial stir. War clubs and lances presented almost every imaginable device of paint; but by far the most elaborate thing was their pipes of red stone, curiously carved, and having flat wooden handles of some four feet in length, ornamented with the scalps of the red-headed woodpecker and male duck, and tail feathers of birds artificially attached by strings and quill work, so as to hang in the figure of a quadrant. But the most elaborately wrought part of the devices consisted of dyed porcupines' quills, arranged as a kind of aboriginal mosaic.

En route back home from the treaty, his crew's progress up the Wisconsin River was impeded by morning fogs and the oppressive heat of mid-day. On 25 August they canoed the stretch from roughly present-day Prairie du Sac to Portage:

> The fog dispersed earlier this morning than usual. We embarked a few minutes after four A.M., and landed for breakfast at ten. The weather now was quite sultry, as indeed it has been during the greater part of every day. . . . Our route this day carried us through the most picturesque

and interesting part of the Wisconsin, called the Highlands or River Hills. Some of these hills are high, with precipitous faces towards the river. Others terminate in round grassy knobs, with oaks dispersed about the sides. . . . Generally speaking, the country has a bald and barren aspect. Not a tree has apparently been cut upon its banks, and not a village is seen to relieve the tedium of the unimproved wilderness. The huts of an Indian locality seem "at random cast". I have already said these conical and angular hills present masses of white sandstone, wherever they are precipitous. The river itself is almost a moving mass of white and yellow sand, broad, clear, shallow, and abounding in small woody islands, and willowy sandbars.

Eventually, with the cessation of prairie fires, most of these bluffs would become overgrown with forest. The construction of the Prairie du Sac dam in 1914 would drown many of the picturesque cliffs and islands.

In particularly charming places, Schoolcraft sometimes recanted his longing for society's trappings:

Between the annoyance of insects, the heat of the sun, and the difficulties of the way, we had incessant employment. At three o'clock P.M. we put ashore for dinner, in a very shaded and romantic spot. Poetic images were thick about us. We sat upon mats spread upon a narrow carpet of grass between the river and a high perpendicular cliff. The latter threw its broad shade far beyond us. . . . Green moss had covered the face of the rock, and formed a soft velvet covering, against which we leaned. The broad and cool river ran at our feet. Overhanging trees formed a grateful bower around us. Alas, how are those to be pitied who prefer palaces built with human hands to such sequestered scenes. What perversity is there in the human understanding, to quit the delightful and peaceful abodes of nature, for noisy towns and dusty streets. . . .

At a late hour in the evening we reached the Wisconsin portage, and found Dr. Wood, U.S.A. camped there. I invited Dr. Wood to supper, having some ducks and snipes to offer in addition to my usual stock of solids, such as ham, venison and buffalo tongues.

The next morning they portaged by oxcart:

It was about nine o'clock A.M. when we embarked on the Fox, and we began its descent with feelings not widely different from those of a boy, who has carried his sled, in winter, *up* the steep side of a hill, that he may enjoy the pleasure of riding *down*. The Fox River is serpentine, almost without a parallel; it winds about like string that doubles and redoubles, and its channel is choked with fields of wild rice; from which rose, continually, immense flocks of blackbirds. They reminded me very forcibly of the poet's line—

"The birds of heaven shall vindicate their grain."

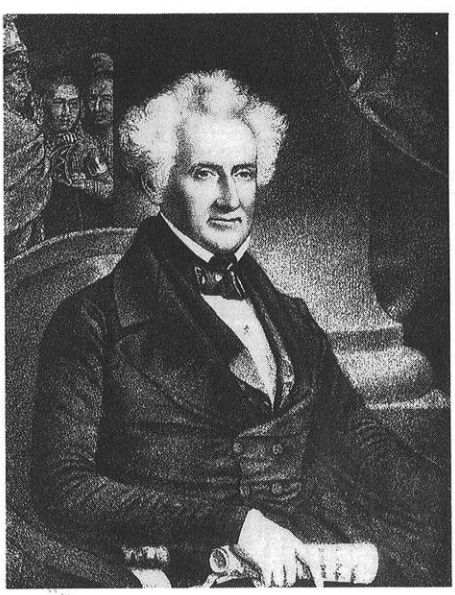
Mr. Holliday the elder and his son made several unsuccessful shots at them. I did not regret their ill success, and was pleased to hear them singing. . . . We met several canoes of Menomonies. We stopped for dinner near a lodge of them . . . at the head of *Pukwa* Lake [Lake Puckaway].

[The next day] a very severe shower of rain fell about three o'clock A.M.; it detained us in our camp until five, when we embarked. Why should I relate to you our dull progress through fields of rice—through intricate channels, and amidst myriads of ducks and wild water fowl. This day has been hot, beyond any experience on the journey. I sank back in my canoe, in a state of apathy and lassitude, partly from the heat, and partly from indisposition. My thoughts were employed upon home.

He was relieved, on 9 September, to arrive back at the Sault.

In 1826, Schoolcraft accompanied Governor Cass and the superintendent of the federal Office of Indian Affairs, Thomas McKenney, to attend the signing of an Indian treaty at Fond du Lac. Schoolcraft made only brief mention of this trip in his *Memoirs*, however McKenney left a detailed and colorful account titled *Sketches of a Tour to the Lakes* (1827).

McKenney (1785–1859) was 41 years old, gray-haired, and a veteran of the War of 1812. He had been a storekeeper in the East, and the superintendent of the "government factory" system, which produced goods for the Indian trade until 1822, when it was abolished. At the beginning of the 1826 excursion he suffered from stress incurred by investigations into his allegedly fraudulent handling of that system, and by his recent charge to set up the new Office of Indian Affairs.



T.L. McKenney, from McKenney and Hall (1833).

His narrative covers his entire trip with his "loyal servant" Ben, to and from Georgetown, D.C. It begins tediously: his 3-sentence preface takes an entire page, and is followed by profuse digressions on Revolutionary War incidents associated with sites he passed. But as McKenney entered the wilderness the associations with his cultured life diminished, and his writing became simpler and more descriptive—all the more so, perhaps, because he wrote daily to an unnamed "friend".

McKenney was reflective, religious, and—within the bounds of his ethnocentricity—tolerant, and had an eye for detail. For example, his narrative contains graphic accounts of the voyageurs who transported him and the other gentlemen on the journey. Yet he was paternal—sometimes to the point of absurdity—toward the "unfortunate" denizens of the wilderness, which to him included Indians as well as animals. This trip was his first substantial encounter with native Americans on the frontier. His patronizing but compassionate view would be embodied in government policies of relocations, annuities, and attempted assimilation into "civilized society". Information on McKenney is in his *Memoirs* (1846), and in the editorial introduction to his text *The Indian Tribes of North America* (McKenney and Hall 1838–1844).

McKenney traveled via the new Erie Canal and by steamboat across Lake Erie, to Detroit, where he rested, read, wrote, and visited with Cass, military

officers, and their families. While here he noted, "I have been just shewn the pallet on which I am destined to repose on the shores of the lakes; and the two stout Mackinac blankets that are to cover me, and between which I see a pair of nice sheets, and a pillow, together with a mosquito net; and by the side of these is a stout oil cloth. This is intended to lie beneath the pallet, by night, and between it and the ground, and as a covering for it by day; and the whole, when rolled up, for a seat in the canoe".

On 23 June they left Detroit on a schooner bound for Mackinac, but were waylaid several days in ascending the St. Clair River, for the want of favorable wind. Harassed in his berth by mosquitoes, he slept on deck among the folds of the mainsail, and reported an improvement in his health, although "I confess, however, that I am not insensible to the loss of home and its endearments."

One night, he and two others

> agreed to go out and spear fish. We accordingly sent ashore and had the [birch] bark got for flambeaux. To me this method of taking fish was entirely new. We had scarcely prepared for the work, before, as night set in, we saw lights in different directions along the Canada shore. Every thing was calm, and the surface of the river smooth as glass. . . . We were soon of the company of those who go out in the evening along the shores of this river to take fish by torch light. The bark is fired, and being rolled up, is held in the hand of a man over the bow, and some three feet above it; or it is broken up and put in what resembles the frame of a lanthern, which being attached to a pole, inclines forward, and over the bow. The light from this, reflecting into the water, which is clear as crystal, at the bow, and on either side, discovers the fish that are lured by it, in the pellucid element below. The boat glides down the current noiselessly, and is sculled back again slowly. The spear is like a fork, barbed and sharp pointed, which is attached to a pole of some ten feet long. This is held by the spearsman (in our boat one stood on either side of the man who held the flambeaux), and when a fish is seen, it is forced through the water; sometimes with one, and sometimes with both hands. Being inexperienced in this method of taking fish, the Governor, who knew that none but the old fishermen knew how to make allowances for the density of the water, and to adjust the line of the stroke to the object struck at, made himself merry at our prospects, and proposed to make a supper of our luck. We returned at half past ten o'clock, with eight fine bass and a pickerel. I turned in as before, in the folds of the mainsail, and slept well.

The following day was Sunday: "We saw some children fishing on a log that was run out into the river, and we joined them, and taking a fish a-piece, . . . returned to the vessel. Time, under such circumstances, hangs heavily. We feel the want of society, and of those interesting exercises which distinguish and make so lovely the Sabbath day."

That night, "Our sailors went out . . . and took fifty fine bass, sheepshead, pickerel, and pike."

On 27 June McKenney walked along shore: "The robin red breast is here, and other birds, whose notes are familiar; and these serve to cheer and remind us, in the solitude of these shores, of places more dear."

Along this stretch of the river, McKenney observed, "The shores . . . are beautiful. The banks are bold, and the woods lovely; and these are reflected as in a mirror in the river that

runs rapidly, though smoothly by. The water is delightful to drink, and is very cool withal."

That evening, near the mouth of the Black River, where the city of Port Huron, MI, now stands, "We found the few people who live near its mouth in the midst of low grounds and mosquitos, with fires at their doors to smoke away these tormentors, and rain frogs on the logs of their huts to sing them to repose". These were apparently gray tree frogs (*Hyla versicolor* or *H. chrysoscelis*).

They finally reached Lake Huron on the 29th. On the evening of the 30th a cold, damp headwind forced the schooner into a natural harbor at Presque Isle, and McKenney went ashore: "Saw some deer feeding near the shore on little hillocks, or mounds, that rise out of the sand. They appeared not to regard our approach . . . Wind lulled into a perfect calm. The wood robin [Wood Thrush] enlivens the surrounding solitude, and cheers us with his evening song."

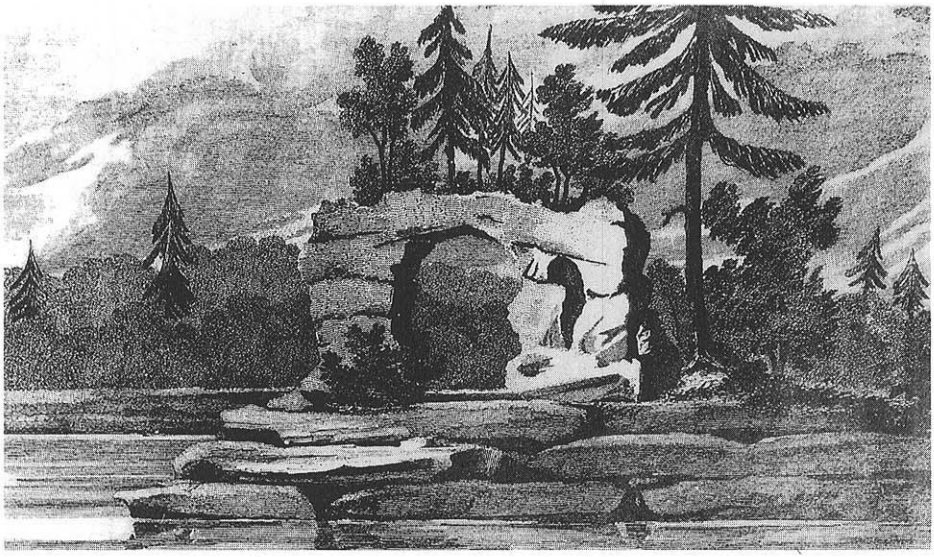
As they left the harbor the next morning, "Looking over the side of the vessel, I saw the bottom distinctly; almost as much so as if no water intervened. I was curious to know its depth, and at that place it measured *twenty-three feet*. As I drew the line up, a shoal of fish swam in, and under the vessel, near the bottom of the lake."

On 2 July they reached Drummond's Island at the far end of the lake. McKenney was attracted by the notes of a flute: "Nothing can be more mournful in its tones. It was night, and a calm rested on everything; and it was moon-light, all which added to its effect. We saw the Indian who was playing it, sitting on a rock. We approached him, when I took his flute and tried to play. It had but three holes. I could produce a tone, but could not vary it into an air of any kind, which diverted him, and he laughed at my want of skill."

The next day they left the schooner and proceeded to Sault Ste Marie in large rowboats, or "barges". They arrived at the village in the middle of the night, McKenney's teeth chattering from the cold spray of the rapids. They were treated to a meal of whitefish, "This fish being, in the universal estimation, the finest that swims", and to warm beds.

It took a week here to prepare for the pending journey along the south shore of Lake Superior to Fond du Lac. McKenney described the local Chippewa children playing lacrosse, the men smoking their long pipes, and the dexterous netting of whitefish from canoe among formidable rapids; maple sugar (a staple food here); the difficulty of growing vegetables this far north; winter cold, from which the mercury would sometimes shrink into the sanctum of the thermometer's bulb; dogsleds; snowshoes; and the birch canoe in which he would be travelling. He was taken by the grace and vitality of Mr and Mrs Johnson and their children, including Schoolcraft's wife, Jane. Notably, he said almost nothing about Henry, either here or throughout their subsequent trip together.

The party of 112 men left the Sault in 2 groups: 7 barges containing provisions, gifts, soldiers, officers, Cass, and his attendents, on 10 July; and a large birch canoe carrying 10 voyageurs, Schoolcraft, McKenney and his servant, on the 11th. The canoe, being much faster and more maneuverable than the barges, allowed McKenney



The "Doric Rock" along Lake Superior. From McKenney (1827).

and Schoolcraft to explore along the way. McKenney must have made quite a sight riding on his canopied perch, wearing a straw hat, head net, and leather gloves to protect him from insects.

"We saw the raven as we turned White fish Point, and numerous flocks of [Passenger] pigeons". They continued past the Grand Sable dunes and Pictured Rocks. On the 16th they rested briefly at the Laughing Whitefish River, where "A bird greeted our landing with a song. I loved the little warbler, and regretted its solitude".

On 17 July, near the present-day city of Marquette, "on nearing Presque Isle, we stopped on some rocks which rose out of the lake. They are barren. Seagulls make their nests in their clefts, and the waves, and the winds, and these birds are, except now and then, their only visitors." Herring Gulls still nest on the rocky islands in this area (Scharf et al. 1979).

A few miles farther they neared the Huron Mountains: ". . . although the mountains rise into peaks, and roll and vary in almost endless succession, and as far as the eye can see, and afford so much gratification to the beholder, they are all barren, and thinly clad with stinted growths of pine, and cedar, and hemlock, and which is not sufficient to cover their granitic nakedness. It is their diversity, and the change we experience in looking out upon nature, and not their richness or fertility that charms us so."

McKenney sat on a rock ledge:

> I . . . contemplate the motion of the waters that in towering waves would roll against these rocks as if asleep, and unconscious of their approaching destiny, till awakened by the shock of the contact, when they would mount high in air, and fall back broken into a thousand parts, and be swallowed up by their successors, which, on reaching the same points, met with the same overthrow. I had been ob-

serving these waves for some minutes, when a mother duck with her brood of younglings, ten or twelve in number, and which appeared to be only a few days old, swan out from behind a projection of a rock where the water was comparatively still. She was, on seeing me, greatly alarmed, and quacked, and with both feet and wings made her way into the lake, and on getting ahead of her brood, would turn back and flap her wings on the water, and then away again, till presently I only saw her as she would mount over the top of the wave, and her little family looking like small corks on the billows.

These ducks were probably Red-breasted Mergansers, for on a later date McKenney noted,

> The ducks we have seen are all, or nearly all, of one species. They are the saw-bill. We found them in families, and never in flocks. The mother duck with her brood of young ones--but never more together. I have seen them with two little ducks, and with as many as eighteen. They appear to be from one to four weeks old. If, in getting out of our reach, any of the little ones take a wrong direction, the mother will instantly flap her wings on the water, and manifest signs of great uneasiness. The moment she becomes stationary, they all gather close to her, and when she moves off, they spread out as if to make room, and then away again.

On the 18th they passed the Huron Islands, "the larger ones covered with trees and foliage; the smaller thin set with pine and spruce." McKenney stopped and climbed onto one of them, and "saw a little bird of the most beautiful plumage my eyes ever beheld. It was not larger than a sparrow. Purple neck and head, golden breast, green and blue wings, and brown tail."

It is unfortunate that McKenney did not write more about these islands, which might allow us to compare their birdlife then with the Herring Gull colonies they support today (Scharf et al. 1979). The bird he did note seems to have been a Northern Parula Warbler.

They made the harrowing traverse across the bay to Keweenaw Point, then coasted along shore:

> Not a bird warbles to cheer us. Not a living thing presents itself to vary the solitude. Nothing is heard but the roar of the waves on the shore, nor seen, but the forests that line it, the lake, and the sky. Whether stormy or calm, the roll of the wave is heard. It never ceases. This is the music of the shores. Now and then the cry of the loon is heard—but nothing sings, save in some places an occasional and stray warbler . . . and the mosquitoes. Now and then a duck is seen with her family of young ones—but these fly at our approach. No Indians—no human beings—no animals—no horses, or cattle, and not even a snake!

They camped that night on the point, alone with the voyageurs, for the barges had lagged several miles behind.

> I noticed at the back of our tent a dead tree with some hollows in it—and heard presently the notes of a bird that I could hardly believe to be there. I listened—and then going out, discovered it to be my favorite *blue bird*! Knowing the disposition of our voyageurs to kill and eat whatever fell in their way, I gave orders that these birds were not to be molested . . .
>
> How instantly on hearing the pensive note of this bird, was I in the room where, in my tenth year, the best of mothers lay a corpse! Never shall I forget the morning after her death, when going into the room, too unconscious, alas! of the mighty loss I had sustained, I saw on the sill of the window, a blue bird. It

> uttered its mournful note, and flying in, lit on the testers of the bedstead—and then on the head-board, and sat pensively there; and I gazing at it, and wondering what brought it in that room—when after appearing to survey my mother, it flew out. I went to the window and saw it clinging to the lightning rod. I heard it nearly all that day. That visit made me the friend of that bird ever afterwards; and never, in all my boyish sports, could I get my consent to shoot one, or connive at others doing it.

They made due with their limited provisions—the voyageurs had only flour and whiskey, and the gentlemen boiled their tea in a bucket. The barges appeared through the fog the next morning. After collecting some agates and other mineralogical specimens, they embarked together at 1000h: "I left the bluebirds with regret—but with the belief that they were safe. They appeared happy in feeding and rearing their young—for their enjoyment consisted in taking them supplies of food, and in an occasional strain of their pensive song."

As they rounded Keweenaw Point they encountered a Herring Gull colony on Gull Rock: "Stopped at a rock lying three miles out in the lake. Hundreds of sea-gulls were flying over it, and we wished to see the manner in which they made their nests. On stepping onto the rock, I saw the head of one better than half grown, in the crevice of the rock—I took it out, and looking into the opening, found only a few sticks there, and nothing in the form of a nest. The sea-gulls are web-footed, and have a head and beak like a crow. Some are white, and some grey—they vary in size".

Later that day McKenney noted, "The same stillness prevails, and the same absence of animal life, save a few additional ducks and sea-gulls, and a most uncommon bug, half crab in its form, and half something else, which Doctor P. found at Point Kewewana, and has brought with him alive, rolled up in a piece of paper."

On Sunday the 23rd, "We had but just landed, when the day broke away finely, and a single bird cheered us with a momentary song, when all, except the breakers on the beach, was still again. These birds' greetings are like angels' visits . . . We had one last Sunday, and another this."

This day they reached the Chippewa village on the Ontanogon River, and "received a present of some fish from the Indians, whose nets are spread at the mouth of the river." Schoolcraft knew the chief here—"the Plover". McKenney and Schoolcraft visited the old man, whose family included a crow "as tame as a chicken." They convinced the Plover to attend the treaty at Fond du Lac.

The next day they passed the Porcupine Mountains. "There is no game in these mountains, except the [black] bear and the common red [white-tailed] deer."

Arriving at the Montreal River, along the present Michigan-Wisconsin border, they visited a lone lodge of Chippewas, who had "no shot to kill even a raven," and saw the forest burning a mile away. They reached Michel Cadotte's trading post on Michael's (Madeline) Island, where they "were received by this mostly French trader with great cordiality." McKenney received a glass of milk, which "tasted like nectar," and wrote, "This is the only spot that has brought gladness to my heart, the associations of home and of civilized society, during a voyage of four hundred miles—since we left the

Sault. It looks like a fairy scene, and every thing about it is enchantment . . . Tame crows appear common in this part of the world. I notice four here that fly after the family as if they were part of it, and had never been wild."

The next morning he enjoyed the gardens and fields here, and visited

> the groups of domestic animals and their haunts, the chicken house, and even the cow-pen, and in indulging in those delightful associations which a sight of them inspires . . . I inquired if there was no orchard?—No fruit of any kind grows in these regions, except the wild strawberry, the sand cherry, and the whortleberry [blueberry]. And but little grain, except oats. Potatoes are grown, and of the finest quality; they are the bread of the traders. The gardens on such an island, and such an exposure as this, produce a few peas—and squashes—and cabbages; and, where the trader is a Frenchman, there is sure to be some garlic.

They left in the morning, stopped to fry fish for lunch, and passed around the Bayfield peninsula. McKenney liked the red sandstone cliffs and noted that "evergreens grow out of them in such order as to convey the impression that they must have been planted here".

They paddled into the night, to the singing of the voyageurs: "Our men were chaunting. The sky was pure, the lake clear, and all the host of stars reflected from the surface, some direct, and some with a long train of light, like a stream of fire on the lake."

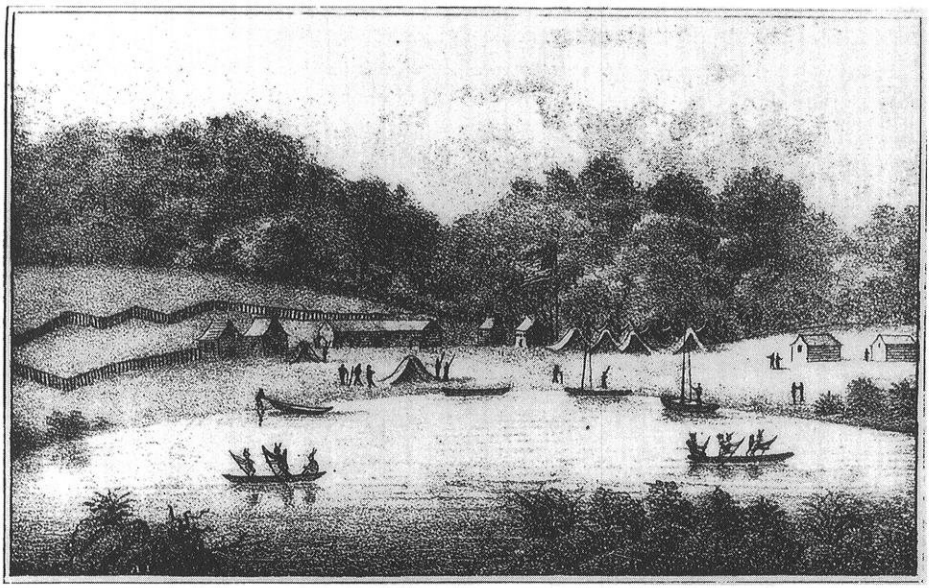
On 28 July they entered what is today Duluth harbor, past the long sand spits that guarded it, "a well defined beach, with trees, pine and aspen, scattered irregularly over it from end to the other, and this was the *Fond*, or bottom or, more properly, head of Lake Superior."

From here, "The river, on passing the beach, at the head of the lake, widens to nearly two miles, but with a large portion of its borders filled with grass and beautiful white and yellow lillies, which continue to ornament it [for several miles upstream]".

They camped on the beach. The next morning they waited for the barges and some canoes of Chippewas, then made a grand approach up the St Louis River to the fort at Fond du Lac,

> all with flags flying, and martial music . . . The sight was truly interesting; while the music filled the valleys and rose over the mountain's tops, for the first time since their formation. The Indians all naked, painted, and silent, gliding over the surface in their bark canoes . . . [and] for the first time, their ears, like their native hills and rivers, were greeted with "*Hail Columbia.*" We landed under a salute from numerous Indians who had already assembled, and whose tents were pitched on an island in the river, and in various other places, and by Mr. Morrison and those connected with the establishment . . . and to the national air of "*Yankee Doodle.*"

The party stayed here for 11 days, preparing and then negotiating the treaty with representatives from several Chippewa bands. The Chippewas agreed to respect the Chippewa/Sioux territorial boundary established the previous year at the Prairie du Chien treaty, ceded their mineral rights, ceded some plots of land to mixed-blood families near Sault Ste Marie, and submitted to the authority of the U.S. government, including a verbal agreement to surrender the braves who had killed 4 traders along the Mississippi River in 1824. In return, the



American fur company post at Fond du Lac, from McKenney (1827).

tribe was promised annuities, protection, and limited funds for formal education. McKenny wrote at length about the proceedings here, including negotiations, Chippewa ceremonies and tales, and his experiences. He greatly admired the Indians' canoeing skills, which, compared with those of the voyageurs, were adapted less for speed and endurance, and more for maneuverability and silence; and also the strength and skill of the women in making and transporting their camps. But he strongly believed in "the superior excellence of civilized, and polished, and Christian society, over that of the savage."

McKenney wrote about other things as well, while at Fond du Lac. For instance, he seemed to feel that birds, as well as native peoples, needed the hand of his civilization. His circular reasoning reveals a selective sensibility, for he seemed to notice only those birds with which he was familiar at home:

> The remark which I have often heard, that birds fly the wilderness, and follow the progress of civilization and domestic life, I have reason to believe is true. I have heard an occasional song poured forth from the solitude of the lake shore, but it has been rare, and never from a bird with which I was familiar, except the wood robin in Presqu'ile bay; and the blue-bird at Kee-we-wa-na point. Where I have heard the singing of birds, has been at Michael's Island, and here; and these are cultivated spots. In all the extent of coast of five hundred and fourteen miles, the length of Lake Superior, with these exceptions, I have neither seen nor heard a singing bird. At both these, the sound of the axe and the hammer have been heard, and rural operations are carried on, and here the birds have assembled.

Keeping McKenney's mentality in mind, following are some more of his

notes on natural history from Fond du Lac:

> This morning broke upon my ear, as it often, and in the spring season, breaks at home, with the cheering and familiar music of the groves. It is not possible for me to describe my sensations on hearing these familiar notes; nor the disappointment, when on awaking fully, to find myself so far distant from those places to which the first warbling of the morning had transported me. Here too is my favourite blue-bird—that bird of pensive note, and modest mein, which will never fail to remind me of the death-scene of my beloved mother . . .
>
> It is now evening, and the robin redbreast, as the sun sinks behind the hills, pours out his liquid, mellow notes, and stretching himself until his legs attain their utmost length, and his feathers press close and smooth against his elongated body, sends forth his shrill chirp, indicating his anxiety about something, as plainly as if he spoke it. His partner delays, or some vagrant has approached his nest—and he thus, from the top of the neighboring tree, gives the alarm. The cattle too—here they recline. But there are here no domestic fowls. Many things remind me of home, but there are many things deficient, besides the fowls . . .
>
> A moose deer [moose, *A. alces*] was killed by an Indian in this neighborhood, and brought to this post. It was an unusually large deer, and on that account, Mr. Morrison prepared a frame for its legs, and a block for its head, and stretching its head and legs over these, stuffed the body with straw, and put it in the posture of a living deer. For some time afterwards, the Indians were unsuccessful in taking the moose. One day, a party of them being at this place, one of them got a sight of the stuffed deer, and reported it to his companions--when their want of success was immediately attributed to the indignity that this one had suffered. The spirit of this deer had evinced its displeasure by thwarting their efforts to take more of its species, and their first business was to appease it. They all, with one accord, lit their pipes, and seating themselves round the skin, began to smoke, when every now and then, the spirit of the deer would be addressed by the speaker, and its forgiveness asked—and many assurances given that they were not in fault. In token of sincerity, they put their pipes into the deer's mouth, that it might smoke too . . .
>
> The birds, after an hour of stillness, are all harmony. Every little throat is swelled with song, and music fills the grove. These little warblers seem impelled by some joyful influence to the delightful task. Even the [Northern House] wren is here, busy and chattering, and the yellow, or briar bird [American Goldfinch], ready for the thistle seed whenever the down shall appear. The robin, too, as I have stated, and the blue-bird—these are all old acquaintances of yours, as well as mine; and then there are others whose notes are new to me. The [Mourning] dove I have not heard . . .
>
> Raspberries grow wild here in great quantities, and of the finest flavour. All the Indians and whites together, some six hundred persons, have been eating them daily since our arrival, from the hills back of our quarters, and they are yet plenty . . .
>
> The Indian women, and even the little girls, paddle these canoes with great skill. Their dexterity and slight in this business would equally delight and surprise you; and you would admire the grace with which they handle the paddle . . . I know nothing with which to compare the slight with which . . . this is done, except it be the foot of a waterfowl . . . Nor does the duck move upon the surface of the water with greater buoyancy, or stillness, than do these birchen canoes. On reaching the shore, which is always approached

with great caution, the whole company rise from the bottom of the canoe, where they all sit, the better to steady it, and are out upon the shore, spreading from right to left, and with a celerity not much short of a flock of their native pigeons, when the contents of a gun are discharged amongst them, and they suddenly pitch from the bough on which they had been resting, and scatter in the woods.

McKenney noted bird skins hanging from the waist strings of some Chippewas, and described a chief's attire thus: "His head dress is made of the feathers of the duck's breast, and the woodpeckers' bills, and the red feathers from the head of that bird, between. His wrists are ornamented in like manner . . . "

His entry of 8 August contains an interesting bit of 1820s science fiction and a timeless remark on technological progress:

> This is a beautiful morning—and though there is so much to enjoy in its loveliness, and in the fine wholesome air that we breathe here, I cannot but indulge the wish to know how all are at home. The time may arrive, perhaps, when, if the ingenuity of man shall continue to develope itself as it has done for the last twenty years, we may, in twenty years more, be able in a few hours, and through the air, to pass over the extent of space that now separates me from you all. [The English poet William] Cowper, I remember, referred to the period, but when, he did not venture to predict, when the air would be the highway of communication from place to place, and the earth deserted by the travelling community. I do not know that this is much more unreasonable than a prediction would have appeared, if made fifty years ago, that travellers could be able at this time to go with certainty from New York to Albany, in twelve hours; or that our cities would be lighted with gas—or that such cities as Lexington and Cincinnati should take the place of the forests in the time they have, and be what they now are.

On 9 August, after the conclusion of the treaty, they departed on the St Louis River, which was "alive with canoes". McKenney's canoe held himself, Ben, and an artist named Lewis, who sketched many sites en route, some of which were later engraved for McKenney's *Tour to the Lakes*. A second canoe had been constructed, and now carried Cass, Schoolcraft, their voyageurs, and 2 other men.

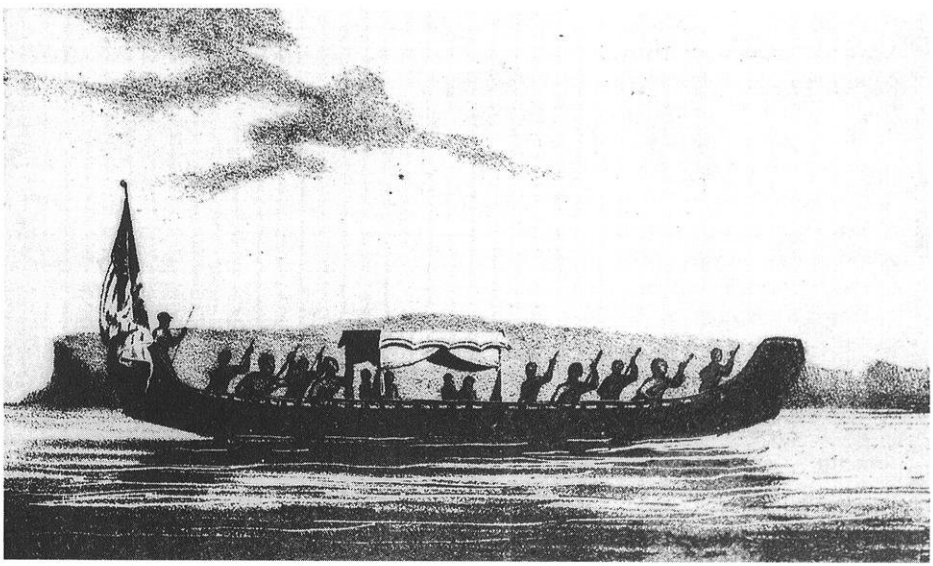
On 10 August McKenney was canoed about 5 miles up the Iron River. His narrative reads:

> Along the shore of the river there are a great many wild gooseberries—but nothing else, except the trees—pine, cedar, elder, etc . . . Saw only a few pigeons, a musk-rat, and a nest of eaglets. On returning, some of our men went to take the young eagles. They found the tree to be about four feet in diameter, but they cut it down. The eaglets, however, as the tree fell, spread out their wings, and finding them capable of supporting them, flew away. The prize was lost. From the appearance of the old one, they are the bald eagles of the lakes, and are of enormous dimensions.

Near the Montreal River they again found wildfire: "The mountain on the right of the entrance on fire. The atmosphere filled with smoke."

On the 13th the voyageurs paddled from 3:30 am until 9:30 pm, resting only for breakfast and for their regular, brief *pauses* on the water to smoke their pipes.

> At seven o'clock [pm], and while the voyageurs were resting on their paddles, I inquired if they did not wish to go



Drawing of McKenney's canoe, with voyageurs and canopy of the *bourgoise.* From McKenney (1827).

> ashore for the night—they answered, they were fresh yet. They had been almost constantly paddling since three o'clock this morning. They make sixty strokes a minute. This, for . . . sixteen hours, [is] fifty-seven thousand six hundred strokes with the paddle, and '*fresh yet!*' No human beings, except the Canadian French, could stand this.

What we today would give for McKenney's experience while far out on the lake, approaching Keewenaw Point on the morning of 14 August:

> At six o'clock the lake was growing white with foam, and the steersman calling for help to keep the canoe from being blown round side to the sea, which is generally afforded by two or three of the voyageurs striking their paddles down by the side of the canoe, and the bowsman working his the contrary way, a bird was seen coming across the lake, feeble in its efforts, and directing its course towards our canoes . . . On getting in a line with mine, [it] turned and followed it. It appeared to make one last effort, and with its feet foremost, lit on the end of the upper yard, when instantly one of the voyageurs raised his paddle, saying "*mange—mange,*" and in the act of giving the bird the meditated stroke, I caught his arm, and prevented it. I then ordered the steersman to untie the rope, which, passing through the top of the mast, was tied near him, when the sail was lowered, and the bird taken and handed to me. It was too feeble to fly. Its heart beat as if it would break. I took some water from the lake with my hand, into my mouth, put the bill of the little wanderer there, and it drank as much as would have filled a tablespoon—then breaking up some crackers, I fed it. My next difficulty was to fall upon some plan for taking it home. It seemed to have sought my protection, and nothing shall cause me to abandon it. On looking round me, the mocock [birchbark basket] that the Indian woman gave me struck my sight. It was the only thing in

the canoe in which it was possible to put it. So I have given it a lodgement in that. It is a wild pigeon, nearly full grown, and is perhaps the only survivor of a flock from Canada. Thousands of them perish in crossing every season, and I am told they are often seen on the lake shore fastened together by their feet, looking like ropes of onions. The lake, in the direction in which this one came, must be at least sixty miles across.

This is a member of the dove family, and the "travelled dove" of the voyage. Is it a messenger of peace?—Why did it pass one canoe, and turn and follow another?—Why come to me?--None of these questions can be answered. But of one thing this poor pigeon is sure—and that is, of my *protection*; and though only a pigeon, it came to me in distress, and if it be its pleasure, we will never part.

This satiated his paternal urge, and he later footnoted, "This pigeon, called by the Chippeways *Me-me*, and by which name it is called, is yet with its preserver—tame, and in all respects domesticated. It knows its name, and will come when called."

They were travelling separately from the slow-moving barges now, and so portaged across the peninsula rather than making the tedious route around it, as they had the first time. While the voyageurs portaged the canoes and heavy packs, McKenney enjoyed the scenery, including the shores, "thick set with pine, birch, cedar, spruce, and aspen, all rich in their varied hues; and beyond were forests of maple. Here the Indians of this quarter sometimes assemble, to extract from these trees one of the few resorts they make to sustain life . . . "

On the 15th, "My little Chippeway is in fine spirits, and has already lost much of its native shyness. It eats and drinks from my hand, and shows no one sign of uneasiness in being confined."

They embarked the next day at 2:30 A.M., by moonlight. They landed for breakfast on a pebble beach near Granite Point, at the base of a steep bluff.

One of our men, after lighting the fire . . . threw a blazing stick into the forest at the foot of the mountain. In a few moments it caught to the dry and dead wood and branches, and before we had half finished our repast, the roar of the fire, the crackling, the ravenous fury with which it encircled and ran up the dead pines, with flames tossing about over our heads, produced a scene which was truly grand. I noticed one tall pine tree which was dead, but its bark was yet on it, and saw the flames wrap themselves round it, and in a spiral form travel to its top, where in a sheet of fire they collected, blazed for a moment, and then expired. We often see smoke in the mountains, which doubtless comes from fires thus kindled by the Indians; and sometimes the quantity is so great as to darken the air, the fires raging for months.

They reached Sault Ste Marie on 18 August after an absence of 5 weeks, to learn of the deaths of John Adams and Thomas Jefferson. McKenney remarked further on the resources of the Lake Superior region:

Waub-es-see-pin [arrowhead (*Sagittaria* sp.)] . . . is a root like a potatoe, only smaller, and grows in wet, cold ground; is mealy when boiled or roasted, and no doubt nourishing. The wild rice does not grow on the lake, but far beyond, between it and the Mississippi; it abounds on Fox River . . . .As to the soil along the lake shore, it would defy the art of the most skillful to make it productive—it is barrenness itself; or if it were more fruitful, summer flies over it like a bird,

> and leaves so little of the fruitful season, as to forbid the hope that any thing would be made to grow there even were the soil better. *I consider this whole region doomed to perpetual barrenness.*

He conceded, however, some prospects for Mackinac:

> I think it by no means improbable, especially should the steamboats extend their route to it, that it will become a place of fashionable resort for the summer. There is no finer summer climate in the world. The purest, sweetest air—lake scenery in all its aged and grand magnificance, and the purest water; white fish in perfection, the very best fish, I believe, in the world, and trout, weighing from five to fifty pounds. No flies, and no mosquitoes, nothing to annoy . . . .No bilious fevers here; and temperate paople may, with something like certainty, if not organically diseased, spin out life's thread to its utmost tenuity. But in winter I would prefer not to be here . . .

McKenney, Cass, Ben, and 10 voyageurs proceeded by canoe to Mackinac and then Detroit. While crossing Thunder Bay after a storm on 3 September, "there was a perfect calm; the waves, however, yet undulating, but showing a smooth and glassy surface. A great many seagulls flew and clamoured about us, fearless and joyful; now sailing aloft, and then fluttering over the surface, eyeing some object below, then darting down on their 'quick-glancing wing', touching the water with their bills, and then circling away again. These birds approached us so near as to show their eyes very distinctly."

They awoke the next moring at the mouth of the Au Sable River, "after a disagreeable and sleepless night, made so by the myriads of mosquitoes that infest the shore of this river, near which, in an immense cranberry swamp that is some few hundred yards back of it, they are generated. . . . A thousand times I asked myself what mosquitoes were made for? . . . I wish I could forget the annoyance I have suffered . . . "

While sitting here, waiting for some of the voyageurs to return from a nearby Indian village with whitefish,

> our attention was excited to an interesting incident by one of the Indians pointing to it; it was a hawk [probably Peregrine Falcon] in pursuit of a gull. I never witnessed a more determined pursuit on the one hand, or dexterity in avoiding it on the other. The hawk would hover over the gull, poise himself for a moment. then fold his wings, and make a sudden pitch, which was avoided only by the gull's dropping again into the water; when the hawk would circle round, and round it, and every now and then make a pitch, which was avoided by the gull's fluttering over a swell, and placing it between itself and its pursuer. The hawk, in rising to avoid the swell, would miss his aim by passing over the object of it. Both seemed aware of the relation in which they stood to the two elements, the air and the water. Though an inhabitant of both, the gull appeared to feel that its security was only in the latter; whilst the hawk avoided it as the evil most to be dreaded. This pursuit continued for half an hour; nor did it cease, until the hawk was frightened by the noise of our paddles and the chaunting of our voyageurs. The gull was much exhausted, and would doubtless in the end, but for us, have fallen a victim to his voracious enemy. We all took the side of the gull, and if there had been a gun in company, the feeble and affrighted bird would have found a speedy relief from its terrors.

On the 5th and 6th they waited on

an island in Saginaw Bay, for winds to subside.

> [The island is] thinly wooded with aspen, maple, pine, and oak, all well grown, particularly the maple and aspen, and abounding in pigeons, robins, blue birds, the red-headed woodpecker, and cedar larks [Cedar Waxwings]. . . . Already the leaves are turning yellow; and every now and then, as I am seated on this beach, do I see them flying off from the stems where they have lived and quivered out their brief summer, and eddying before the wind, and finally lodging in the grass, or passing off upon the waters. The birds, too, are chirping and flying in all directions in flocks—the pigeons to the south, and the robins from place to place, seeking the most genial retreats against the coming winter. . . .
>
> In addition to the birds I have mentioned, I have seen today, the wood-robin, whose liquid and sweet notes I have so often sat under the shade of a tree, at Weston, and listened to, until the day was past, and the evening admonished both it and me to retire. The yellow hammer [Northern Flicker] is here also, and the sparrow.
>
> It is agreeable to see the sparrow picking the crumbs at our tent door, and to hear the robin and blue bird, the noisy jay, and even the shrill-noted woodpecker. They are the notes with which I am familiar—and give rise to associations which go back to "childhood and home"; and which the mind carries along with it as the flower does its perfume, to be shaken out by every motion of the breeze, to refresh and regale the air upon which it floats. One note alone sounds mournful; and that is the note of the blue-bird!

He also noted an orchard-like savanna of stunted, wind-blown oaks on the north point of the island, and near the center "the largest sugar maple trees I have ever seen." He collected a root from a wild grape vine, to take back to a Georgetown vintner. On the 8th, before leaving Lake Huron, "At sunrise, and when within about two hundred yards of the shore, we saw an elk standing with his fore-feet on the margin of the lake, his branching antlers striking wide out from his head, looking upon its waters, and at the rising of the sun. . . . The woods of this region abound, I am told, with this animal. On the beach, where we breakfasted. I saw the track of a wolf."

They continued all night long, with all but the steersman sleeping as they descended the St. Clair River. In the morning they paddled directly across Lake St. Clair, and reached Detroit in a heavy rain by afternoon. On the 15th, McKenney, Ben, and his pet Passenger Pigeon boarded a steamer to head homeward across Lake Erie. That night "I retired, and bade adieu to the lake and its scenery . . ., taking my bird, *Meme*, in its bark cage, to the head of my birth to quiet its alarms, which occasionally disturb its repose, and which are hushed when I speak to it. It knows my voice."

In 1827, Schoolcraft, Cass, and McKenney attended another treaty to establish tribal boundaries, this time at Little Butte des Morts, below the outlet of Lake Winnebago. Schoolcraft summarized the excursion and treaty in a brief 3 pages of his *Memoirs*. McKenney's more complete, albeit pretentious, account is in his *Memoirs* (1846). It contains very few natural history notes.

In early June, still mourning the loss of his son, Schoolcraft met the others

at Mackinac and departed by steamer to Green Bay. His wife Jane came along as far as the village of Navarino (now the city of Green Bay), "as a means of diverting her mind from the scene of our recent calamity."[4] During a violent gale on Lake Michigan, McKenney was one of the few passengers unphazed by sea-sickness:

> Those who were upon the floor, had arrived at that condition of helplessness, as to have no power over their movements—not a muscle seconded their will to take hold and steady themselves. When the boat would lurch, they would roll across the cabin, and fetch up in one confused mass on the opposite side, to remain there until anothert lurch from the other side would send them all across the floor in the opposite direction. . . . As the mass began to separate to find its lodgement on the opposite side of the cabin floor, I would, as the openings between the bodies were made, thrust in a blanket. I continued the process till I had all the sufferers wedged in, so as at last they became stationary.

The strong winds had created a seiche, which lowered the water in the south part of the bay, and here the steamer ran aground. "Every body,except the captain, was delighted at the stationary, and for some time at least, permanent situation of the boat." Later, McKenney noted, "along the south[eastern] shore of the bay, I saw ample evidence, in the uprooting of enormous trees, that were lying in all directions, of the force and violence of the storm."

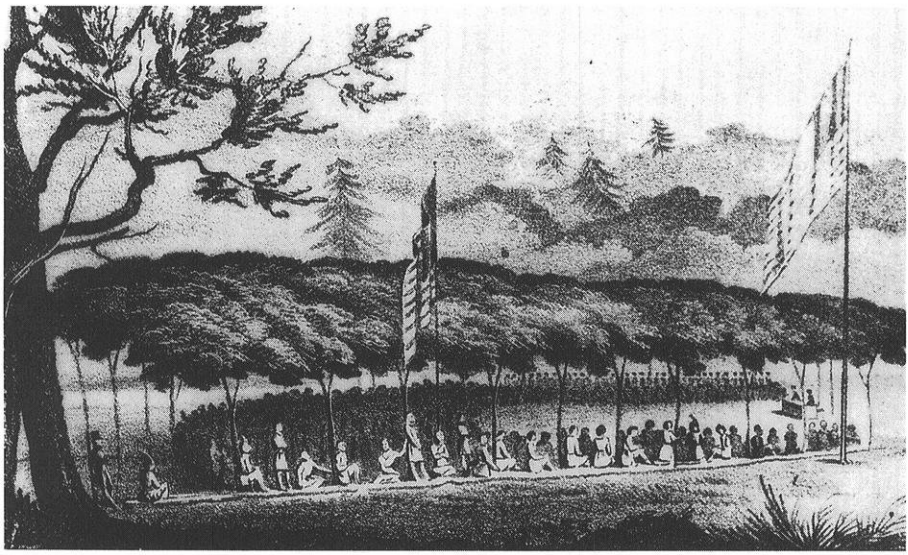
Eventually, the various commissioners and their military escort ascended the Fox River, portaging its many rapids, and encamped at Little Butte des Morts. Hundreds of Chippewas, Menominees, Winnebagos, and other Indians arrived for the negotiations. To McKenney, the Indians were "flowers and gems . . . which needed only to be cultivated and polished" by Euro-American culture and Christianity. By mid July the treaty was signed, and the hundreds of native and white participants prepared to depart. "Some canoes were undergoing the operation of being gummed, whilst the smoke of the fires ascended, filling the area with the incense odor, peculiar to them. This odor is the joint product of an occasional boiling over of the gum, and the burning of pine and cedar, and spruce boughs in their green state."

Schoolcraft left for home, while McKenney went as far as Green Bay, then returned in a canoe up the Fox with a large party of soldiers, Indians, voyageurs, traders, his servant Ben, and a young clerk and interpreter, "the estimable Mr. [John] Kinzie"—a total of 359 men. Kinzie was 24 years old and had spent his entire life among the fur traders and Indians, and was then Cass's personal secretary. Two years hence, he would become Indian sub-agent at Fort Winnebago on the Fox-Wisconsin portage. His wife would document their life there in the classic book *Wau-Bun* (Kinzie 1856).

McKenney camped a few days on the northwest shore of Lake Puckaway ("Rush Lake"), waiting for the military to catch up, meanwhile buying potatoes and squash from local Indian women. The Indian escort, uncertain about proceeding, was convinced to do so by encounters with 2 animals:

> A party of our Indians who were strolling about, had captured a rattlesnake, and found a fine bear in a trap . . . The

[4]This quote is Schoolcraft's (1851). The remaining quotes regarding the 1827 trip are McKenney's (1846).



"Grand Council held at Fond du Lac" from McKenney (1827).

ceremony of taking the snake and the bear . . . were as follows: He who had first discovered the snake, made the usual signal that he had found one. This secured it as his property; when he addressed it thus: "You are welcome, friend, from the spirit-land. We were in trouble; our friends there knew it. The Great Spirit knew it. You are come to bring us rest. We know what your message is. Take this offering of tobacco;"—taking a pinch of fragments from his pouch, and rubbing them to powder between his finger and thumb, he sprinkled it on the snake's head—"it will make you feel strong after your long journey." Then reaching well down towards the tail, he ran his finger and thumb up the back of the snake, till they reached the neck, when, with a quick compression, he rose with the snake well secured, and giving it a jerk, broke every vertebra in the process. The head was instantly opened, the fangs carefully taken out, the skin taken off, and the body being quickly cut up into small pieces, was distributed to the Indians for their medicine-bags--thus furnishing a new antidote against evil agencies, should any happen, during the remainder of their march. The skin of the snake was seen in a few minutes after his capture, fastened by the root of the red cedar, called wattap, to a lock of the captor's hair, the tail reaching down his back, and nearly to the ground. This was a proud trophy.

While this snake capture, and what followed it, was going on, the bear was being disposed of. He who had made the discovery of the entrapped bruin, set up his claim, in like manner, by announcing more formally his discovery of the prize. The bear was also addressed in terms of congratulation, in which he was told that his visit was one of great interest. He was questioned as to the condition of the departed whose spirits he had left upon this his errand of love, and then told that he would soon have the pleasure of going back to them with messages; that if the manner of sending him there should be harsh, he must blame the white man for it, since it was at his call they had left their squaws and papooses to come into

that country, &c., &c.; so calling to him a couple of his friends, he gave the order to fire, at the same time pulling the trigger of his own rifle, when Bruin, receiving three balls, fell and died. He was soon released from the trap, skinned, quartered, cut up, and over the fires, in kettles, simmering away, preparatory to a feast, in which all joined.

On 31 August they continued and camped farther up the Fox, and spied a "crane", evidently a Great Blue Heron:

> Just before sun-down, a large crane was seen coming up at the slow rate which characterizes the flight of this bird. The line of its course being such, as to both height and distance, as to make quite a mark for a trial of skill of all hands, the thought seemed spontaneous, and in a moment every man with his gun was in line, on the edge of the river bank, at open order. The lazily moving crane, flapping slowly his enormous wings, arriving opposite the first man on the right, he aimed and fired; and so on, down the whole line, each man fired, but all missing the bird, which seemed as unconscious of the peril of its situation, as though not a gun had been within a mile of it. Indeed, so imperfectly insensible was it, as to convey the idea that the thing was asleep. The count was on the left, the last man in the line, with a double-barrelled shotgun; so, it coming to his turn, he fired, first one barel, then the other, both taking effect; when the sluggish bird's long neck became pendent, and his legs losing their horizontal position, fell into the perpendicular, the whole thing coming over, and over, to the river; while reaching, and even before it touched the water, I don't know how many Indians were off this ten feet bank, head foremost, after the prize. The one who had kept under water longest, coming up nearer the bird than the rest, seized his prey, and holding it up in one hand, out of the water, swam back to shore, amidst the greetings and shouts of the whole company.

The next day, "The river now began to show signs that we were near the portage. Savannas of wild rice grew out of it in all directions, leaving a channel so narrow as to scarcely admit a barge, while its turns are so short as to make it dificult to follow their windings, except in a very short canoe. Ducks, pigeons, and blackbirds, numerous." Regarding the entire Fox River, McKenney wrote:

> There are, . . . upon its shores, many beautiful upland views, where the trees grow apart, and without undergrowth, conveying to the eye the almost certain presence of civilization and cultivation. But, in the main, its shores are level, and its waters are dark, and filled with the *folle avoin*, or wild rice, and various aquatic plants besides; some of them, the lilly, especially, very beautiful. Nature would seem, even here, to have made provision for the gratification of man; and, if the way was monotonous, she kindly scattered flowers to diversify the scene, and regale the voyager.

At the portage McKenny witnessed the willing surrender of 2 Indians wanted for their retaliatory killing of pioneers near Prairie du Chien. He was impressed by the one named Red-Bird, who, wearing a collar of mountain lion claws, submitted bravely and gracefully, singing his death song, and asking only that he not be imprisoned. He would die the next year, behind bars.

Massasauga rattlesnakes figured prominently in the experiences of many early travellers at the portage. McKenney was no exception. At one point,

> a rattle-snake passed me, and was

struck by Captain D., with his sword, and partly disabled, when I ran mine through his neck, and holding up the slain reptile, a Menomonie Indian cut off his head with his knife. The head was burned, to keep the fangs from doing injury by being trodden upon, and his body cut up, after the fashion of the one previously spoken of, and disposed of in the same way. This was looked upon as another good omen by the Indians . . .

On the morning of the 3rd, having little else to do, I busied myself to find out, if I could, how the Indians could, without danger, capture the rattle-snake. This whole country is full of them; and so constant is the noise of their rattles, when anything happens to molest them, that the ear is kept half the time deceived by what seems to be the ticking of watches, in a watch-maker's window. I was honored by a visit from one in my tent that morning, and was prompted by that call, perhaps, to find out in what way my civilities might best protect me from their too close attention. I was told the smell of tobacco made the snake sick; and this explained why, in two instances in which I had witnessed the taking of this reptile by Indians, tobacco was employed. . . . They also employ a root, but of what herb or shrub I could not find out [possibly white lettuce, *Prenanthes alba*], which they pound and put on a stick; then they excite the snake to bite it, when the poison of the root being taken into the snake's mouth, kills it. I was told they take from the neck of the turkey-buzzard a piece of the flesh, and dry and pound it, and rub their bodies with this powder. Thus guarded, the snake will not bite, or come near them. How true all, or any part of all this is, I cannot vouch, never having made trial of either . . .

The entire way [across the portage] was miry, and full of rattle-snakes. The veteran interpreter [Pierre] *Pauquet* (since murdered), was employed to drive us over. The wheels of the cart, though broad, sank deep in the mud, and the sturdy beasts bent to their duty; but without the constant employment of Pauquet's powerful arms, and the exertion of his great strength in applying to their sides repeated strokes from what seemed like a hoop or a hop-pole, exciting them, meantime, with his stentorian voice, and giving vent to anathemas, in Winnebago, with almost every breath, we must have been forced into some other conveyance, or taken to our feet in mud a foot deep, to have, in any reasonable time, reached the Ouisconsin. . . . When about mid-way, and during one of the numerous pauses which the oxen were want to make, the man bearing the flag-staff of my canoe struck, with the lower end of it, a rattle-snake that lay near by where Pauquet was standing—for he walked the entire distance. The snake, enraged at the blow, gave signs of resistance, and apprehending it might dart its fangs into Pauquet's legs, I stooped from the cart, and ran it through with my sword, when one of the men cut off its head with an axe. Whether Pauquet trusted to his leather leggins and moccasins, or their being well imbued with tobacco smoke, or to the powdered root, or the buzzard's neck, I did not learn; but he was as composed in regard to these reptiles, as if he had been mailed in brass or iron.

Descending the Wisconsin River, McKenney noted the following:

> We were charmed . . . at having escaped the monotony, as well as the tedium of the ascent of the Fox River. . . . Here, on the Wisconsin, are sandy shores, and sand-bars, and islands, and rolling and verdure-capped shores, and hills and mountains—with valleys of the richest green, in which there would seem never to have been a war, even of the elements; and these again were relieved by miniature representations of the Pictured Rocks of Lake Superior. . . .
>
> The water of the Ouisconsin is the color of brandy, with less sediment than

is found in that of the Fox river. Neither, however, should be drunk, in my opinion, without first having undergone the process of boiling. Every mile of our descent increased the variety, and grandeur, and beauty of the shores. Hills shooting up into more towering heights, without a tree, but clothed in the brightest green; others again, with summits resembling dilapidated fortifications. . . . Many of these elevations rise from the river, in the terrace form; the lower, all soft and green, and beautiful; the upper, crowned with dark evergreens [red cedar (*Juniperus virginiana*), possibly also white pine (*Pinus strobus*)], arranged so as to wear the appearance of having been planted upon a regular plan, the whole conception and execution of some mind richly stored with all the elements of a practical science. . . .

Hills, vast towering, irregular, many of them circular-crowned, increased as we approached the Mississippi; and between them, stretching far off in the interior, are beautiful savannas, widening as they recede from the river, and then terminate in fertile and richly-clad table lands. . . .

[We arrived] at Prairie du Chien at eight o'clock, in the softest, and brightest, and purest moonlight I had ever beheld. . . . The rainbow of Lake Superior has had, can have, no equal; but the moonlight of the Mississippi, on that night when I first beheld this father of rivers, will take precedence of all I had ever seen before. How I wish I could paint it! The moon above, and the river beneath me; the glory of the heavens, and the silver-tipped ripples of the Mississippi, and the pearl-tinged forests, made brighter by the contrast of the dark recesses into which the moonlight had not entered . . .

At Prairie du Chien he noted "the old picket fort standing on the plain, a little north of the village, quite a ruin"; also the floodplain meadows, the forested aspect of the east-facing bluffs on the far side of the river, and the goat prairies on the more xeric, western exposures on the near side.

> The level land, upon part of which the village stands, was once, doubtless, part of the bed of the Mississippi. When forsaken by the waters, the channel of the river running close to the opposite or southern shore, the deserted lands became a prairie. . . ., now shorn of its native grass and flowers. . . . The hills opposite rise abruptly out of the river. They are irregular, but covered with trees. On the east, are hills corresponding in height, but wearing no foliage.

On 8 September McKenney "embarked with my party in my bark canoe, and . . . was again upon the bosom of the Mississippi, and going, with its descending current, onward, to St. Louis." They camped in "a mosquito hive", not far from an incipient village named in honor of a man McKenney well knew—Cassville. The next day they passed southward, out of the Michigan Territory.

Meanwhile, Schoolcraft had returned safely to his wife and home at the Sault. Whereas he had made trips into the wilderness during 8 of the previous 10 years, for the ensuing 3–1/2 years he would travel only to Detroit and the eastern states. He declined a position as naturalist on an expedition to the South Seas, yet he maintained correspondence and interest in natural history. As he noted on 1 June 1828, "The study of Natural History presents some of the most pleasing evidences of exactitude and order, in every department of creation, and adds to life many hours of the most innocent and exalted enjoyment. It drops, as it were, golden tissues in the

walks of life, which there is a perpetual enjoyment in unraveling."

To be continued

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The Fall Season: 1992

by Mark S. Peterson

Many gardeners and farmers will probably not remember the 1992 growing season with too much fondness. Although a volcano in the Philippines was responsible for a series of the most beautiful sunsets in memory, the ash it produced also caused temperatures to be much colder than normal. The delayed growing season was further set back by a frost or freeze on the first day of summer. By the time the fall season arrived in August, it became a race between the ripening of the corn and tomatoes and the frost. In the fall of 1992, the frost won. One consolation to the poor growing season was that a bountiful blackberry crop lasted until about October 1.

As fall seasons go, most weather occurrences were not memorable. One exception was the devastating tornado that clipped off a large portion of the south side of Wautoma on August 29. A widespread frost occurred on September 23 in the north and central areas were hit with a harder frost and freeze on the 29th. The first measurable snows fell on October 15th and 19th. Frequent snows of less than 2" occurred throughout most of November, although no bitter cold periods were noted. A 10 inch wet, heavy snow that would last the winter fell in Caroline on the evening of November 25th.

The fall passerine migration seemed to have fewer waves than usual. Murray Berner reported 8 mornings with 14 or more species of warblers between August 25 and September 20, the high being 18 species on September 7. In Dane County, Philip Ashman found 13 species of warblers on August 29 and 16 species on September 19.

Eric Munson, who contributed his observations during his undergraduate years at UW-Stevens Point, died on November 23 in Illinois, at the age of 23. Most of his observations were from Portage County.

Rarities during the season included: a Red-throated Loon in Douglas County, Red-necked Grebes in Burnett, Chippewa, Dane, Green Lake, and Winnebago counties, Eared Grebes in Dane, Manitowoc, Milwaukee, and Sheboygan Counties, American White Pelicans in Brown, Burnett, Chippewa, Dodge, Green Lake, La

Crosse, Trempealeau, and Vernon Counties, Snowy Egrets in Brown County, Trumpeter Swans in Burnett, Dane, and Polk Counties, Greater White-fronted Geese in Columbia, Dane, and Douglas Counties, Ross' Geese in Columbia and Dodge Counties, a King Eider in Ozaukee County, Harlequin Ducks in Milwaukee and Ozaukee Counties, Swainson's Hawks in Iron, Ozaukee, and Pierce Counties, Golden Eagles in Manitowoc, Monroe, Ozaukee, and Sheboygan Counties, a Yellow Rail in Milwaukee County, a King Rail in Dodge County, Piping Plovers in Bayfield and Milwaukee Counties, American Avocets in Dodge County, Whimbrels in Manitowoc, Milwaukee and Sheboygan Counties, a Marbled Godwit in Milwaukee County, Western Sandpipers in Douglas, Milwaukee, and Vernon Counties, Buff-breasted Sandpipers in Dane, Douglas, Racine, and Vernon Counties, Red-necked Phalaropes in Dodge County, a Jaeger Sp. in Sheboygan County, Little Gulls in Manitowoc and Milwaukee Counties, a Thayer's Gull in Ozaukee County, a Lesser Black-backed Gull in Milwaukee County, Great Black-backed gulls in Douglas and Manitowoc Counties. Black-backed Woodpeckers in Douglas and Forest Counties, a Scissor-tailed Flycatcher in Trempealeau County, a Vermilion Flycatcher in Calumet County, Carolina Wrens in Dane, Door, Manitowoc, Milwaukee, Ozaukee, and Racine counties, a Townsend's Solitaire in Iowa County, a Northern Mockingbird in Ozaukee County, Loggerhead Shrikes in Oconto County, a Bell's Vireo in Iowa County, a Green-tailed Towhee in Bayfield County, a Black-throated Sparrow in Winnebago County, Sharp-tailed Sparrows in Milwaukee and St. Croix County, and a Golden-crowned Sparrow in Sheboygan County.

Reports (1 August 1992–30 November 1992)

Red-throated Loon.—The only report was from Burcar and Johnson in Douglas county on October 3. Common Loon

Reported at the beginning of the period south to Barron and Taylor Counties. Burcar found 34 in Dane County on November 10. Found at the end of the period in Dane and Green Lake Counties.

Pied-billed Grebe.—Found in scattered areas throughout the state at the beginning of the period. Domagalski found 148 in Dodge County on August 1. Last reported by Burcar in Sauk County on November 27.

Horned Grebe.—First reported by Johnson in Douglas County on September 15. Tessen found 33 in Sheboygan County on November 11. Reported at the end of the period in Dane, Door, Oconto, and Ozaukee Counties.

Red-necked Grebe.—Found at the beginning of the period in Burnett, Green Lake, and Winnebago Counties. Reported at the end of the period in Dane County by Robbins. Also found during the period in Chippewa County.

Eared Grebe.—First reported on August 30 in Dane County by Hansen. Last reported by the Brassers in Sheboygan County on November 7. Also reported during the period in Manitowoc and Milwaukee Counties.

American White Pelican.— Found at the beginning of the period in Burnett, Dodge, and La Crosse Counties. Dankert and Lesher found 250 in La Crosse County on August 18. Last reported by Domagalski in Dodge County on October 14. Also found during the period in Brown, Chippewa, Green Lake, Trempealeau, and Vernon Counties.

Double-crested Cormorant.—Reported in scattered areas throughout the state at the

beginning of the period. The Lukes found 4300 in Door County on August 11. Found at the end of the period in Dane and Winnebago Counties.

American Bittern.—Found at the beginning of the period in Ashland, Barron, Bayfield, Burnett, Douglas, Price, and Taylor Counties. Last reported by Hoefler in Burnett County on October 12.

Least Bittern.—Reported at the beginning of the period in Dodge, Oconto, and Shawano Counties. Burcar found 4 in Dodge County on August 16. Last reported by Burcar in Dodge County on October 5.

Great Blue Heron.—Found throughout the state at the beginning of the period. Burcar found 61 in Dodge County on August 9. Reported at the end of the period in Dane, Dodge, Milwaukee, Monroe, and Winnebago Counties.

Great Egret.—Found at the beginning of the period in Barron, Burnett, Dodge, Green Lake, Jefferson, Polk, Shawano, and Winnebago Counties. Burcar found 130 in Dodge County on August 9. Last reported by Burcar in Dodge County on November 12.

Snowy Egret.—In Brown County Nussbaum found 2 on August 15, Burcar found 4 on August 29, and Nussbaum found 4 on September 9.

Cattle Egret.—First reported by the Smiths in Oconto County on August 16. Nussbaum found 27 in Brown County on September 9. Last reported by Cowart in Ozaukee County on November 13. Also found during the period in Dodge and Taylor Counties.

Green-backed Heron.—Reported at the beginning of the period in scattered areas throughout the state. Burcar found 26 in Dodge County on August 5. Last reported by Korducki in Milwaukee County on October 15.

Black-crowned Night-Heron.—Found at the beginning of the period in Dodge, Manitowoc, Milwaukee, Oconto, Shawano, and Winnebago Counties. Domagalski found 119 in Dodge County on August 9. Last reported by Domagalski in Milwaukee County on November 8.

Trumpeter Swan.—Reported at the beginning of the period in Burnett and Polk Counties. Hudick found 7 in Polk County on October 26. Reported at the end of the period in Burnett County by Hoefler. Also reported during the period in Dane County.

Tundra Swan.—First reported on October 15 in Burnett County by Hoefler. Dankert found 2500 in Vernon County on November 21. Reported at the end of the period in Ashland, Bayfield, Oconto, and Winnebago Counties.

Mute Swan.—Found at the beginning of the period in Ashland, Bayfield, Dane, Douglas, Milwaukee, and Portage Counties. The LaValleys found 9 in Douglas County on October 7. Reported at the end of the period in Dane, Douglas, Milwaukee, and Portage Counties.

Greater White-fronted Goose.—Reported on November 4 in Dane County by Burcar, on November 10 in Douglas County by Johnson, on November 11 in Columbia county by Legler, and on November 14 in Columbia County by Ashman.

Snow Goose.—First reported by Nussbaum in Winnebago County on August 19. The Sheas found 254 in Columbia County on October 25. Last reported by Korducki in Milwaukee County on November 27.

Ross' Goose.—Up to 5 individuals were found in Columbia County between October 18 and October 31 by Ashman, Burcar, Frank, Gustafson, Hansen, Peterson, and Robbins. Also reported by Hall in Dodge County on November 17. See By the Wayside.

Canada Goose.—Found throughout the state at the beginning of the period. Ziebell found 5000 in Winnebago County on October 3. Reported throughout the state at the end of the period.

Wood Duck.—Found at the beginning of the period south to Dane and Milwaukee counties. Burcar found 300 in Dodge County on August 23. Reported at the end of the period in Monroe County by Kuecherer.

Green-winged Teal.—Reported at the beginning of the period in Ashland, Barron, Bayfield, Burnett, Dane, Dodge, Manitowoc, and Milwaukee Counties. The Sheas found 200 in

Columbia County on October 25. Last reported by Domagalski in Dodge County on November 26.

American Black Duck.—Reported at the beginning of the period in Ashland, Barron, Bayfield, Dane, Dodge, Manitowoc, Milwaukee, and Winnebago Counties. Ashland found 100 in Columbia County on November 2. Found in scattered areas throughout the state at the end of the period.

Mallard.—Found throughout the state at the beginning of the period. Ashman found 4000 in Columbia County on November 2. Reported throughout the state at the end of the period.

Northern Pintail.—First reported on August 9 in Dodge County by Burcar and Domagalski. Ashman found 25 in Columbia County on September 20. Last reported by Dankert in Vernon County on November 25.

Blue-winged Teal.—Found throughout the state at the beginning of the period. Dankert found 300 in La Crosse County on August 18. Last reported by Anderson and Petznick in Outagamie County on October 30.

Northern Shoveler.—Reported at the beginning of the period in Barron and Dane Counties. Ashman found 155 in Dane County on November 15. found at the end of the period in Dane and Winnebago Counties.

Gadwall.—Found at the beginning of the period in Burnett and Dodge Counties. Burcar found 275 in Dodge County on October 5. Reported at the end of the period in Dane County by Ashman and Burcar.

American Wigeon.—Reported at the beginning of the period in Barron and Burnett Counties. Burcar found 300 in Dodge County on October 15. Reported at the end of the period in Dane County by Robbins.

Canvasback.—Reported at the beginning of the period in Dodge County by Domagalski. Dankert found 5000 in Vernon County on October 31. Found at the end of the period in Green Lake County by Schultz.

Redhead.—Found at the beginning of the period in Dodge and Door Counties. The Lukes found 1000 in Door County on October 29. Reported at the end of the period in Dane and Milwaukee Counties.

Ring-necked Duck.—Reported at the beginning of the period in Barron, Burnett, Dane, Douglas, and Monroe Counties. Dankert found 500 in Vernon County on October 31. Found at the end of the period in Dane, Eau Claire, and Winnebago Counties.

Greater Scaup.—First reported by Burcar in Manitowoc County on August 29. The Brassers found over 3000 in Sheboygan County on October 25. Found at the end of the period in Door, Milwaukee, Ozaukee, Sheboygan, and Winnebago Counties.

Lesser Scaup.—First reported on September 2 in Milwaukee County by Burcar and Domagalski. Verch found 1063 in Ashland and Bayfield Counties on October 20. Found at the end of the period in Dane, Eau Claire, Manitowoc, Milwaukee, and Winnebago Counties.

Scaup Sp..—Reported by Korducki in Milwaukee County on August 15.

King Eider.—Reported in Ozaukee County on November 21 by Domagalski and Konings and on November 22 by Boldt, Burcar, Cowart, Frank, Gustafson, and Tessen. See By the Wayside.

Harlequin Duck.—Reported in Ozaukee County on October 24 by Burcar, Domagalski, and Korducki, on October 31 by Gustafson, and from November 15 to the end of the period in Milwaukee County by Korducki.

Oldsquaw.—First reported by Bontly in Milwaukee County on October 21. Tessen found over 150 in Ozaukee County on November 11. Found at the end of the period in Manitowoc, Milwaukee, and Ozaukee Counties.

Black Scoter.—First reported by Sontag in Manitowoc County on October 8. Tessen found 5 in Sheboygan County on October 24. Last reported by Domagalkski in Ozaukee County on November 21.

Surf Scoter.—First reported on September 28 in Ozaukee County by Domagalski. Tessen

found 10 in Sheboygan County on October 24. Last reported by Sontag in Manitowoc County on November 18.

White-winged Scoter.—First reported by Hoefler in Burnett County on October 8. Tessen found 15 in Sheboygan County on October 24. Reported at the end of the period in Dane County by Burcar.

Common Goldeneye.—Reported at the beginning of the period in Door County by the Kules. Domagalski found 683 in Ozaukee County on November 28. Found in scattered areas throughout the state at the end of the period.

Bufflehead.—First reported on August 18 in La Crosse County by Dankert and Lesher. Burcar found 200 in Dane County on November 10. Found in scattered areas throughout the state at the end of the period.

Hooded Merganser.—Found at the beginning of the period in Barron, Burnett, Douglas, La Crosse, and Taylor Counties. Peterson found over 300 in Shawano County on November 10. Reported at the end of the period in Ashland, Bayfield, Dane, Milwaukee, and Winnebago Counties.

Common Merganser.—Reported at the beginning of the period in Ashland, Bayfield, and Taylor Counties. Carlsen found 3000 in Pierce County on November 17. Found in scattered areas throughout the state at the end of the period.

Red-breasted Merganser.—Found at the beginning of the period in Ashland, Bayfield, Door, and Oneida Counties. Domagalski found 536 in Ozaukee County on October 11. Reported at the end of the period in Dane, Door, Manitowoc, Milwaukee, Ozaukee, Portage, and Winnebago Counties.

Ruddy Duck.—Reported at the beginning of the period in Columbia, Dane, Dodge, and Winnebago Counties. Burcar and Domagalski found 80 in Dodge county on October 5. Found at the end of the period in Manitowoc, Milwaukee, and Winnebago Counties.

Turkey Vulture.—Found at the beginning of the period in scattered areas throughout the state. Cowart found 85 in Ozaukee County on October 12. Last reported by Berger in Sheboygan County on November 14.

Osprey.—Reported at the beginning of the period south to Monroe, Dane, and Dodge Counties. Cowart found 27 in Ozaukee County on September 18. Last reported by Burcar in Dane County on October 28.

Bald Eagle.—Found at the beginning of the period south to Pierce, Portage, and Door Counties. Carlsen found 10 in Pierce County on October 20. Reported at the end of the period south to Monroe, Dane, and Dodge Counties.

Northern Harrier.—Reported at the beginning of the period south to Dodge County. Berger found 23 in Sheboygan County on September 28. Found at the end of the period in Burnett, Dodge, Door, Green Lake, Oconto, Walworth, and Winnebago Counties.

Sharp-shinned Hawk.—Found at the beginning of the period in scattered areas throughout the state. Berger reported 807 in Sheboygan County on September 28. Reported at the end of the period in scattered areas throughout the state.

Cooper's Hawk.—Reported in scattered areas throughout the state at the beginning of the period. Berger reported 44 in Sheboygan County on September 28. Found in scattered areas throughout the state at the end of the period.

Northern Goshawk.—Reported at the beginning of the period in Door, douglas, Marathon, and Taylor Counties. Berger reported 7 in Sheboygan County on November 14. Found in scattered areas throughout the state at the end of the period.

Red-shouldered Hawk.—Found at the beginning of the period in Dodge, Monroe, Outagamie, Polk, and Portage Counties. Berger reported 9 in Sheboygan County on October 12. Reported at the end of the period in Polk County by Hudick.

Broad-winged Hawk.—Reported at the beginning of the period south to Dane and Monroe Counties. Cowart found 14,100 in Ozaukee County on September 18. Last reported by Goff in Barron County on October 17.

Swainson's Hawk.—Reported in Ozaukee County by Cowart on September 19, in Pierce County by Burcar on September 28, and in Iron County by Elias on September 30.

Red-tailed Hawk.—Found throughout the state at the beginning of the period. Cowart found 197 in Ozaukee County on November 14. Reported at the end of the period north to Burnett, Douglas, and Oconto Counties.

Rough-legged Hawk.—First reported on August 27 by the Engbergs in Oneida County. Cowart found 14 in Ozaukee County on November 14. Found in scattered areas throughout the state at the end of the period.

Golden Eagle.—Reported in Manitowoc County on August 28 by Sontag, in Monroe County on October 17 and November 27 by Epstein, in Sheboygan County on October 30 by Berger, and in Ozaukee County on November 5 by Robbins.

American Kestrel.—Found throughout the state at the beginning of the period. Berger reported 96 in Sheboygan County on September 18. Reported at the end of the period north to Burnett, Taylor, Oconto, and Door Counties.

Merlin.—Reported at the beginning of the period in Ashland, Bayfield, and Douglas Counties. Berger found 59 in Sheboygan County on September 18. Reported at the end of the period in Douglas County by Johnson.

Peregrine Falcon.—Found at the beginning of the period in Dane, La Crosse, and Milwaukee Counties. Cowart found 14 in Ozaukee County on September 27. Reported at the end of the period in Milwaukee County by Korducki.

Gray Partridge.—Reported during the period in Dane, Dodge, and Green counties. Burcar found 20 in Dane County on October 1.

Ring-necked Pheasant.—Found during the period north to Burnett, Douglas, Taylor, Oconto, and Door Counties. The Smiths found 18 in Oconto County on August 2.

Sharp-tailed Grouse.—Reported during the period in Ashland, Bayfield, Burnett, and Taylor Counties.

Ruffed Grouse.—Reported during the period south to Crawford, Iowa, Green, and Sheboygan Counties. Berner found 8 in Portage County on August 28.

Wild Turkey.—Found during the period north to Burnett, Oconto, and Door Counties. Carlsen found 30 in Pierce County on November 19.

Northern Bobwhite.—Reported during the period in Dane, Iowa, Monroe, Richland, and Winnebago Counties. Burcar found 15 in Dane County on October 2.

Yellow Rail.—Diehl reported an injured individual in Milwaukee County on October 7.

King Rail.—Burcar reported one in Dodge County on August 5.

Virginia Rail.—Reported at the beginning of the period in Ashland, Bayfield, Dodge, Douglas, and Oconto Counties. Burcar found 5 in Dodge County on August 16. Last reported by Burcar in Dodge County on September 18.

Sora.—Found in scattered areas throughout the state at the beginning of the period. Burcar fund 11 in Dodge County on August 23. Last reported by Gustafson in Milwaukee County on October 13.

Common Moorhen.—Reported at the beginning of the period in Dodge and Oconto Counties. Burcar found 5 in Dodge County on August 5 and the Smiths found 5 in Oconto County on August 30. Last reported by Domagalski in Dodge County on September 29.

American Coot.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 5000 in Dane County on November 10. Reported at the end of the period north to Chippewa, Winnebago, and Manitowoc Counties.

Sandhill Crane.—Reported in scattered areas throughout the state at the beginning of the period. Ziebell found 500 in Winnebago County on October 3. Last reported by Burcar in Iowa County on November 29.

Black-bellied Plover.—First reported on

August 9 in Dodge County by Burcar and Domagalski. Tessen found 15 in Ozaukee County on September 19 and the Smiths found 15 in Oconto County on November 11. Reported at the end of the period in Dane County by Hansen.

Lesser Golden-Plover.—First reported by Gustafson in Racine county on August 24. Berner found 69 in Portage County on October 6. Reported at the end of the period in Dane County by Hansen.

Semipalmated Plover.—Reported at the beginning of the period in Burnett, Dane, Dodge, and Milwaukee Counties. Burcar found 15 in Dane County on August 8. Last reported by Gustafson in Milwaukee County on October 27.

Piping Plover.—Reported on September 2 in Milwaukee County by Boldt, Burcar, Domagalski, Gustafson, and Korducki and in Bayfield County on September 22 by Schubert and on September 22 and 24 by Verch.

Killdeer.—Found throughout the state at the beginning of the period. Burcar found 347 in Dane County on August 19. Last reported on November 11 in Green County by Burcar and in Walworth County by Tessen.

American Avocet.—Reported in Dodge County on October 7 by Domagalski and on October 8 by Burcar.

Greater Yellowlegs.—Reported at the beginning of the period in Burnett, Dane, Dodge, Door, Oconto, and Manitowoc Counties. The Smiths found 19 in Oconto County on August 22. Last reported by Burcar in Dodge County on November 12.

Lesser Yellowlegs.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 135 in Dodge County on August 23. Last reported by Burcar in Dodge County on November 12.

Solitary Sandpiper.—Reported at the beginning of the period in scattered areas throughout the state. Burcar found 19 in Dane County on August 8. Last reported by Sontag in Manitowoc County on November 20.

Willet.—Johnson found one in Douglas County on August 21.

Spotted Sandpiper.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 16 in Dane County on August 13. Last reported by Sontag in Manitowoc County on October 26.

Upland Sandpiper.—Reported at the beginning of the period in Burnett, Door, and Taylor Counties. Last reported by Armbrust in Taylor County on August 10.

Whimbrel.—Reported between August 26 and September 9 in Manitowoc County by Sontag, in Sheboygan County on August 29 by Burcar, and between August 27 and September 7 in Milwaukee County by Boldt, Bontly, Cowart, Domagalski, Frank, Gustafson, and Korducki.

Hudsonian Godwit.—Four were seen in Milwaukee County on October 16 by Burcar, Domagalski, and Korducki.

Marbled Godwit.—Reported between August 30 and September 18 in Milwaukee County by Boldt, Bontly, Burcar, Domagalski, Frank, Gustafson, Korducki, Nussbaum, and Strelka.

Ruddy Turnstone.—Found at the beginning of the period in Dane and Milwaukee Counties. Johnson found 8 in Douglas County on September 21. Last reported by Sontag in Manitowoc County on November 3.

Red Knot.—First reported on August 22 in Douglas County by Johnson. Last reported on September 28 in Milwaukee County by Domagalski, Korducki, and Nussbaum.

Sanderling.—Reported at the beginning of the period in Dane County by Burcar. Sontag found 28 in Manitowoc County on October 16. Last reported by the Brassers and Peterson in Sheboygan on November 6.

Semipalmated Sandpiper.—Reported at the beginning of the period in Dane, Dodge, Douglas, Manitowoc, Milwaukee, and Oconto Counties. Ashman found 50 in Dane County on August 2. Last reported on October 25 in Milwaukee County by Domagalski and Korducki.

Whimbrel and Marbled Godwit *photo by Brian Boldt*

Western Sandpiper.—First reported on August 20 in Douglas County by Semo. Last reported on September 25 in Milwaukee County by Korducki. Also reported during the period in Vernon County.

Least Sandpiper.—Reported at the beginning of the period in Dane, Dodge, Douglas, Milwaukee, and Oconto Counties. Burcar found 90 in Dodge County on September 13. Last reported by Burcar in Dodge County on November 12.

White-rumped Sandpiper.—First reported on August 20 in Dane County by Robbins. Burcar and Hansen found 5 in Dane County on August 27. Last reported by Korducki in Milwaukee County on November 26.

Baird's Sandpiper.—Reported at the beginning of the period in Douglas and Milwaukee Counties. Domagalski found 37 in Dodge County on September 18. Last reported by Sontag in Manitowoc County on November 5.

Pectoral Sandpiper.—Found at the beginning of the period in scattered areas throughout the state. Burcar found 395 in Dane County on August 26. Reported at the end of the period in Dane County by Hansen.

Dunlin.—First reported on August 2 in Dane County by Burcar. Burcar found 19 in Dane County on November 4. Last reported by Burcar in Dodge County on November 18.

Stilt Sandpiper.—Reported at the begin-

ning of the period in Douglas County by Johnson. Burcar found 7 in Dodge County on October 5 and Domagalski found 7 in Dodge County on October 9. Last reported on October 24 in Milwaukee County by Burcar and Korducki.

Buff-breasted Sandpiper.—First reported on August 18 in Dane County by Burcar. Johnson found 5 in Douglas County on September 5. Last reported by Ashman in Dane County on September 13. Also reported during the period in Racine and Vernon Counties.

Short-billed Dowitcher.—Found at the beginning of the period in Dane, Dodge, Manitowoc, and Milwaukee Counties. Burcar found 101 in Dodge County on August 23. Last reported by Burcar in Dodge County on October 8.

Long-billed Dowitcher.—First reported by Goff in Barron County on August 22. Burcar found 12 in Dodge County on November 3. Last reported by Burcar and Domagalski in Dodge County on November 7.

Common Snipe.—Found in scattered areas throughout the state at the beginning of the period. The Smiths found 43 in Oconto County on September 13 and Dankert found 43 in Vernon County on October 18. Last reported by Gustafson in Milwaukee County on November 11.

American Woodcock.—Found at the beginning of the period south to Monroe County. Diehl found 3 in Milwaukee County on November 5. Last reported on November 5 in Manitowoc County by Sontag and in Milwaukee County by Diehl.

Wilson's Phalarope.—First reported by Ashman in Dane County on August 4. Burcar and Domagalski found 3 in Dodge County on August 23. Last reported on September 12 in Dodge County by Burcar and Domagalski.

Red-necked Phalarope.—First reported by Tessen Dodge County on August 29. Domagalski found 28 in Dodge County on September 17. Last reported by Domagalski in Dodge County on October 14.

Jaeger Sp..—Burcar saw one in Sheboygan County on October 15.

Franklin's Gull.—First reported in Outagamie County on August 18 by Nussbaum. Hudick found 320 in Polk County on October 5. Last reported in Columbia County by Ashman on November 7.

Little Gull.—Reported at the beginning of the period in Manitowoc and Milwaukee Counties. Sontag found 5 in Manitowoc County on August 3. Last reported by Cowart in Milwaukee County on November 1.

Bonaparte's Gull.—Found at the beginning of the period in Douglas, Manitowoc, Milwaukee, Sheboygan, and Winnebago Counties. Johnson found 24 in Douglas County on October 17. Reported at the end of the period in Milwaukee County by Korducki.

Ring-billed Gull.—Reported throughout the state during the period. Burcar found 5500 in Dane County on November 10.

Herring Gull.—Found in scattered areas throughout the state during the period. Sontag found 508 in Manitowoc County on October 19. Boldt reported an albino in Milwaukee County from September 13 to 26.

Thayer's Gull.—Cowart saw one in Ozaukee County on September 27.

Lesser Black-backed Gull.—Reported by Boldt in Milwaukee County on August 27. See "By the Wayside."

Glaucous Gull.—First reported by Sontag in Manitowoc County on October 19. Johnson found 4 in Douglas County on November 10. Reported at the end of the period in Douglas, Manitowoc, and Winnebago Counties.

Great Black-backed Gull.—Reported by Rudy in Manitowoc County on August 22 and by Johnson in Douglas County on November 10.

Caspian Tern.—Reported at the beginning of the period in scattered areas throughout the state. The Lukes found over 300 in Door County on August 19. Last reported on October 3 by Burcar in Douglas County and by Tessen in Ozaukee County.

Common Tern.—Common Tern reported

at the beginning of the period in Ashland, Bayfield, Door, Douglas, Manitowoc, Milwaukee, and Sheboygan Counties. The Smiths found 65 in Oconto County on September 13. Last reported by the Smiths in Oconto County on September 27.

Forster's Tern.—Reported at the beginning of the period in Dane, Dodge, Green Lake, Manitowoc, Milwaukee, and Winnebago Counties. The Smiths found 56 in Oconto County on August 23. Last reported by Sontag in Manitowoc County on October 1.

Black Tern.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 20 in Dodge County on August 5. Last reported by Burcar in Dodge County on September 18.

Rock Dove.—Reported throughout the state during the period. The La Valleys reported over 1000 in Douglas County at any time during the period.

Mourning Dove.—Found throughout the state during the period. Berner found 314 in Portage County on August 3.

Black-billed Cuckoo.—Reported at the beginning of the period in Barron, Burnett, Dodge, Door, Oconto, Richland, and Taylor Counties. the Smiths found 4 in Oconto County on August 16. Last reported by Armbrust in Taylor County on October 12.

Yellow-billed Cuckoo.—Found at the beginning of the period in Door, Milwaukee, Monroe, Portage, and Richland Counties. Last reported on September 27 in Outagamie County by Anderson, Nussbaum, and Petznick.

Eastern Screech Owl.—Reported during the period in Dane, Dodge, Iowa, Kenosha, La Crosse, Milwaukee, Ozaukee, Richland, Sheboygan, Taylor, and Winnebago Counties.

Great Horned Owl.—Found throughout the state during the period. Semo found 7 in Douglas County on November 27.

Snowy Owl.—First reported by the La Valleys in Douglas County on September 30. Found at the end of the period in Ashland, Bayfield, Burnett, Douglas, Manitowoc, and Taylor Counties.

Barred Owl.—Reported during the period south to Rock and Jefferson Counties.

Long-eared Owl.—Reported by Berger in Sheboygan County on September 29 and by Diehl in Milwaukee County on November 9.

Short-eared Owl.—Reported in Burnett County by Hoefler on September 25 and in Milwaukee County from October 3 to November 14 by Domagalski, Gustafson, and Korducki.

Northern Saw-whet Owl.—First reported on September 21 in Portage County by Jacobs. On October 18 Jacobs reported 54 in Portage County and Berger reported 25 in Sheboygan County. Last reported by Diehl in Milwaukee County on November 23.

Common Nighthawk.—Found throughout the state at the beginning of the period. Berger reported 1250 in Sheboygan County on August 25. Last reported by Evanson in Dane County on October 2.

Whip-poor-will.—Reported at the beginning of the period in Monroe, Taylor, and Polk Counties. Last reported by Berger in Sheboygan County on September 29.

Chimney Swift.—Found throughout the state at the beginning of the period. Domagalski found 486 in Ozaukee County on September 18. Last reported by Gustafson in Milwaukee County on October 7.

Ruby-throated Hummingbird.—Reported at the beginning of the period south to Dane, Jefferson, and Walworth Counties. The Engbergs found 4 in Oneida County on August 10 and the Smiths found 4 in Oconto County on August 15. Last reported by Bontly in Milwaukee County on October 11.

Belted Kingfisher.—Found throughout the state at the beginning of the period. Burcar found 7 in Dodge County on October 8. Reported at the end of the period in Manitowoc, Monroe, and Price Counties.

Red-headed Woodpecker.—Found in

scattered areas throughout the state at the beginning of the period. Berner found 7 in Portage County on August 19. reported at the end of the period in Dane, Door, Monroe, and Taylor Counties.

Red-bellied Woodpecker.—Found during the period north to Burnett, Washburn, Taylor, Oconto, and Door Counties. Burcar found 9 in Dane County on November 24.

Yellow-bellied Sapsucker.—Reported at the beginning of the period south to Dane County. Ashman found 4 in Dane County on September 19. Last reported by Burcar in Sauk County on November 5.

Downy Woodpecker.—Found throughout the state at the beginning of the period. Hardy reported a maximum of 15 in Price County during the period.

Hairy Woodpecker.—Reported throughout the state during the period. Hardy reported a maximum of 11 in Price County during the period.

Black-backed Woodpecker.—Reported by Johnson in Douglas County on August 15, by Reardon in Forest County on October 15, and by Semo in Douglas County on October 29.

Northern Flicker.—Found throughout the state during the period. The La Valleys found 48 in Douglas County on September 22. Reported at the end of the period in Dane, Door, and Green Lake Counties.

Pileated Woodpecker.—Reported during the period south to Lafayette and Rock Counties.

Olive-sided Flycatcher.—First reported by Reardon in Forest County on August 8. Last reported by Berger in Sheboygan County on September 14.

Eastern Wood-Pewee.—Found throughout the state at the beginning of the period. Burcar found 24 in Dodge County on August 5. Last reported on September 28 in Manitowoc County by Sontag and by Bontly in Milwaukee County.

Yellow-bellied Flycatcher.—Reported at the beginning of the period in Douglas, Oconto, and Price Counties. Ashman found 4 in Dane County on August 29. Last reported by Burcar in Dane County on October 4.

Acadian Flycatcher.—Reported at the beginning of the period in Dane and Dodge Counties. Ashman found 4 in Dane County on August 16. Last reported by Burcar in Dane County on August 27.

Alder Flycatcher.—Reported at the beginning of the period south to Dane and Dodge Counties. Last reported on September 22 in Ashland and Bayfield Counties by Verch.

Willow Flycatcher.—Reported at the beginning of the period north to Taylor and Oconto Counties. Burcar found 11 in Dodge County on August 5. Last reported by Burcar in Dane county on September 21.

Least Flycatcher.—Found at the beginning of the period south to Monroe and Dodge Counties. Berner found 11 in Portage County on August 31. Last reported on September 27 by Hardy in Price County and by Berner in Portage County.

Eastern Phoebe.—Found throughout the state at the beginning of the period. Burcar found 9 in Dane County on September 21. Last reported by Walsh in Sauk County on November 29.

Great Crested Flycatcher.—Reported at the beginning of the period south to Dane, Jefferson, and Milwaukee Counties. The Smiths found 11 in Oconto County on August 2. Last reported by Bontly on September 30 in Milwaukee County.

Eastern Kingbird.—Found throughout the state at the beginning of the period. The Smiths found 48 in Oconto County on August 2. Last reported by Burcar in Dane County on September 21.

Scissor-tailed Flycatcher.—Kirsch found one in Trempealeau County on October 7. See "By the Wayside."

Vermilion Flycatcher.—Hauser found one accompanied by another flycatcher in Cal-

umet County on October 18. See "By the Wayside."

Horned Lark.—Reported at the beginning of the period south to Dane County. Burcar found 75 in Dane County on October 1. Found at the end of the period north to Burnett and Taylor Counties.

Purple Martin.—Found in scattered areas throughout the state at the beginning of the period. Ziebell found 250 in Winnebago County on August 18 and Sontag found 250 in Manitowoc County on September 2. Last reported by Domagalski in Ozaukee County on September 18.

Tree Swallow.—Found throughout the state at the beginning of the period. Burcar found 2000 in Dodge County on August 5. Last reported on November 11 in Dane and Green Counties by Burcar.

Northern Rough-winged Swallow.—Reported at the beginning of the period in Barron, Dane, Dodge, Douglas, Monroe, Polk, and Taylor Counties. Last reported by Burcar in La Crosse County on September 29.

Bank Swallow.—Found at the beginning of the period north to Douglas and Taylor Counties. Burcar found 370 in Dodge County on August 9. Last reported by Hudick in Polk County on September 17.

Cliff Swallow.—Reported at the beginning of the period south to Dane and Milwaukee Counties. Domagalski found 760 in Ozaukee County on August 30. Last reported by Burcar in Dodge County on September 18.

Barn Swallow.—Found throughout the state at the beginning of the period. Burcar found 270 in Dodge County on August 9. Last reported by Korducki in Ozaukee County on October 16.

Gray Jay.—Reported during the period in Ashland, Douglas, Forest, Price, Sawyer, Taylor, and Vilas Counties. Hardy reported a maximum of 10 in Price County during the period.

Blue Jay.—Found throughout the state during the period. Burcar found 74 in Dane County on October 7.

American Crow.—Reported throughout the state during the period. Duerksen found 150 in Richland County on November 17.

Common Raven.—Reported during the period south to Monroe, Juneau, Portage, and Outagamie Counties. The Smiths found 9 in Oconto County on August 30.

Black-capped Chickadee.—Found throughout the state during the period. Hardy found a maximum of 70 in Price County during the period.

Boreal Chickadee.—Reported by Gustafson in Forest and Oneida Counties on August 11.

Tufted Titmouse.—Found during the period in Crawford, Dane, Green, Iowa, Juneau, La Crosse, and Richland Counties. Dankert found 8 in Crawford County on October 12.

Red-breasted Nuthatch.—Reported at the beginning of the period south to Dane County. Berner found 24 in Portage County on October 4. Found at the end of the period south to Dane, Jefferson, and Milwaukee Counties.

White-breasted Nuthatch.—Found throughout the state during the period. Burcar found 14 in Dane County on November 24.

Brown Creeper.—Reported at the beginning of the period south to Marathon, Outagamie, and Door Counties. Nussbaum found 6 in Calumet County on October 26. Found in scattered areas throughout the state at the end of the period.

Carolina Wren.—Reported during the period in Dane, Door, Manitowoc, Milwaukee, Ozaukee, and Racine Counties.

House Wren.—Found throughout the state at the beginning of the period. Burcar found 14 in Dodge County on August 5. Last reported by Ashman in Dane County on October 21.

Winter Wren.—Reported at the beginning of the period in Douglas, Dunn, and Portage Counties. In Milwaukee County Bontly found 6 on September 25 and Domagalski found 6 on

October 4. Last reported by Bontly in Milwaukee County on November 18.

Sedge Wren.—Found in scattered areas throughout the state at the beginning of the period. The Smiths found 30 in Oconto County on August 2. Last reported by Domagalski in Dodge County on October 7.

Marsh Wren.—Reported at the beginning of the period in scattered areas throughout the state. Burcar found 12 in Dodge County on September 18. Last reported by Ashman in Dane County on October 25.

Golden-crowned Kinglet.—Reported at the beginning of the period in Douglas County by Johnson. Kuecherer found 53 in Monroe County on October 15. Reported at the end of the period in Dane, Dodge, Manitowoc, Milwaukee, Portage, and Winnebago Counties.

Ruby-crowned Kinglet.—Reported at the beginning of the period in Douglas County by the La Valleys and Semo. Burcar found 23 in Dodge County on October 5. Reported at the end of the period in Manitowoc County by Sontag.

Blue-gray Gnatcatcher.—Reported at the beginning of the period north to Polk and Oconto Counties. Burcar found 6 in Dodge County on August 9 and 6 in Dane County on August 25 and Ashman found 6 in Dane County on August 26. Last reported by Domagalski and Tessen in Ozaukee County on September 19.

Eastern Bluebird.—Found throughout the state at the beginning of the period. Burcar found 55 in Dane County on October 20. Reported at the end of the period in Dane and Sauk Counties.

Townsend's Solitaire.—Burcar found one in Sauk County on October 27.

Veery.—Reported at the beginning of the period south to Dane and Dodge Counties. The La Valleys found 17 in Douglas County on August 24. Last reported by Richter in Monroe County on October 7.

Gray-cheeked Thrush.—First reported by Sontag in Manitowoc County on September 2. Last reported by the Lukes in Door County on October 24.

Swainson's Thrush.—Reported at the beginning of the period in Douglas County by Semo. Sontag found 20 in Manitowoc County on September 17. Last reported by the Lukes in Door County on October 24.

Hermit Thrush.—Reported at the beginning of the period south to Barron, Taylor, and Oconto Counties. Tessen found 55 in Ozaukee County on October 3. Reported at the end of the period in Dane and Milwaukee Counties.

Wood Thrush.—Reported at the beginning of the period in scattered areas throughout the state. Burcar found 5 in Dodge County on August 5. Last reported by Wierzbicki in Brown County on November 9.

American Robin.—Found throughout the state at the beginning of the period. Epstein found 1600 in Monroe County on October 16. Reported at the end of the period north to Barron, Portage, and Winnebago Counties.

Gray Catbird.—Found throughout the state at the beginning of the period. Burcar found 36 in Dodge County on August 5. Last reported by Burcar in Green County on November 11.

Northern Mockingbird.—Cowart found one in Ozaukee County on November 27.

Brown Thrasher.—Found in scattered areas throughout the state at the beginning of the period. Ashman found 8 in Dane County on September 19. Last reported by Hansen in Dane County on October 29.

American Pipit.—First reported by Burcar in Douglas County on September 24. Nussbaum found 9 in Columbia County on October 20. Last reported by Korducki in Milwaukee County on November 9.

Bohemian Waxwing.—First reported by Verch in Ashland and Bayfield Counties on September 6. Reported at the end of the period in Ashland, Bayfield, and Douglas Counties.

Cedar Waxwing.—Found throughout the

state at the beginning of the period. Cowart saw over 5000 in Ozaukee County on August 30. Found at the end of the period in scattered areas throughout the state.

Northern Shrike.—First reported by the Sheas in Price County n October 8. Found at the end of the period south to Pierce and Green Lake Counties.

Loggerhead Shrike.—The Smiths found up to 4 individuals in Oconto County from the beginning of the period to August 7.

European Starling.—Found throughout the state during the period. Burcar found 300 in Dodge County on October 5.

Bell's Vireo.—Burcar found one in Iowa County on August 18.

Solitary Vireo.—Reported at the beginning of the period in Ashland, Barron, Bayfield, and Douglas Counties. Berner found 3 in Portage County on September 19. Last reported by Hansen in Dane County on October 19.

Yellow-throated Vireo.—Reported at the beginning of the period south to Richland, Sauk, and Dane Counties. Berner found 8 in Portage County on August 31. Last reported by Burcar in Dane County on October 7.

Warbling Vireo.—Found in scattered areas throughout the state at the beginning of the period. On August 9 Burcar found 5 in Dodge County and the Smiths found 5 in Oconto County. Last reported by Hoeft in Marathon County on September 24.

Philadelphia Vireo.—First reported by Robbins in Dane County on August 28. Last reported by Tessen in Ozaukee County on October 3.

Red-eyed Vireo.—Found throughout the state at the beginning of the period. Berner found 33 in Portage County on September 4. Last reported by Burcar in Columbia County on October 14.

Blue-winged Warbler.—Reported at the beginning of the period in Monroe, Polk, Richland, and Sauk Counties. Berner found 3 in Portage County on August 4. Last reported by Duerksen in Richland County on October 4.

Brewster's Warbler.—Berger reported one in Sheboygan County on August 14.

Golden-winged Warbler.—Found at the beginning of the period in Barron, Polk, Shawano, and Taylor Counties. Kuecherer found 13 in Monroe County on September 16. Last reported by Ashman in Dane County on September 19.

Tennessee Warbler.—First reported on August 2 in Oconto County by the Smiths and in Price County by Hardy. Berner found 38 in Portage County on September 4. Last reported on October 10 in Milwaukee County by Burcar and Domagalski and in Portage County by Berner.

Orange-crowned Warbler.—First reported on August 5 in Price County by Hardy. Sontag found 3 in Manitowoc County on September 17. Last reported on October 25 in Dane County by Ashman.

Nashville Warbler.—Reported at the beginning of the period south to Taylor, Oconto, and Door Counties. Peterson found 16 in Shawano County on August 31. Last reported by Hansen in Dane County on October 27.

Northern Parula Warbler.—Found at the beginning of the period in Door and Oconto Counties. Last reported on September 19 in Dane County by Ashman and in Ozaukee County by Domagalski.

Yellow Warbler.—Found throughout the state at the beginning of the period. Burcar found 35 in Dodge County on August 5. Last reported by the Lukes in Door County on October 10.

Chestnut-sided Warbler.—Reported at the beginning of the period south to Milwaukee County. Kuecherer found 12 in Monroe County on September 15. Last reported on September 27 in Burnett County by Burcar.

Magnolia Warbler.—Found at the beginning of the period in Ashland, Bayfield, Douglas, and Price Counties. Berner found 24 in Portage County on September 7. Last reported on Oc-

tober 10 in Milwaukee County by Burcar and Domagalski.

Cape May Warbler.—First reported on August 9 in Price County by Hardy. Berner found 11 in Portage County on August 28. Last reported on September 26 in Dane County by Robbins.

Black-throated Blue Warbler.—First reported on August 30 in Oconto County by the Smiths. Tessen found 3 in Ozaukee County on September 19. Last reported by Zehner in Milwaukee County on October 6.

Yellow-rumped Warbler.—Reported at the beginning of the period south to Barron and Door Counties. Tessen found 300 in Ozaukee County on October 3. Last reported on November 14 in Milwaukee County by Korducki and in Oconto County by the Smiths.

Black-throated Green Warbler.—Reported at the beginning of the period south to Portage and Door Counties. Peterson found 16 in Shawano County on August 31. Last reported on October 10 in Door County by the Lukes and in Portage County by Berner.

Blackburnian Warbler.—Found at the beginning of the period in Ashland, Bayfield, and Douglas Counties. Kuecherer found 8 in Monroe County on September 15. Last reported by Berner in Portage County on October 10.

Pine Warbler.—Reported at the beginning of the period in Ashland, Bayfield, and Door Counties. Last reported on October 3 in Ozaukee County by Tessen.

Palm Warbler.—Reported at the beginning of the period in Douglas County by Johnson and the La Valleys. Berner found 13 in Portage County on October 4. Last reported on November 8 in Milwaukee County by Domagalski and Korducki.

Bay-breasted Warbler.—First reported on August 4 in Portage County by Berner. Berner found 23 in Portage County on September 7. Last reported by Bontly in Milwaukee County on october 7.

Blackpoll Warbler.—First reported by Burcar in Sauk County on August 21. Berner found 12 in Portage County on September 7. Last reported by the Lukes in Door County on October 10.

Cerulean Warbler.—Reported by Burcar in Dodge County on August 9, by Robbins in Green County on August 20, and by Burcar in Sauk County on August 31.

Black-and-White Warbler.—Reported at the beginning of the period south to Taylor, Oconto, and Door Counties. Tessen found 10 in Ozaukee County on August 29. Last reported by the Lukes in Door County on October 10.

American Redstart.—Found in scattered areas throughout the state at the beginning of the period. Berner found 60 in Portage County on September 7. Last reported by Hansen in Dane County on October 19.

Prothonotary Warbler.—Reported from the beginning of the period to August 15 in Polk County by Hudick, on August 5 in La Crosse County by Dankert, on August 8 in Vernon County by Dankert, and on September 27 in Sawyer County by the Wilsons.

Ovenbird.—Reported at the beginning of the period south to Dane and Milwaukee Counties. Berner found 12 in Portage County on September 7. Last reported by Anderson and Petznick in Outagamie County on September 26.

Northern Waterthrush.—Found at the beginning of the period in Ashland, Bayfield, and Oconto Counties. Berner found 6 in Portage County on September 7. Last reported by Berner in Portage County on October 9.

Louisiana Waterthrush.—Reported at the beginning of the period in Sauk County by Burcar. Last reported on September 17 in Manitowoc County by Sontag.

Connecticut Warbler.—First reported on August 10 in Price County by Hardy. Last reported on September 20 in Milwaukee County by Diehl.

Mourning Warbler.—Reported at the beginning of the period south to Monroe and Milwaukee Counties. Berner found 3 in Portage County on August 4. Last reported on October 3 in Washburn County by Haseleu.

Common Yellowthroat.—Found throughout the state at the beginning of the period. Burcar found 74 in Dodge County on August 5. Last reported by Bontly in Milwaukee County on October 31.

Kentucky Warbler.—Reported by Hardy in Price County on September 6.

Hooded Warbler.—Reported by Peterson in Shawano County on August 2 and by Ashman in Dane County on August 4.

Wilson's Warbler.—First reported by Domagalski in Milwaukee County on August 15. Ashman found 4 in Dane County on August 29 and Berner found 4 in Portage County on September 3. Last reported by Durksen in Richland County on October 10.

Canada Warbler.—Reported at the beginning of the period in Ashland and Bayfield Counties by Verch. Berner found 5 in Portage County on September 7. Last reported by Berner in Portage County on September 16.

Scarlet Tanager.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 4 in Dane County on August 4 and Berner found 4 in Portage County on September 7. Last reported by Robbins in Dane County on September 26.

Northern Cardinal.—Reported during the period north to Burnett, Price, Oconto, and Door Counties. Burcar found 21 in Dane County on August 11.

Rose-breasted Grosbeak.—Found in scattered areas throughout the state at the beginning of the period. Hardy found 12 in Price County on September 14. Last reported by Malueg in Waushara County on November 26.

Indigo Bunting.—Found throughout the state at the beginning of the period. The Smiths found 176 in Oconto County on August 9. Last reported on October 10 in Milwaukee County by Burcar and Domagalski.

Dickcissel.—Reported at the beginning of the period in Dane and Dodge Counties. Last reported by Burcar in Dane County on September 21.

Green-tailed Towhee.—Reported on October 10 in Bayfield County by Verch and on October 22 in Bayfield County by Burcar, Domagalski, and Korducki. See "By the Wayside."

Rufous-sided Towhee.—Found in scattered areas throughout the state at the beginning of the period. Burcar found 5 in Dane County on August 4. Last reported by Bontly in Milwaukee County on November 19.

American Tree Sparrow.—First reported by Hardy in Price County on September 20. Kuecherer found 160 in Monroe County on November 24. Reported at the end of the period north to Barron, Taylor, Oconto, and Door Counties.

Chipping Sparrow.—Found throughout the state at the beginning of the period. Parsons found 58 in Walworth County on September 17. Last reported by Ashman in Dane County on November 8.

Clay-colored Sparrow.—Reported at the beginning of the period south to Dane County. Last reported by Hardy in Price County on October 20.

Field Sparrow.—Reported at the beginning of the period north to Burnett, Shawano, and Door Counties. Parsons found 75 in Walworth County on September 17. Last reported on October 23 in Dane County by Robbins and in Portage County by Berner.

Vesper Sparrow.—Reported at the beginning of the period south to Richland and Dane Counties. Berner found 7 in Portage County on October 9. Reported at the end of the period in Dodge County by Domagalski.

Lark Sparrow.—Gustafson found one in Milwaukee County on October 5.

Black-throated Sparrow.—Reported in Winnebago County by Foust on November 15 and by Ziebell on November 15 and 18. See "By the Wayside."

Savannah Sparrow.—Found throughout the state at the beginning of the period. Burcar found 65 in Dane County on October 1. Last reported by Burcar in Dodge County on November 12.

Grasshopper Sparrow.—Reported at the beginning of the period in Dane, Dodge, Oconto, Portage, and Shawano Counties. Burcar found 3 in Dodge County on August 9. Last reported by Berner in St. Croix County on October 2.

Henslow's Sparrow.—Reported from the beginning of the period to August 2 in Richland County by Duerksen.

LeConte's Sparrow.—Reported at the beginning of the period in Douglas County by Johnson. Gustafson found 4 in Oneida County on August 11. Last reported on October 4 in Milwaukee County by Korducki.

Sharp-tailed Sparrow.—Reported between September 21 and October 7 in Milwaukee County by Domagalski, Gustafson, Korducki, and Tessen and on October 2 in St. Croix County by Berner.

Fox Sparrow.—First reported on September 25 in Douglas County by Burcar. Berner found 18 in Portage County on October 20. Last reported by Johnson in Douglas County on November 16.

Song Sparrow.—Found throughout the state at the beginning of the period. Burcar found 243 in Dodge County on August 5. Reported at the end of the period in Dane, Manitowoc, and Milwaukee Counties.

Lincoln's Sparrow.—Reported at the beginning of the period in Douglas and Price Counties. Burcar found 3 in Dane County on October 12. Last reported by Robbins on October 23 in Dane and Columbia Counties.

Swamp Sparrow.—Found at the beginning of the period south to Dane and Jefferson Counties. Burcar found 45 in Dane County on October 2. Reported at the end of the period in Dane and Dodge Counties.

White-throated Sparrow.—Reported at the beginning of the period south to Columbia County. Tessen found 100 in Ozaukee County on October 3. Reported at the end of the period in Dane, Milwaukee, and Taylor Counties.

Golden-crowned Sparrow.—Roger Reif's son discovered one at his feeder in Sheboygan County on Thanksgiving day. This bird's presence was enjoyed by many during the winter months.

White-crowned Sparrow.—First reported by Berner in Portage County on September 16. Peterson found 9 in Shawano County on October 10. Last reported by Strelka in Milwaukee County on November 5.

Harris' Sparrow.—First reported by Johnson in Douglas County on September 22. Johnson reported 5 in Douglas County on September 29 and Hardy reported a maximum of 5 in Price County. Last reported by Hardy in Price County on October 14.

Dark-eyed Junco.—First reported by Semo in Douglas County on August 6. Berner found 220 in Portage County on October 23. Found throughout the state at the end of the period.

Lapland Longspur.—First reported by Burcar in Douglas County on September 25. Ziebell found 60 in Winnebago County on October 5. Found at the end of the period in Dodge and Winnebago Counties.

Snow Bunting.—First reported by the La Valleys in Douglas County on October 1. The Smiths found 350 in Oconto County on November 22. Found at the end of the period south to Dodge County.

Bobolink.—Reported at the beginning of the period north to Polk, Barron, Taylor, and Oconto Counties. Epstein found 78 in Monroe County on August 15. Last reported by Robbins in Dane County on October 2.

Red-winged Blackbird.—Found throughout the state at the beginning of the period. Burcar found 10000 in Dodge County on November 5. Reported at the end of the period in Ashland, Bayfield, Dane, and Dodge Counties.

Eastern Meadowlark.—Reported throughout the state at the beginning of the period. The Smiths found 35 in Oconto County on September 27. Last reported by the Smiths in Oconto County on November 14.

Western Meadowlark.—Reported at the beginning of the period east to Dodge County.

Burcar found 7 in Dane County on September 4. Last reported by Burcar on October 27 in Dane and Iowa Counties.

Yellow-headed Blackbird.—Found at the beginning of the period in Barron, Columbia, Dane, Dodge, Polk, and Taylor Counties. Dankert found 100 in La Crosse County on September 1. Last reported by Burcar in Dodge County on November 3.

Rusty Blackbird.—First reported by Berner in Portage County on September 24. Burcar found 300 in Dodge County on November 3. Reported at the end of the period in Dane County by Burcar.

Brewer's Blackbird.—Reported at the beginning of the period south to Portage County. Burcar found 950 in Dodge County on November 7. Last reported by Domagalski in Dodge County on November 26.

Common Grackle.—Found throughout the state at the beginning of the period. Domagalski found 4000 in Dodge County on October 5. Reported at the end of the period in scattered areas throughout the state.

Brown-headed Cowbird.—Reported throughout the state at the beginning of the period. Domagalski found 2700 in Dodge County on October 13. Found at the end of the period in Dodge and Milwaukee Counties.

Northern Oriole.—Found throughout the state at the beginning of the period. The Smiths found 12 in Oconto County on August 16 and Ashman found 12 in Dane County on August 22. The La Valleys reported that one was brought to the DNR office in Douglas County on November 23 after being caught by a dog.

Pine Grosbeak.—First reported by the Engbergs several times during September at their feeder in Oneida County. Reported at the end of the period in Douglas County by Semo.

Purple Finch.—Found at the beginning of the period south to Baron, Taylor, Marathon, Shawano, and Door Counties. Hardy found 33 in Price County on November 15. Found at the end of the period in scattered areas throughout the state.

House Finch.—Reported during the period north to Douglas, Bayfield, Ashland, Oconto, and Door Counties. Korducki found over 150 in Milwaukee County on October 3. There are now few towns in Wisconsin that do not have a growing population of this species.

Red Crossbill.—First reported by Semo in Douglas County on October 27. Reported at the end of the period in Douglas County by Semo.

Common Redpoll.—First reported by Hardy in Price County on October 20. Hardy found 6 in Price County on October 20. Reported at the end of the period in Barron and Douglas Counties.

Pine Siskin.—Reported at the beginning of the period in Ashland, Barron, Bayfield, Douglas, and Vilas Counties. Sontag found 95 in Manitowoc County on October 23. Found in scattered areas throughout the state at the end of the period.

American Goldfinch.—Found throughout the state during the period. Burcar found 102 in Dodge County on August 5.

Evening Grosbeak.—Reported at the beginning of the period south to Taylor County. Hardy reported a maximum of 55 in Price County. Found at the end of the period south to Monroe County.

House Sparrow.—Found throughout the state during the period. Burcar found 300 in Dodge County on August 9.

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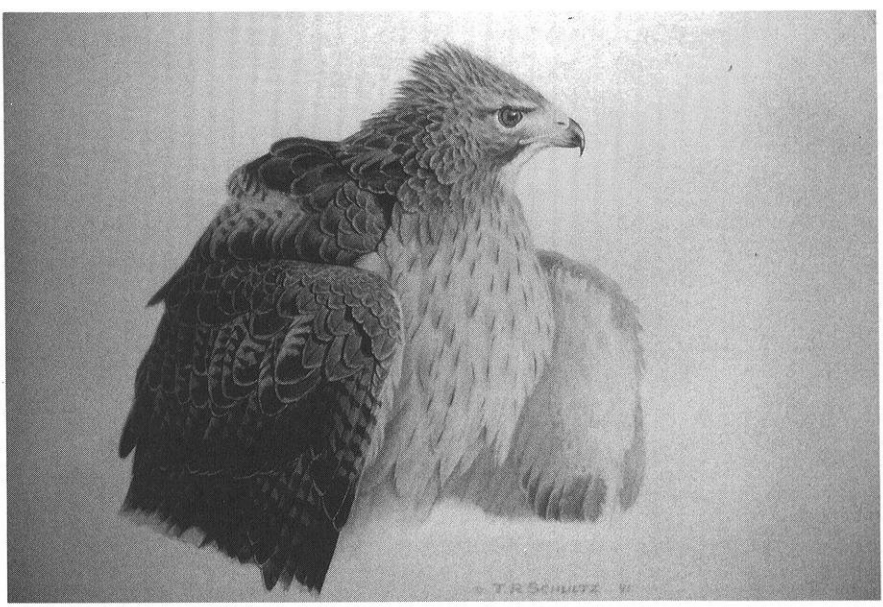


Red-tailed Hawk study—watercolor 1991 *by Thomas R. Schultz*

Canvasback *by Brian T. Kuether*

"By the Wayside"

Observations of Common Loon, Ross' Goose, Canada Goose, King Eider, Lesser Black-backed Gull, Great Black-backed gull, Vermilion Flycatcher, Scissor-tailed Flycatcher, Green-tailed Towhee and Black-throated Sparrow are featured.

Beaver Attacks Common Loons (*Gavia immer*)

20 May 1993, Crex Meadows, Burnett County—At 0648 hours while conducting a loon census of the Upper North Fork Flowage in the Crex Meadows Wildlife Area, I observed an adult beaver (*Castor canadensis*) repeatedly attacking a pair of Common Loons (*Gavia immer*). The beaver swam around the loons, then directly towards them. When within 4 to 6 feet of the birds, the beaver dove with a slap of its tail. At the beaver's dive, both loons put their heads underwater apparently looking for the approach of the animal. The beaver apparently attacked from underneath, causing the loons to either dive under water, leap sidewise out of the water, or flap along the water surface away from the animal. the loons occasionally made tremelo calls during the ruckus. The beaver was clearly the aggressor, but it appeared that the loons occasionally struck back. The water surface would ripple and bulge with turbulence when the creatures were battling underwater.

At 0655, the loons swam rapidly away for a distance of approximately 100 feet, stopping behind a small grassy island. The beaver followed, swimming around the island and resuming the attack. At 0700, the loon pair separated, but the beaver continued its pursuit of one of the birds. Despite its many attempts, the beaver was unable to catch the loon. The bird generally would flap along the water surface and make an abrupt turn which would apparently throw the beaver off its trail. The loon would then stop, turn around and peer under water for its adversary. The other loon followed at a discrete distance, occasionally looking under water. When I left at 0705, the beaver was still chasing the loon. The loons appeared to be reluctant to leave the area of the beaver attack. They could have easily flown or swum away but apparently chose to remain in the general area.

Normally beaver and loons coexist in their wetland habitats. The beaver eats vegetation (H. H. T. Jackson, *The Mammals of Wisconsin,* U. Wis. Press, 1961) and, no doubt would not consider loons as food. The beaver is also generally thought to be a peaceful an-

imal except when defending its self, young or territory.

Food of Common Loons consists largely of fish with smaller quantities of frogs and aquatic vertebrates, invertebrates, and vegetation (A. C. Bent, *Life Histories of North American Diving Birds,* Smithsonian Inst. U.S. Nat. Mus. Bull. 107, 1919). Loons have been known to eat trout up to 18 inches in length and weighing 2 pounds (W. A. Flick, *N. Am. J. Fish. Manage.* 3:95–96). In addition, there are observations of Common Loons killing ducklings (B. E. McGrath, *Blue Jay* 47:145–146) and Canada Goose goslings (M. C. Zicus, *Auk* 92:611–612). Young beaver weight about 1 pound and are about a foot in length at birth (Jackson op. cit.), small enough to be conceivably vulnerable to loons. The adult beaver may have attacked the loons due to a perception that the birds were potential predators of its young. The loons may have been attempting to nest near the beaver's den and were reluctant to leave the area, causing the attack by the beaver. Beaver activity has caused the abandonment of loon nests in other areas (J. R. Titus and L. W. VanDruff, *Response of the Common Loon to recreational pressure in the Boundary Waters Canoe Area, northeastern Minnesota,* Wildl. Mono. No. 79, 1981). Whatever the cause for the attack, it is apparent that beaver and Common Loons do not always coexist in proximity.

Partially funding for this study was provided by the Federal Aid to Wildlife Restoration under Pittman-Robertson Wis. Proj. W-141-R.—*James O. Evrard, Wisconsin Department of Natural Resources, P.O. Box 367, Grantsburg, WI 54840.*

Ross' Goose (*Chen rossii*)

29 October 1992, Goose Pond, Columbia County—Scanning the thousands of Canada Geese and dozens of Snow Geese, I noted one smaller white goose, but with it turned away from me, identification was difficult. Moving further into the flock a second and third bird were found. Later the first bird had turned profile to me. All three birds were compared to immediately adjacent Snow Geese and noted to be 3/4 the size of them in length. The overall bulk seemed much less than 3/4, though. These small geese were entirely white with the exceptions of black primaries, a pink bill, and a dark eye. The pink bill was markedly shorter in height and length without any evidence of the horizontal black patch on the side that the Snow Geese exhibited. The forehead of the Ross' Goose rose more sharply from the beak than the Snow Geese, giving it a much more "delicate" profile than the angular "goose profile" of the snows.

No view of extended wings or feet was obtained, but the repeated views of these 3 geese swimming into different positions immediately next to or in front of Snow and Blue Geese was almost more than I could have asked for in aiding identification.—*James Frank, 4339 W. Laverna Avenue, Mequon, WI 53092*

20 October 1992, Goose Pond, Columbia County—While scoping the geese at Goose Pond I observed one white phase goose that appeared about two-thirds the size of nearby Snow Geese. Checking more carefully I noted that the small pink bill was more petite and lacked the grinning patch like those on the Snow Geese. I also

observed the black wing tips on the bird. On 11-3-92 I observed three small white phase geese which all appeared about two-thirds the size of nearby Snow Geese. These birds also lacked the grinning patch on their small pink bills.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528*

17 November 1992, Horicon Marsh, Dodge County—In the scope mounted on the car window I watched a white goose on the mud flat with a flock of several hundred Canada Geese. At first I thought it would be a Snow Goose. The bird was preening and showing black primary feathers. The bird acted a bit skittish when the Canadas walked around it, moving to get out of their way. As the dull but even light increased, I noticed that the bird seemed smaller relative to the Canadas than a Snow Goose usually appears. I started paying specific attention to the bill which was proportionately small and pink. The base of the upper mandible was dark rather than being totally pink to the feathers. When the bird moved into the water, it allowed unobstructed views from all angles. When in profile there were no dark "lips" between the mandibles, only a clean line where the pink mandibles met. During the time I watched the bird, this feature was very clear. There was no sunlight to interfere with this observation. The diagonal barring in the formation of the white neck feathers was also clearly visible. the legs and feet were pink when it walked out of the Canadas and into the water; otherwise I could not observe them. In the water it still impressed me as being smaller in proportion to the Canadas than a Snow Goose. This was confirmed to me as I did watch a Snow Goose among Canadas later in the morning. The lack of dark "lips" was obvious as the bird drank and picked at items in the water, lifting its head to swallow.—*H. Lowell Hall, 2281 N. Lake Drive, Milwaukee, WI 53202*

18 October 1992, Goose Pond, Columbia County—Upon arriving at Goose Pond, I scanned the several thousand geese (all Canadas except for about 10 Snow and Blue Geese) and ducks, but I was unable to locate the Ross'. About five minutes later I noticed two small white geese fly in and land near the northwest end of the west pond. In flight the birds showed an all white plumage on the head, neck, breast, underparts, back and wings, except for the black primaries. Upon landing I could see these additional field marks: Small size for a goose—approximately 20–30% smaller than the majority of the adjacent Canada Geese; short, pink bills without a black "grinning" patch; and a small rounded head with a relatively steep forehead on a short neck. The birds initially were only near Canada Geese, but after a while they swam a short distance so that they were within 15–20 feet of a group of three Blue and one Snow Goose. I was then able to compare the two species.—*Philip Ashman, 615 E. Johnson St., Madison, WI 53703*

Use of Whistled Juvenile-form Calls by Adult Canada Geese (*Branta canadensis*)

17 October 1992, Montello, Marquette County—Perhaps I should preface this account with the information that I did my dissertation research on

Canada Goose behavior and vocalizations. As part of that research, to gain an understanding of ontogeny (development) of calls, my wife and I imprinted Giant Canada Goose, *Branta canadensis maxima,* on ourselves. We raised them for 10 weeks, one of us being with them continually from first light to full dark, every day. I later played back and analyzed recordings of their calls to us and each other using a Kay Elemetrics 6061B sonograph and compared them with published gosling vocalization information from many species. thus, I think that it is safe to say I know the whistled gosling calls of the species as well as anyone alive today.

In all my research with and background investigations of the species, I never saw mention of adult Canada Geese retaining the ability to use a whistled call, in place of or in addition to the more standard honks and grunts. yet, now I can say without reservation that they do. I have seen (or perhaps I should say heard) two examples of this phenomenon. The first example I did not report because I thought it might be related to the artificial rearing conditions for our goslings. When my wife and I had raised the goslings, we found that they were impractical to keep in an apartment as they began their attempts at flight. We moved them to a friend's gamefarm in Montana. Two years later we went back to see "Rambler and Rover." I was flabbergasted when they recognized us and came directly over to greet us, but even more so when I realized they were using the whistled, gosling-like, forms of the greeting call which we had used with them two years earlier. This call has been described as "whee whee whee whee" (Whitford, P. C. 1987. Vocal and visual communication and other social behavior in Canada Geese. Diss. Univ Wis., Milwaukee, Milwaukee, WI. 418p.) is usually four to seven syllables (short whistles) long. This call starts as a clear, pure whistle when the goslings first hatch and becomes more hoarse and rasping as they age. As Adults, the calls had an almost whisper-like quality, like that made when a person pretends they are whispering to another, and the whistle was very subdued within that sound. As I indicated, I never bothered to report this instance before since I felt the goslings' rearing may have influenced their vocal repertoire.

On 17 October 1992, I was sitting out in the predawn darkness (circa 0600) listening to the sounds of 5–600 Canada Geese (Interior subspecies) quietly talking on a small and very isolated, bog lake in Marquette County Wisconsin. They were less than 200 meters away. There was no wind, no noise of any kind. Suddenly, as I listened, I became aware that there were sounds coming from the flock other than the low grunts and sporadic honks which presaged the preflight calls that would begin in earnest in 30–40 mi2nutes. What I heard very clearly many times over in the next 20 minutes was the same hoarse, whispered-sounding, greeting that I had heard from the goslings years before. The pattern of the call was still the same, 4–7 syllables of rising and falling sound—the "whee- whee- whee-whee." It came from many birds at different points on the lake, not just one or two and was not heard to be repeated at any single site. My guess was that it was being used between family members just after waking—as it often is used between goslings and their fam-

ilies. It was too dark to see the posture used.

What makes this even more interesting, perhaps, is that these geese were very likely to be predominantly adults, birds two years old and over. The geese that use this lake annually are part of the MVP Flock (a group which stays in Central Wisconsin through the winter). The MVP flock was reported to have suffered near total mortality of goslings due to a late snowstorm on the nesting grounds on the west shores of Hudson's Bay, June 1992. These geese nest far enough north that they do not renest following loss of eggs or goslings. Therefore, few if any goslings would have been likely to exist within this flock at the time these calls were observed. This makes it much more likely that the calls heard were from full adult geese. I am now convinced that Canada Geese retain the ability to produce this form of "whistled call" as adults, and must retract my 1987 conclusion that these calls are lost from the vocal repertoire when the "honking" calls develop at 100–150 days of age.—*Philip C. Whitford, Biology Department, University of Wisconsin-Whitewater, Whitewater, WI 53190.*

KING EIDER (*Somateria spectabilis*)

21 and 22 November 1992, Port Washington Harbor, Ozaukee County— The first impression of the bird, when first seen from the Port Washington bluff overlooking the harbor, was of a large, thick, dark duck with faint whitish markings on the face. Because of the darkness and the whitish face markings, my first thought was of a female Surf Scoter, and yet the bird was too thick and not black. On close inspection, the facial feathering extending into the bill area and the shape of the bill and forehead immediately told me I was looking at an eider. The next 4½ hours of viewing, spread over two days, was spent trying to decipher the bird as either a Common Eider or King Eider.

The outline of the head was roundish with a steep, straight-down slant through the forehead and bill, and then a slight upturn near the tip of the bill. The angle of the forehead and bill were sharp; I did not have the impression of a slight slant extending into a long bill as I might expect on a Common Eider. The upper parts of the bill were a fleshy color, while the distal end was grayish. This fleshy color of the upper bill perhaps indicates an immature male, yet the breast area was brown with no hint of whitening. At all times the bill was held at a horizontal to the water line.

Although the feathering of the face or cheek area that extended into the bill was quite noticeable, this feathering did not come to a sharply pointed triangle at its distal point, but rather, was somewhat roundish. Also, and quite importantly, it very definitely did not extend to or just below the nostril area of the bill. There was a comfortable distance of nearly one third of the bill length (i.e. bill length in this case being from the distal end of the face feathering to the tip of the bill) that extended from the nostril area and backwards to the feathering.

The upper and distal portion of the face feathering that extended into the bill area was of a definite whitish color. Also there was an area of white encircling the eye and then extending out as a well-marked line back and down from the eye. Sometimes there can be

an eye brow line on the Common Eider that extends toward the back of the head, but this line is thin and drops quickly down and back from the eye, coming down into the facial area of the head rather than to the back of the head.

The back of the bird was a dark or blackish brown with the breast and sides a paler shade of brown. Nearly all the time I saw the bird, it sat too low in the water to see the sides well. Best views were when the bird stretched or rolled the body to one side or the other. At such times there sometimes appeared to be a blackish barring on the sides, but such views were so brief and usually in such rough water and in such poor light that I could not be sure there was not chevron-like designs in this barring. Also, when seen, this barring was of a large texture, not fine textured or of a dense nature. The breast of the bird, which was always exposed, did not show this barring design. Also, there were times when the sides of the bird were exposed at a distance of about 50 feet from me and in calm water, and when I was unable to make out a clear barring pattern.

On my best view of the back of the bird, from a distance of about 100 feet and looking through a spotting scope, I did notice that the primary feathers were a slightly darker shade than the remainder of the wing and that there appeared to be a slight hint of a pale line separating the blackish primaries from the rest of the wing. When the bird was in flight, this thin pale line of separation was not noticed. During the short periods of flight, I clearly saw an area of white in the wing pits of the bird plus an extended area of pale gray along the outer sides of the underwing, with the primaries being darker.—*Robert C. Domagalski, W140 N8508 Lilly Road, Menomonee Falls, WI 53051.*

22 November 1992, Port Washington Harbor, Ozaukee County—The eider was a large, squat duck. The body was brown with dark-brown, black primary wings. There was a gray/white patch below the bill with a white crescent extending as a thin line from the eye down the side of the head. The sides/flanks were barred. The bill had an upcurved profile with a large amount of unfeathered bill by the nostrils. While swimming, the bill was held level.—*Daryl D. Tessen, 2 Pioneer Park Place, Elgin, IL 60123.*

22 November 1992, Port Washington harbor, Ozaukee County—The bird was first seen with Dennis Gustafson at around 7:00 A.M. about 20 feet to the north of the breakwall. At this time the following were noted: overall chunky build, sloped forehead similar to a canvasback, gray-brown color. We did not attempt to get too close at first in fear that we might frighten the bird away. Later on, once more people had arrived, we had the opportunity to observe the bird from a closer distance and at great length. Rather than try to describe the rather intricate head pattern, I have enclosed a sketch which I have copied directly from one made during the observation.

There are a couple of points to make with regard to the sketch: first, the black line extending back from the base of the bill is a mark I found referenced often in field guides, which all described this "grin patch" as making a rather sharp angle and turning upward. This was always mentioned specifically for the female, not immature male. As I attempted to indicate in the

sketch, I saw no sharp angle upward of this line.

Secondly, the positioning of the white line going down and back from the eye seems to outline what would be the blue crest of an adult male. I tried carefully to discern a difference in the texture of the feathers behind this line—in other words to see if this region, which was the same color as the area in front of the line showed any bushiness or suggestion of a crest—and could not.

Next, concerning the profile from forehead to tip of bill: I think the sketch is a fairly close representation—the overall profile was very straight. The only suggestion of an angle was at the end of the feathering on the culmen, where it was very slight, and near the tip as shown in the sketch. Many of the field guides I looked at showed a more pronounced angle at the point where the feathering ends.

Finally, concerning the feathering on the bill: the only correction I would make to the sketch is to say that the visible portion of the bill extending toward the eye was not so pointed, but a bit more broadly rounded. I would not say that it was squarish, as is mentioned in many guides. I had some difficulty sketching the extent and proportion of feathering on the bill as it was difficult to get a long look at. One thing I would say is correct is that the feathering on the lower portion did not reach as far forward as the nostril, nor did it get closer than 1/4 inch to the nostril at its nearest point.

The white loral patch was the most striking feature, at a glance, about the head. Several of the guides I consulted mentioned this as a feature of the juvenile king eider. During the entire period of the observation, the bill was held parallel to the surface of the water, which also implies king. The overall size of the head on this bird is useful as well; while slightly larger and different in shape than the head of a common duck such as a mallard, it was still on relatively the same scale, not the massive head described for the Common Eider. As shown in the sketch, the base of the bill was a very dull orange, which would indicate juvenile male rather than female, since the female's bill is entirely gray. The pattern on the scapulars, as indicated in the sketch, was pointed black markings in the centers with lighter gray-brown edging.

During the period of observation, several people remarked about the vertical barring on the sides of the bird. I at best got the impression of roughly vertical barring, but very irregular. I would not, however, say that the barring wasn't vertical, as I never got a satisfactory look at the sides. I did definitely get the impression of vertical barring on the portion of the breast below the back of the neck on the swimming bird (what would on a Mallard be the border between the rusty upper breast and the white belly). The barring also seemed to be a bit finer and showed the most contrast between light and dark here. I can definitely say that the barring did not extend onto the upper breast (what on a mallard would be rust-colored). I could determine no definite patten of spotting, streaking, or barring to this area. I would only call it mottled, in overall color slightly lighter gray-brown than the back. Again, this is in contrast to the juvenile Common Eider which should show barring continuing on the breast up to the base of the neck.—*Brian Boldt, 1832 Jeffery Lane, Waukesha, WI 53186.*

Lesser Black-backed Gull (*Larus fuscus*)

27 August 1992, South Shore Yacht Club, Milwaukee—When first seen, the bird was on the beach about 100 feet south of me. At this time I noted the size, an inch to 1/2 inch shorter than a nearby Herring Gull; much lighter build than a Herring Gull; legs yellow; bill yellow with red spot at gonys; mantle black, but slightly lighter and with slightly more brownish cast than primary tips, which were jet black. After observing the bird for 5 minutes, I left to get film for my camera. On my return, I noticed the bird had moved within 20 feet of my position. At this time I noted the dull yellow iris, and the exceptionally fresh plumage—the breast and head were snow white, with no streaking or dirty spots. The bird was also noted to be about one inch taller than nearby Ring-billed Gulls. In overall stature, it was about equal between Herring and Ring-billed Gulls. The legs were of interest in that they were proportionately longer than either the Herring or Ring-billed gulls. After about 15 minutes, the bird flew. In flight it wa noted that the bird appeared to be molting the primaries, as the inner ones were shorter than the adjacent secondaries.—*Brian Boldt, 1832 Jeffery Lane, Waukesha, WI 53186.*

Great Black-backed Gull (*Larus marinus*)

22 August 1992, Point Beach State Forest, Manitowoc County—One of the few hot sunny days of the summer inspired my husband Martin and me to take a picnic lunch to Point Beach State Forest in Manitowoc County and enjoy a day at the beach. As we approached the mouth of Molash Creek from the south, we passed the usual flock of gulls and terns that always sits by the water's edge. I noticed with surprise that one of them was a Great Black-backed Gull. I had not seen one of this species since I lived in Pennsylvania where they were common on Lake Erie in winter, but I had never seen one in the summer before, nor had I ever been so close to one.

As it stood among Herring Gulls, I could see that it was larger in all dimensions and taller, though shaped and proportioned like them. Its wings, shoulders and back were coal-black, and the rest of the body snowy-white. There were neat white edges at the tips of the tertial and secondary feathers. The bill was yellow; the legs and feet pinkish grey. Altogether it was a very stately and beautiful bird. The gulls were so used to beach-walking people that they stood their ground until I was about 150 feet away before they took flight. The Black-backed Gull flew about 50 feet and landed in Lake Michigan. In flight its wingspread was considerably greater than the Herring Gull's. Since I had gone to the beach to wade in the lake, I had taken no binoculars so had to approach as close as possible to see the bird well, and at 150 feet had no trouble seeing all the markings easily.—*Carroll Rudy, W3866 Highway H, Chilton, WI 53014.*

Vermilion Flycatcher (*Pyrocephalus rubinus*)

18 October 1992, High Cliff State Park, Calumet County—At 9:30 A.M., my companion and I took a walk along two ponds, hoping to see some migrating ducks taking refuge from hunting season. I spotted two small song

birds flying over one of the ponds. One of these birds caught my eye because of a red body and black wings. The first species that came to mind was a Scarlet Tanager. Knowing they had already migrated, I was intrigued. The two birds of sparrow size, perched in a lone sapling, bare of leaves, next to a pond. They were approximately 40 yards away. With my binoculars we were able to view the characteristics of these birds for roughly five minutes. One was red on the belly and crown, with a black line extending from the bill through the eye, to the hind head and merged with the dark brown on the body. The back, wings and tail of the bird were all a solid color of dark brown. The other bird that accompanied it was much drabber in color. The back, wings, and tail were brown. The belly was light in color with a slightly darker head. After we noticed these distinguishing markings of the birds, we observed their activities. The two interesting birds were very active, flittering in the trees. Twice we observed them fly up into the air, chasing, and coming in contact with each other and then perching in the same tree. The two didn't exhibit signs of aggression, but rather signs of playfulness. The more brilliant colored male would feed by flying down into the tall grass then back up in its perch, exhibiting typical sally behavior. When perched, the more brilliant colored one would pump its tail. The two birds flew off after about four minute and we were unable to locate them again.—*Scott Hauser, 1648 College Avenue, Stevens Point, WI 54481.*

Scissor-tailed Flycatcher (*Tyrannus forficatus*)

7 October 1992 just east of the Trempealeau National Wildlife Refuge, Trempealeau County—The bird was about the same size as a Western Kingbird but the tail was must longer and distinctly forked. The bird flared its tail slightly as I watched, revealing white outer borders on the rectices. The belly, flanks, and crissum were salmon-colored, wings and tail were dark gray, head and back were gray, bill and eyes were black. The head was peaked slightly at the back giving the appearance of a small crest. As the bird spread its wings several times before flying and as it flew, I could clearly see the deeper salmon-colored feathers under the wings on the body. The bird did not vocalize or interact with other birds while I observed it.—*Eileen M. Kirsch, 1015 Terrace Drive, Onalaska, WI 54650.*

Green-tailed Towhee (*Pipilo chlorurus*)

10 October 1992, Cornucopia, Bayfield County—I watched the feeder for over an hour without seeing the towhee. There were numerous White-throated Sparrows, White-crowned Sparrows, and Harris' Sparrows on the feeder and under it. About the time I was considering moving to a nearby feeder I saw the bird moving through the grass underneath the feeder. As I watched, the towhee moved up a raspberry bush and on to the flat feeder. It stayed on the feeder for several minutes before flying into the woods. It returned for brief intervals for the next ten minutes.

The bird was almost as large as nearby Harris' Sparrows. The reddish crown was visible as was the very distinct white throat. The white throat was bordered on each side by a black line which also had a white line dorsal

to it. The breast of the bird was gray and the upper parts were an olive-green color. There were not any conspicuous marks on the wings or tail.

The towhee seemed comfortable feeding with sparrows, but would leave the area when Blue Jays or Evening Grosbeaks came to feed.—*Richard L. Verch, Biology Dept., Northland College, Ashland, WI 54806.*

22 October 1992, Cornucopia, Bayfield County—I observed an olive-green backed bird about the size of a White-Throated Sparrow jump onto a four foot high feeder. I observed the large rusty cap, the bright white throat with black malar stripes along the sides of the throat. I also noted the plain gray face and breast, and the white belly and undertail coverts. The bill was similar to that of the White-throated Sparrow. The solitary bird remained on the feeder for 20 to 30 seconds before returning to thick underbrush. About 15 minutes later the bird reappeared on the feeder. The erect posture of this bird and the flicking motion of its tail reminded me of behavior of the Gray Catbird or Northern Cardinal. The bird held its tail at approximately a 90 degree angel from its body. When the bird flew from the feeder, it left and disappeared quickly.—*Kay Burcar, 5136 Enchanted Valley Road, Cross Plains, WI 53528.*

Black-throated Sparrow (*Amphispiza bilineata*)

15 November 1992, Oshkosh, Winnebago County—The bird was smaller than House Sparrows and about the size of Dark-eyed Juncos. It had the same body shape as juncos. The head was gray on top with a white line above the eye. The eye was dark with a white eye ring and a black bar running from the beak back past the eye. Below this was a gray area going back past the side of the neck. Coming off the chin below the gray was another white line going to the side of the neck. The back was gray with a brown tinge. The lower back was streaked light and dark. The tail was quite dark and square-ended. The breast and belly were light gray. The most distinguishing mark was the inverted triangle patch that was black and started at the chin and went down to the breast.—*Gordon L. Foust Jr., 2304 Hickory Lane, Oshkosh, WI 54901.*

15 November 1992, Oshkosh, Winnebago County—The bird was smaller than the House Sparrows it was feeding near and the House Sparrows often chased the Black-throated Sparrow away. The most noticeable feature was the large black patch extending from the throat down over the breast. The head pattern also was distinctive with a dark cap (crown), white eye stripe, dark cheek, and white whisker stripe. The belly was whitish and the rest of the body (sides, wings, back ,and tail) was a uniform gray color. There was a hint of white in the outer tail feathers.—*Thomas J. Ziebell, 1322 Ceape Avenue, Oshkosh, WI 54901.*

1993 Silver Passenger Pigeon Award

KENNETH I. LANGE

This recipient of the Silver Passenger Pigeon Award is a naturalist, writer and wealth of information on the flora, fauna and cultural history of Sauk County.

He has been a member of WSO since 1966 and became a Life member in 1991. He has contributed many hours of his time to the organization since 1980 through his careful compilation and interpretation of the winter field notes and continues in this role. He was the coordinator of the Sauk City and Baraboo Christmas counts for many years. He consistently contributes his insightful field notes to WSO. He conducts several breeding bird surveys, some routes of over 20 years.

He has been the naturalist at Devil's Lake State Park since 1966. One can only imagine the number of people that have been inspired by the nature center there, by the countless field trips that he has led and by his vast array of talks and writings.

He is co-author of *Breeding Birds of the Baraboo Hills,* not just a "bird book" but a natural history of this unique feature on the southern Wisconsin landscape. The book demonstrates his broad understanding of ecology as it starts with historical geology, continues through pre-settlement vegetation and explains the modern natural communities and conditions and why the Baraboo Hills play an important role for birds in southern Wisconsin.

He is also author of a human history of Sauk County and a publication on the pre-settlement vegetation of the Baraboo Hills, co-author of a natural history of Devil's Lake State Park and author or co-author of other technical publications and articles.

It is with great pleasure that the Wisconsin Society for Ornithology, Inc. recognize his service to the Society by presenting the Silver Passenger Pigeon Award to Kenneth I. Lange.—*Mary F. Donald, Awards Committee.*

1993 Silver Passenger Pigeon Award

Stanley A. Temple

This recipient of the Silver Passenger Pigeon is a well known wildlife ecologist and ornithologist. He was the 1989 recipient of the Society's Golden Passenger Pigeon Award. He joined WSO in 1977 and became a Life member in 1987. He chaired the Research Committee from 1978 to 1987. During this period he introduced the Society's successful "Wisconsin Checklist Project" and co-authored Wisconsin Birds—A Seasonal and Geographical Guide, a 5 year summary of the WSO members reports.

In 1988 he became Editor of *The Passenger Pigeon.* In his tenure in that position, he contributed countless hours producing 5 volumes and immeasurable creative energy turning the quarterly publication of WSO into a nationally respected journal of ornithology. Among his creative, enjoyable and informative additions to *The Passenger Pigeon* were the series "At Home With Birds," "In the Words of Ornithologists Past" and "Birding the Habitat Way."

He is Beers Bascom Professor of Wildlife Ecology at the University of Wisconsin-Madison. He uses this position not only to carry on important research in ornithology but to serve as mentor for many students studying the fields of ornithology and wildlife ecology.

It is with great pleasure that the Society recognize Stanley A. Temple for his service to the Society by awarding him this Silver Passenger Pigeon Award.—*Mary F. Donald, Awards Committee.*

Recipient of Certificate of Appreciation

SAMUEL D. ROBBINS, JR.

Whereas his early service to the society starting in 1947 as seasonal editor, followed by *passenger Pigeon* editor and society president was recognized in 1964 as one of the first recipients of the society's Silver Passenger Pigeon Award, and

Whereas his service and contributions to the society and Wisconsin ornithology have continued into the 1990's, and

Whereas in 1979 he was instrumental in initiating the society's records committee and served as one of its first board members for 6 years, and

Whereas he rejoined the WSO Board in 1988 to serve 4 years as Conservation Chair in insuring that the interests of Wisconsin's bird population were adequately presented, and

Whereas many of his fellow participants on field trips have been delighted and amazed by his ability to recognize bird species by "chip" alone, and

Whereas he has contributed much to the appreciation and understanding of birds through his long running weekly column in *the Country Today,* and his long term dedication to the yearly "Breeding Bird Survey" program, and

Whereas in 1991 he completed his long and eagerly awaited massive book on Wisconsin ornithology, *Wisconsin Birdlife, Population and Distribution—Past and Present,* and

Now, therefore, the Wisconsin Society for Ornithology, Inc. takes great pleasure in presenting this certificate of appreciation to Wisconsin's premier birder, Samuel D. Robbins, Jr. in recognition of his exceptional and long service to the society.—*Mary F. Donald, Awards Committee.*

Recipient of Certificate of Appreciation

CHARLES GILMORE

Whereas his early service to the society at Honey Creek and as Publicity Chair was recognized in 1977 with the Society's Silver Passenger Pigeon Award, and

Whereas his service and contributions to the society have continued for the past 17 years, and

Whereas he is one of the limited few who could be counted on to participate through the years at each Honey Creek work weekend, and

Whereas in 1979, he and his wife took on the most demanding and time consuming volunteer responsibility in the Society in becoming only the second Supply Department Chair, and

Whereas they dedicated all their time at each yearly convention in transporting, setting up and serving as salespersons for the convenience of the convention attendees, and

Whereas for the past 14 years he has contributed thousands of hours to the Society membership and others in helping with their special book needs while maintaining one of the state's largest specialized book stores with aggregate sales in excess of $130,000, and

Whereas beyond his official contributions to the society, he has served Wisconsin ornithology through participation in Christmas Bird Counts, May Day Count and Breeding Bird Surveys, and

Now, therefore, the Wisconsin Society for Ornithology, Inc. takes great pleasure in presenting this certificate of appreciation to Charles Gilmore in recognition of his exceptional and long service to the Society.—*Mary F. Donald, Awards Committee.*

ABOUT THE AUTHORS AND ARTISTS

N. R. Barger held the first term of President of WSO in 1939 and is a former editor of *The Passenger Pigeon.* He is the recipient of the 1964 Silver Passenger Pigeon award.

John Bielefeldt is one of southeastern Wisconsin's most active ornithologists. He received WSO's Silver Passenger Pigeon Award in recognition of his many contributions to Wisconsin ornithology.

Randy M. Hoffman is a biologist with the Wisconsin DNR's Bureau of Endangered Resources where he is in charge of managing the lands in the State Natural Area program.

Brian T. Kuether is a graduate of the Milwaukee Institute of Art and Design where he focused much of his studies on wildlife art. He is an avid outdoorsman and has been studying and painting wildlife since his youth. In 1992 *Waterfowl USA Magazine* selected him as "Sponsor Artist of the Year." His work is displayed at Mader's Old World Third Street Gallery in Milwaukee, WI.

Barbara and Richard Mearns are authors of *Audubon to Xantus. The Lives of those Commemorated in North American Bird Names* and live in Scotland.

Michael J. Mossman is a Wildlife Research Biologist with the Wisconsin DNR's Bureau of Research. He has a M.S. degree in Wildlife Ecology from UW-Madison. He is a frequent contributor to *The Passenger Pigeon* and other WSO activities.

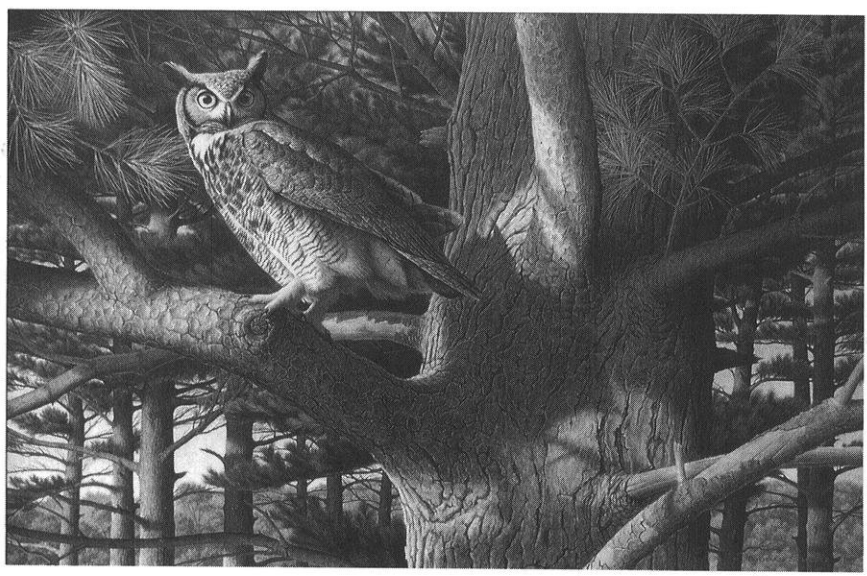
Mark S. Peterson, the fall field-note compiler, has his B.S. in Biology from UW-Stevens Point.

Sam Robbins is one of Wisconsin's most active ornithologists. He has served WSO in many capacities, including President and Editor, and he has received WSO's Silver Passenger Pigeon Award. He is author of the book *Wisconsin Birdlife.*

Robert N. Rosenfield is an Assistant Professor of Biology at the University of Wisconsin-Stevens Point. He has his Ph.D. degree from North Dakota State University.

Thomas R. Schultz is a well-known Wisconsin wildlife artist and a frequent contributor to *The Passenger Pigeon.* He is co-chair of WSO's Field Trip Committee.

Charles Sontag WSO's current President, is professor of Biological Sciences at UW Center-Manitowoc. He has a MS and PhD from UW-Madison.



Guardian of the Pines—Great Horned Owl—1989 *by Thomas R. Schultz*

50 years ago in *The Passenger Pigeon*

The following are some miscellaneous gleanings: In an article on extinct and endangered birds of the Upper Great Lakes region, A. W. Schorger noted the following: "According to Hoy, the last time a turkey was killed near Racine was in the fall of 1846. It survived longest in Grant County where one was shot in the fall of 1872." Apparently, the extermination of the native stock in the Upper Mississippi Valley was complete by 1910. Concerning the Sandhill Crane, Schorger notes that "the total breeding population of Wisconsin is limited to 25 pairs." How times change! BY THE WAYSIDE included notes on a Brown Pelican collected at Madison, an Orchard Oriole nesting in Door County, American Egrets nesting at Horicon Marsh, young Screech Owls bathing in Lake Mendota on July 12 when the temperature was over 94 degrees, and a Great Blue Heron fishing on the wing. Early morning bird hikes at the Annual Convention in Milwaukee visited Jacobus, Lake, and Estabrook parks. There are quotes from Aldo Leopold on being appointed for a six-year term to the Wisconsin Conservation Commission on the problems faced by Wisconsin's wildlife. The issue concludes with a picture of Owen Gromme working on a Red-headed Woodpecker painting for *Birds of Wisconsin*. The legend notes that $20,000 is needed to underwrite the color work for this project. (Excerpts from Volume 5, 1943)

NOTICES AND ADVERTISEMENTS

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.

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*Members of the Board of Directors

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