



Flooded Sedge Meadow, Duck Creek Marsh, Columbia Co., Wisconsin (*photo by Michael J. Mossman*)



Sedge Meadow, Peshtigo Harbor, Marinette County, Wisconsin (*photo by Michael J. Mossman*)

Birds of Wisconsin Sedge Meadows

by Michael J. Mossman and David W. Sample

Sedge meadows are wet or damp "grassy" meadows dominated by sedges (*Carex* spp.) and often grasses. Once common through most of Wisconsin, most have succumbed to ditching, draining, and filling. Although in the past these native meadows were viewed by society primarily as an impediment to agricultural and urban development, or at best as a source of "marsh hay", they have become increasingly recognized and appreciated for their roles in water purification, groundwater recharge, and in providing habitat for wildlife. Hunters, trappers and wildlife managers have long recognized the value of sedge meadows for game such as mink, Mallard, and Blue-winged Teal, and have promoted their protection, management and restoration in state wildlife areas, where the largest, highest quality sedge meadows now remain.

These meadows are important for nongame birds as well. Characteristic birds include common species such as Red-winged Blackbird and Common Yellowthroat, less widespread species such as Sedge Wren and Sandhill Crane, and uncommon, specialized

birds that occur in almost no other Wisconsin habitat type: Sharp-tailed Sparrow, LeConte's Sparrow, Wilson's Phalarope, and Yellow Rail.

Although many of us have watched and listened for sedge meadow birds from roadsides or dikes, few are willing to brave these wet, boggy or hummocky places to acquire a more intimate knowledge of the meadow communities. As one cooperater noted in his report of a Cherokee Marsh survey, conducted by walking through the meadow and along old ditches:

"Mosquitoes tolerable, footing atrocious. Most ditches have to be jumped. Treacherous and hidden holes along overgrown ditch banks—breaking a leg would be easy, so be careful. Expect to get thoroughly wet from the waist down."

And yet the meadows can be incredibly fascinating, for instance at night when the sounds and cooling darkness lend a peculiar enchantment. Some of the boggy sites even make for pleasant, springy walking. As a cooperater on nocturnal surveys noted, "I hear periodic booms and . . . thuds that seem

to come from the sedge mat and bog. It sounds like pressure being released with each step I take. . . . This is a great habitat, very nice underfoot.” Lisa Hartman (1989) described another experience during a nocturnal survey for Yellow Rails at Reeds Lake Bog-Meadow:

“Upon our aural palate landed a wonderful, musical pastiche. There rained the whoops and whoos of pied-billed grebes and great horned owls, the pumping glugs of American bitterns, snipes awinnowing and ‘scaip’ing every which way, and whip-poor-wills-whip-poor-wills-whip-poor-wills. Less loud, but equally incessant were the ratchets, rasps and hissings of well-territoried sedge wrens, sharp-tailed sparrows and Le-Conte’s sparrows. The anurans alone were deafening . . . chorus frogs and eastern grey treefrogs creaking and blurting their way through the night, with any gaps in the sound assortment iced smoothly over by the harmonies of toads. And had I known nothing of the large Canada goose population on the refuge, I’d have sworn that all horizons were kenneled with hungry dogs barking for food and attention. Don’t be led to believe the sedge meadow is a quiet place at night. At least the northern lights, very much at play in the sky above, were doing so silently and did not add to the uproar.”

In Wisconsin, sedge meadows can be conveniently divided into those north and south of the tension zone. A southward extension of the northern meadows occurs in the bed of extinct Glacial Lake Wisconsin—the central “sand counties”—often in association with conifer swamps. Sedge meadows are still relatively common in some parts of these central counties. They are least common in the hilly Driftless Area of southwestern Wisconsin.

Southern sedge meadows are related to the fens and wet prairies, but are dominated more heavily by sedges and less by grasses and forbs than are the prairies. The most common sedge is tussock sedge (*C. stricta*), which typically forms hummocks containing two types of roots that allow the plants to survive in both flooded and unflooded conditions.

According to Curtis (1959), southern sedge meadows typically lie just at or above the permanent water table, and experience periodic flooding, especially in spring. The substrate is usually peat, which develops from the poorly decomposed roots and leaves of the sedges; or muck, which forms from decomposition of peat, often with mineral material washed in from surrounding uplands. These wetlands usually occur in extinct glacial lake beds, “kettle” depressions of glacial moraines or outwash, and around shores of lakes and streams. Because of spring flooding and drainage of cool air into these low areas, sedge meadows are generally slow to “green-up” in the spring. By summer they are typically rank with sedges and bluejoint grass (*Calamagrostis canadensis*), and accented with the colorful blossoms of forbs such as swamp milkweed (*Asclepias incarnata*), Joe-pye weed (*Eupatorium maculatum*), boneset (*E. perfoliatum*), meadow rue (*Thalictrum dasycarpum*) and angelica (*Angelica atropurpurea*). A few shrubs may be present, usually willows (*Salix* spp.), red osier dogwood (*Cornus stolonifera*), or silky dogwood (*C. obliqua*). On wet sites, sedge meadows tend to maintain themselves, although they may succeed slowly to wet prairie. On drier sites, or where water levels are lowered by drought or drainage, succession tends

towards shrub communities. Slightly varying, local topography may produce a natural mosaic of sedge meadow, wet prairie and patches of shrubs. In pre-settlement times, many of the drier meadows were undoubtedly kept relatively open by wildfires. Since then, many have succeeded to shrub-carr, but others have been maintained by intentional or accidental burning, or by mowing for marsh hay.

Northern sedge meadows most often occur in acidic environments, and usually on a fibrous peat substrate that may be many feet thick from centuries' accumulation of undecomposed sedge and sphagnum moss (*Sphagnum* spp.). Plants in these meadows must survive extremes in temperatures—cool air drainage can cause frost at any night of the year, and on a spring or summer day, the difference in temperature between a plant's roots (bathed in cool or even frozen water) and its sun-bathed leaves may be as great as 50° F.

Northern sedge meadows are of various types, the interrelationships of which are poorly understood. Differences in their composition apparently result from differences in substrate, water levels, and available nutrient sources, and to a large extent from their histories of natural and cultural disturbances such as water level changes and fire. Some northern meadows contain tussock sedge and robust, broad-leaved sedges such as *C. lacustris*, and *C. rostrata* and therefore resemble the tall, rank meadows of southern Wisconsin. Others are more sparsely vegetated with thin, "wiregrass" sedges (e.g., *C. oligosperma*, *C. lasiocarpa*), tussock sedge, and bluejoint. Still others, called "sedge bogs" (Curtis 1959) or "bog-meadows", are

more closely related to open bogs, and are characterized by sphagnum moss, wiregrass, *C. rostrata*, "cottongrass" rush (*Eriophorum* spp.), insectivorous plants such as sundew (*Drosera* spp.) and bladderwort (*Utricularia* spp.), and often contain low, ericaceous shrubs known as "heath", for example, leatherleaf (*Chamaedaphne calyculata*), bog rosemary (*Andromeda glaucophylla*), and bog laurel (*Kalmia polifolia*). In some bog-meadows, the slow accumulation of peat may eventually encourage succession to conifer swamp. Any type of northern sedge meadow may contain occasional low shrubs such as bog birch (*Betula pumila*), alder (*Alnus rugosa*) and meadow sweet (*Spiraea alba*). As with southern meadows, the lowering of water levels encourages encroachment by shrubs, particularly in the absence of fire.

In addition to drainage, ditching, and filling, sedge meadows may be altered or threatened by other land management practices. In diked, state and federal wildlife management impoundments, the same sort of water level manipulations that have been used to maintain or create sedge meadows can also flood them out, creating relatively natural "sedge marsh" communities of open water, sedges such as *C. stricta* and *C. aquatilis*, bluejoint, spikerush (*Eleocharis* spp.), and emergents such as cattail (*Typha* spp.) or bulrush (*Scirpus* spp.). In many cases the sedge meadow component is replaced entirely by emergents or open water. In central and northern Wisconsin, the impoundments of commercial cranberry operations have also inundated meadows. Commercial sphagnum "mossing" of central and northern bogs and meadows removes much of the characteristic bog flora noted

above, which may be succeeded at first by disturbance-tolerant species such as beggarticks (*Bidens* spp.) and smartweeds (*Polygonum* spp.), and then by a relatively simple community characterized by wiregrass sedges, bluejoint and other grasses, and a thin cover of sphagnum that eventually reclaims the exposed peat.

Some sedge meadows have also been altered by grazing. These wet pastures generally contain a prevalence of sedges, often along with other species such as bluejoint, spikerushes, and introduced or disturbance-tolerant species such as reed canary grass (*Phalaris arundinacea*), bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), and a variety of forbs. The features that most distinguish wet pastures from natural sedge meadows are: soil compaction, areas of trampled, exposed soil, exaggerated hummocks, the presence of exotic plant species, and relatively short vegetation. For obvious reasons, wet pastures do not occur on very boggy sites.

Today Wisconsin has about 30,000 acres of moderate to high quality sedge meadows, less than 3% of the 1,135,000 acres estimated to be present prior to settlement (Natural Heritage Inventory, unpubl. data). Most of the remaining meadows are highly fragmented, but several large tracts remain, mostly on public lands in the north and in the central sand counties. Examples include: Comstock Bog-Meadow (Marquette County), White River Marsh (Green Lake County), and Dewey Marsh (Portage County), Washburn Marsh (Jackson County), Crex Meadows and Fish Lake Wildlife Areas (Burnett County), Big Swamp (Oneida County), Powell Marsh (Vilas County), and Lake Noquebay and Peshtigo Har-

bor Wildlife Area (Marinette County). Sedge meadows owned and managed by The Nature Conservancy are at Summerton Bog (Marquette County) and Mink River (Door County).

In our following discussion of the breeding avifauna of sedge meadow communities, we distinguish three geographic regions in Wisconsin: north, south, and the central sand counties. We also consider several related habitat types. These include northern and southern sedge marshes—wetlands with at least 20% open water and generally co-dominated by sedges, spikerushes, bluejoint, and emergents. Central Wisconsin sedge marshes were considered northern if associated with sphagnum, and were otherwise considered southern. Excellent examples of northern sedge marshes are at Crex Meadows, Fish Lake, Peshtigo Harbor, and Powell Marsh Wildlife Areas. Southern sedge marshes are smaller, but include Fox River Crane Marsh and Lake Puckaway's West Marsh (Marquette County), Puchyan River and Prairie (Green Lake County), several sites around the Winnebago pool's upriver lakes (Winnebago and Waushara Counties), and Goose Lake (eastern Dane County).

We also discuss sphagnum bog communities disturbed by commercial mowing operations, which are represented here by four surveys from central Wisconsin. Wet pastures from throughout the state are combined as a single, related habitat type.

The final related habitat is one dominated by reed canary grass, an aggressive exotic that was formerly planted in lowlands as a source of marsh hay, or for soil conservation and wildlife habitat. Once established, intentionally or by natural dispersal of

its seed, it often spreads into surrounding areas. It generally forms tall, dense stands that are sometimes nearly monotypic and at other times include a significant component of sedges, bluegrass, brome grass (*Bromus inermis*), stinging nettle (*Urtica dioica*), or giant ragweed (*Ambrosia trifida*).

Data for our description of bird communities come from two sources: Sample's intensive study of 21 southern Wisconsin grassland habitats (Sample 1989, Sample and Hoffman 1989), and Mossman's less intensive single-visit counts throughout the state. The southern grassland studies included 3-visit bird counts and detailed habitat measurements within 100 × 200 m transects in 9 southern sedge meadows, 10 wet pastures, and 6 reed canary grass fields. Statewide single-visit counts were conducted on a wide range of northern and southern habitat types, including those in the southern grassland study, mostly using the walk-5-minute/stand-5-minute method suggested for Natural Areas breeding-bird surveys (Mossman and Matthiae 1988), and some by canoe. On most of these single-visit surveys, habitat was described by making cover estimates of various types and heights of vegetation, residual material, water, and open ground. We pooled the data from both studies for Table 1, a total of 135 sites.

Sedge meadows throughout Wisconsin do not harbor highly diverse bird communities, and tend to be dominated by a few characteristic species: Sedge Wren, Red-winged Blackbird, Common Yellowthroat, and Swamp Sparrow (Table 1). This is evidently because sedge meadows typically have a simple, homogeneous structure and do not vary locally or regionally as much

as other native Wisconsin plant communities. However, what regional variation there is in vegetation structure is reflected in changes in the bird communities. For example, Yellowthroats and Swamp Sparrows, which prefer tall lush herbaceous cover (Sample 1989) are less common northward where dense, broad-leaved sedges tend to be replaced by sparser stands of more thin-leaved wiregrass sedges. Of these dominant species, the Sedge Wren is most distinctive of sedge meadows because it occurs in relatively few other Wisconsin habitats. This wren prefers habitats with fairly homogeneous stands of tall and dense vegetation, with a dense litter layer. The Swamp Sparrow also occurs in other wetland types, the Yellowthroat occurs in various wetland and shrubby upland sites, and the Red-wing is probably the most generally distributed of all open country birds, on both dry and wet sites. Other, fairly regular sedge meadow species statewide include various swallow species, Savannah Sparrow, Bobolink, and, increasingly over the past 30 years, Sandhill Crane. Savannah Sparrow and Bobolink occur most frequently in drier "prairie-like" sedge meadows with relatively many grasses and forbs, and relatively low vegetation height and density. These two species use forb stalks extensively as song perches. Bobolinks (and to a lesser degree Savannah Sparrows) will tolerate the presence of a few low, scattered shrubs used for song perches.

In our southern Wisconsin grassland bird study, the bird community of sedge meadows was most similar to those of wet prairie, reed canary grass, and switchgrass (*Panicum virgatum*). Switchgrass is planted as nesting cover for ducks and pheasants on wildlife

Table 1. Occurrence of breeding birds in Wisconsin sedge meadows and related communities.

Species	Sedge Meadow			Sedge Marsh		Related Communities		
	South (22) ^b	Central (15)	North (25)	South (17)	North (16)	Wet Pasture (18)	Mossed Bog (4)	Canary Grass (18)
Common Loon	—	—	—	—	FC	—	—	—
Pied-billed Grebe	—	—	—	U	A	—	—	—
Double-crested Cormorant	—	—	—	U	U	—	—	—
American Bittern	—	U	FC	FC	U	—	—	—
Least Bittern	—	—	R	FC	U	—	—	—
Great Blue Heron	—	U	R	FC	C	—	—	—
Great Egret	—	—	R	U	—	—	—	—
Green-backed Heron	—	U	—	U	U	—	—	—
Black-crowned Night-Heron	—	—	R	U	U	—	—	—
Canada Goose	—	—	—	U	FC	—	—	—
Wood Duck	R	—	—	U	FC	—	—	—
Green-winged Teal	—	—	U	—	U	—	FC	—
American Black Duck	—	—	—	—	U	—	—	—
Mallard	U	U	FC	C	C	U	—	—
Northern Pintail	—	—	—	—	U	—	—	—
Blue-winged Teal	U	U	U	FC	C	—	—	U
Northern Shoveler	—	—	—	—	U	—	—	—
Gadwall	—	—	—	—	U	—	—	—
Ring-necked Duck	—	—	—	U	FC	—	—	—
Osprey	—	—	—	U	—	—	—	—
Bald Eagle	—	—	—	U	—	—	—	—
Northern Harrier	—	FC	U	—	U	—	FC	—
Red-tailed Hawk	—	—	R	—	—	—	—	—
Merlin	—	—	R	—	—	—	—	—
Peregrine Falcon	—	—	—	U	—	—	—	—
Gray Partridge	—	—	—	—	—	—	—	U
Ring-necked Pheasant	—	—	—	U	—	—	—	U
Sharp-tailed Grouse	—	U	R	—	—	—	—	—
Yellow Rail	—	—	U	—	U	—	—	—
King Rail	—	—	—	U	U	—	—	—
Virginia Rail	R	—	U	FC	U	—	—	—
Sora	R	—	U	FC	FC	—	—	—
Common Moorhen	—	—	—	U	U	—	—	—
American Coot	—	—	—	C	U	—	—	—
Sandhill Crane	FC	FC	U	C	FC	—	C	—
Killdeer	—	—	R	U	U	FC	—	—
Spotted Sandpiper	—	—	—	U	U	—	—	—
Upland Sandpiper	R	—	R	—	—	U	—	—
Common Snipe	R	U	FC	U	FC	U	—	—
Wilson's Phalarope	R	U	FC	U	FC	—	—	U
Ring-billed Gull	—	—	—	—	U	—	—	—
Herring Gull	—	—	—	U	U	—	—	—
Forster's Tern	—	—	—	FC	—	—	—	—
Black Tern	R	—	U	C	C	—	—	—
Short-eared Owl	—	—	R	—	—	—	—	—
Common Nighthawk	—	—	—	U	—	—	—	—
Chimney Swift	—	—	R	—	—	—	—	—
Ruby-throated Hummingbird	R	—	—	—	—	—	—	—
Belted Kingfisher	—	—	—	U	—	—	—	—
Northern Flicker	—	U	R	U	—	—	—	—
Alder Flycatcher	—	U	R	U	—	—	—	—

continued

Table 1. (Continued)

Species	Sedge Meadow			Sedge Marsh		Related Communities		
	South (22) ^b	Central (15)	North (25)	South (17)	North (16)	Wet Pasture (18)	Mossed Bog (4)	Canary Grass (18)
Willow Flycatcher	U	—	R	—	—	—	—	—
Eastern Kingbird	R	U	U	U	U	U	—	—
Purple Martin	R	—	U	FC	U	—	—	U
Tree Swallow	U	U	FC	C	C	FC	C	U
Northern Rough-winged Swallow	—	—	—	—	U	—	—	—
Bank Swallow	R	U	U	U	—	—	—	—
Cliff Swallow	—	—	U	U	U	U	—	U
Barn Swallow	U	—	U	FC	U	A	FC	C
Blue Jay	R	—	—	—	—	—	—	—
American Crow	—	—	R	—	U	—	—	—
Sedge Wren	A	C	A	U	FC	—	A	C
Marsh Wren	U	—	U	A	C	—	—	U
Eastern Bluebird	—	U	—	—	—	—	—	—
American Robin	—	U	R	—	—	FC	—	—
Gray Catbird	R	U	—	U	U	—	—	—
Cedar Waxwing	—	U	U	—	—	—	—	—
European Starling	—	—	R	—	—	—	—	—
Warbling Vireo	—	—	—	—	—	U	—	—
Yellow Warbler	U	U	U	U	U	—	—	—
Common Yellowthroat	A	A	FC	A	R	U	FC	C
Chipping Sparrow	—	—	—	—	—	—	—	U
Clay-colored Sparrow	—	—	U	—	—	—	—	U
Savannah Sparrow	U	FC	FC	U	—	A	A	FC
Henslow's Sparrow	R	U	—	—	—	—	A	U
Le Conte's Sparrow	—	U	C	—	—	—	FC	—
Sharp-tailed Sparrow	—	—	U	—	—	—	—	—
Song Sparrow	U	C	FC	U	U	U	FC	FC
Lincoln's Sparrow	—	—	U	—	—	—	—	—
Swamp Sparrow	A	C	C	A	C	FC	—	C
Bobolink	U	FC	C	U	—	A	FC	FC
Red-winged Blackbird	A	A	A	A	A	A	C	A
Eastern Meadowlark	U	—	U	—	—	C	—	FC
Western Meadowlark	—	—	—	—	—	U	—	—
Yellow-headed Blackbird	—	—	—	C	FC	—	—	—
Brewer's Blackbird	—	U	U	—	—	U	—	—
Common Grackle	—	—	R	C	U	—	—	U
Brown-headed Cowbird	U	U	U	—	—	—	—	—
Northern Oriole	—	U	—	—	—	—	—	—
American Goldfinch	U	FC	R	—	—	U	—	U

*Abundance codes: A = Abundant (occurred on over 75% of sites); C = Common (occurred on 50–75% of sites); FC = Fairly common (occurred on 25–50% of sites); U = Uncommon (occurred on 5–25% of sites); R = Rare (occurred on 1–5% of sites).

^bNumbers in parentheses indicate number of sites surveyed.

management properties, often in dense stands that resemble reed canary grass meadows. Although occurring primarily on upland sites, switchgrass fields are characterized by the same

four breeding bird species as are sedge meadows. In fact, among all 21 grassland and related habitat types included in that study, the Sedge Wren, Yellowthroat, and Swamp Sparrow had very

similar distributions and tended to occur together on tracts more than did any other group of species, due to their preference for very tall and dense vegetation. The Red-winged Blackbird, although consistently present in sedge meadows, was less distinctive because it occurred in almost all grassland habitats.

Many species are affected by shrubby invasion of southern sedge meadows. Sedge Wrens decline, although they will tolerate some low shrubs (<2% total cover) and will persist in local, open areas even in some meadows that have succeeded to the shrub carr stage. Many species typical of shrub carr (Hoffman 1989) begin to increase with the occurrence of just a few shrub or saplings per acre, especially Song Sparrow, American Goldfinch, Eastern Kingbird, Willow Flycatcher, Cedar Waxwing, Yellow Warbler and sometimes Ring-necked Pheasant. As density of woody cover increases further, many more species may appear (e.g., American Robin, Common Grackle, Gray Catbird, Downy Woodpecker, American Woodcock, Northern Cardinal, Brown-headed Cowbird, Blue-winged Warbler, and Mourning Dove). The addition of trees encourages Warbling Vireos, Northern Orioles, Eastern Kingbirds, and sometimes American Kestrels. Some species appear to maintain roughly similar densities in both open and shrubby meadows, including the Sandhill Crane, Virginia Rail, Yellowthroat, Swamp Sparrow, and Red-winged Blackbird.

With an increase in wetness, southern sedge meadows tend to experience an increase in waterfowl such as Mallard and Blue-winged Teal, rails, herons, and sometimes Wilson's

Phalarope, while crane, snipe, Yellowthroat, Red-wing and Sedge Wren tend to remain just as abundant. As marsh conditions are reached with the addition of other emergent aquatic plants, Sedge Wren declines while Marsh Wren increases, as do Pied-billed Grebe, bitterns, herons, waterfowl, rails, Common Snipe, Common Moorhen, American Coot, Yellow-headed Blackbird, Common Grackle, Black Tern, and sometimes Forster's Tern (Table 1). Grassland species such as Bobolink and Eastern Meadowlark decline, while Yellowthroat and Swamp Sparrow still occur regularly.

In many of Wisconsin's sedge-dominated wetlands, local topographic variations, past disturbances and other factors produce mosaics of different habitat types, which may include deep marsh, shrub swamps, and lowland forests or various upland types. This results in a mixture of avifaunas. Moreover, the composition of a particular meadow or sedge marsh bird community depends partly on the nature of neighboring habitats, since individuals of most species can move across habitat boundaries. For example, Black Terns may feed over sedge meadows, but usually only if marshy nesting sites are nearby. Northern Harriers, because of their need for large, open territories, do not occur on 20-acre sedge meadows surrounded by woods or cropland, but may well occur on a similar-sized meadow that is adjacent to an extensive sedge marsh or upland grassland.

Although the breeding bird community of northern sedge meadows (Table 1) resembles that of our southern meadows, it is also distinguished by the addition or increased abundance of several species; one causative

factor is the relatively large size of many northern meadows, or their inclusion in extensive open tracts that include other grasslands, barrens, bogs or marsh. Sedge meadow species that apparently depend on large tracts of habitat in Wisconsin include Northern Harrier, Sharp-tailed Grouse (which requires proximity to shrubby meadows or barrens), Yellow Rail, Short-eared Owl, and possibly Sharp-tailed Sparrow and Wilson's Phalarope.

Several species seem favored by the particular structural features that distinguish northern from southern meadows, i.e., a lower density and height of herbaceous vegetation, and a greater predominance of wiregrass sedges, sphagnum, and heath. The Savannah Sparrow—not a particularly “northern” species—does well in sedge-sphagnum bogs although it is infrequent in the tall, dense sedges and grasses of southern meadows. Sharp-tailed Sparrow, LeConte's Sparrow, and Yellow Rail seem to favor wiregrass, in sites where thick prostrate residual material provides cover for nesting and possibly feeding. In general, bitterns, rails, Green-winged Teal, Common Snipe, and Brewer's Blackbird are more abundant in the north. Brewer's Blackbird occurs most often in sites recently burned. Wilson's Phalarope requires some standing water, and vegetation that is not tall and thick. Once common throughout most of Wisconsin, it now breeds mainly in northern and central meadows and marshes, possibly because of appropriate habitat structure, large tract size, and relatively stable water levels.

Most sedge meadows of the central sand plains resemble those of northern Wisconsin, with regard to floristics, habitat structure, and breeding bird

fauna (Table 1). Sandhill Crane and Harrier are more common here than elsewhere in the state. Although reports of Yellow Rail and Sharp-tailed Sparrow are rare for this region, nesting is possible.

When northern and related central meadows succeed to open bog with scattered conifers, new species are introduced: Nashville Warblers, Yellow-rumped Warblers and Lincoln's Sparrow. Succession toward alder shrub swamp (Hoffman 1989) favors those same species noted for southern shrub-carr, with the addition of Alder Flycatcher (often in place of the more southern Willow Flycatcher), Veery, White-throated Sparrow, and sometimes Clay-colored Sparrow, while especially reducing numbers of Sedge Wren, Wilson's Phalarope, LeConte's Sparrow, and Yellow Rail.

Northern sedge marshes (Table 1) usually support many meadow birds with the addition or increase of a rich array of water and wading birds—most notably Common Loon, Pied-billed Grebe, Ring-necked Duck, Black Tern, and Marsh Wren.

The breeding bird community of wet pastures (Table 1) resembles that of sedge meadows only roughly. Although many of the same species occur in both habitat types, the grazed vegetation provides insufficient live and residual cover for Sedge Wren, and to some extent Yellowthroat and Swamp Sparrow, the latter two species surviving largely as a result of scattered shrubs or wet pockets of sedges and emergents that frequently occur in these pastures. Killdeer and Robin often occur, feeding in damp or trampled soil among short, sparse vegetation. Wet prairie species such as Bobolink, Eastern Meadowlark, and

Savannah Sparrow, with the nearly ubiquitous Red-winged Blackbird, are the most regular species of occurrence. In no Wisconsin habitat is the Savannah Sparrow found more regularly than in wet pasture.

Commercially mossed sphagnum bogs typically support a simple breeding avifauna (Table 1) dominated by Sedge Wren, Savannah Sparrow, and Henslow's Sparrow. The latter species is common in no other sedge-dominated habitat, nor in the sphagnum bogs prior to mowing; although it may become common in bog-meadows after repeated droughts, such as at Comstock Bog-Meadow in 1988 and 1989. The relatively thin or patchy herbaceous cover and shrubless aspect of this disturbed habitat type provide poor habitat for Yellowthroat and Swamp Sparrow. Sedge Wrens occur mainly in wet pockets. Our small sample doesn't indicate that the remaining bird species of mossed bogs differ substantially from the overall occurrence of species in sedge meadows.

Fields of reed canary grass (Table 1) are usually dominated by the same four species that occur so frequently in other sedge meadows—the Sedge Wren and Red-wing, both of which tend to occur in high densities, and the Yellowthroat and Swamp Sparrow. Wet prairie species (Bobolink, Eastern Meadowlark and Savannah Sparrow) are fairly common in canary grass, mostly where sedges are intermixed, and in dry sections, where the vegetation is relatively short.

Sedge meadows and their various, disturbed counterparts are not among the most diverse bird habitats in Wisconsin, and typically support a simple breeding-bird community dominated by just a few species. Sedge-dominated

marshes, however, are characterized by a mixture of meadow and marsh conditions, and are thus richer in bird species; they provide some of the best bird watching in the state.

But sedge meadows, despite their simplicity, are incredibly interesting places, and are, more importantly, very important biologically to Wisconsin's avifauna. Many sedge meadow birds are declining statewide, according to the U.S. Fish and Wildlife Service's Breeding Bird Survey (BBS). These include species that are relatively common in sedge meadows, such as Sedge Wren, Savannah Sparrow, and Bobolink, and less abundant species such as Blue-winged Teal, Upland Sandpiper, Eastern Meadowlark, and LeConte's Sparrow. All of these species except LeConte's Sparrow occur in other native and disturbed habitats as well; but as the quality and extent of many of those other grassland and wetland habitats continue to decline, sedge meadows become more important breeding-bird habitats.

Sedge meadows are also important for other species that are too rare to be monitored accurately by BBS, but which are otherwise known or suspected to be declining. Among these, the Sharp-tailed Grouse and Short-eared Owl are area-dependent grassland species that often include sedge meadows as part of their large territories or feeding ranges, within extensive complexes of open habitats. Four species are particularly dependent on sedge marshes and meadows and would probably disappear from Wisconsin without them: Yellow Rail, Wilson's Phalarope, LeConte's Sparrow, and Sharp-tailed Sparrow. The Yellow Rail, formerly common along sections of Green Bay (University of Wisconsin-

Green Bay Richter Museum, unpubl. data) and probably elsewhere in the state, has recently been found in but a few sites despite extensive searching. Wilson's Phalarope, though more common than the Yellow Rail, has declined greatly since the turn of the century, when it was a "common summer resident in Wisconsin, breeding in larger or smaller colonies in many parts of the state . . . at any suitable place. One colony at Lake Koshkonnong has been known to have more than two hundred pairs on the marsh at one time." Of the 2 sparrows, LeConte's now occurs in many of the remaining northern and central Wisconsin meadows, but the Sharp-tail probably breeds regularly in fewer than 20 local sites, most of them in the Crex Meadows and Fish Lake Wildlife Areas of Burnett County.

Sedge meadow bird communities have undergone various threats since the time of settlement. For example, Hoy (1885) noted that the Sedge Wrens which were abundant in the sedge meadows of southeastern Wisconsin in the 1840's had scarcely been seen since the 1860's, their song "... silenced by the click of the mower. The hay harvest comes before the young are fledged, hence the mower is fatal to this wren's best interests. They have gone, I hope, somewhere where carex abounds and mowers do not." Ironically, in the long run it was disturbances such as mowing that kept some meadows from succeeding to shrubs and trees.

Now, after decades of decimation by ditching, draining, filling, and conversion to other uses, most of our remaining sedge meadows have come under the purview of wetland protection laws. Yet conversion of sedge

meadows to other wetland types remains a major threat to this community and its characteristic bird fauna: witness the flooding of meadows in cranberry and publicly-owned impoundments; in other areas a lack of appropriate management has allowed meadows to succeed to shrubs and even trees, often with the help of ditching or draining of adjacent lowlands, which eventually lowers the local water table.

The outlook for sedge meadows is not bleak, however. Most remaining meadows are on lands managed by public and private conservation agencies, and can be maintained or even expanded by appropriate burning, mowing, and water level manipulations. Next time you visit one of these areas, let the agency or site manager know how much you appreciate "their" sedge meadows and sedge marshes, and that you hope they continue managing for large, viable tracts of this increasingly rare but invaluable resource.

DESCRIPTION OF SITES

The following three sites are among the best remaining examples of relatively large, intact sedge meadows in southern, central, and northern Wisconsin, respectively. We have also briefly described the locations of some sedge-dominated marshes, but have not included any of the other related habitats. Altogether, the sites described below harbor populations of almost all of the bird species discussed in this paper. Although the count data were gathered by walking through the meadows, we advise against entering these areas because of the wet, sometimes treacherous substrate and the

potential disturbance to nesting birds and sensitive plants. All sites can be observed from dikes, roads, railroad grades, or adjacent uplands. All are worth visiting not only during the breeding bird survey period of late May through early July, but also from late April through mid May; at this time visibility is better, migrant waders and waterfowl are often present, and many breeding species such as rails, bitterns, crane and snipe are most active and vocal.

CHEROKEE SEDGE MEADOW AND MARSH NATURAL AREA

Size.—About 350 acres, within a 2,000-acre wetland complex of shrub-carr, meadow, and marsh.

Location.—Associated with Cherokee City Park on Madison's north side, Dane County.

Access.—The best access is from the railroad tracks that border the meadow on the west. From Highway 51 (Stoughton Road) just south of the I90-94 ramp, turn west on Daentl Road, then left on Buckley Road to the unimproved parking area near the tracks. Follow the tracks south. The meadow begins about 1/4 mile down the tracks, and continues for another mile. Be careful of trains.

Site Description.—The north portion of the natural area is primarily a blue-joint-sedge meadow grading southward into a shrubby meadow where about half of the cover is provided by bog birch, willows, and dogwoods. Much of the southern portion was ditched and is somewhat more disturbed, including 20 acres that was

filled and is dominated by reed canary grass, cane (*Phragmites australis*), and bulrushes. Twenty acres around a spring source from the east are relatively undisturbed cattail marsh and high quality sedge meadow. Other areas include marsh with low prairie, fen, and meadow elements containing rare plant species. The state-threatened Blandings turtle (*Emydoidea blandingi*) occurs here. The marsh has endured numerous ditching and draining attempts, development of the golf course to the west, and sod growing to the immediate west. Historically, marsh hay was cut from portions of the marsh.

Birds.—Numbers in Table 2 are from our survey of only sedge meadow sections of the natural area on 31 May 1988. David Fallow and we have also surveyed the sites several times in other years. The predominance of Willow Flycatcher, Sedge Wren, Yellowthroat, Swamp Sparrow and Red-winged Blackbird and the presence of Yellow Warbler and Goldfinch is typical for large, southern meadows that have a lush growth of broad-leaved and tussock sedges and moderate invasion by shrubs. A rare sighting is that of the Yellow Rail on 2 June 1982.

COMSTOCK BOG-MEADOW STATE NATURAL AREA

Size.—The bog-meadow comprises approximately 400 acres within a natural wetland basin that covers about 1,000 acres. The meadow is bordered by upland oak woods, and small tracts of tamarack swamp and cattail-sedge marsh.

Location.—Eastern Marquette County.

Table 2. Numbers of birds encountered on breeding bird surveys in 3 sedge meadows.

Species	Number of Birds Encountered at:		
	Cherokee	Comstock	Reeds Lake
American Bittern	+ ^a	—	6
Least Bittern	—	1	—
Green-backed Heron	1	—	—
Wood Duck	+	—	+
Green-winged Teal	—	—	10
Mallard	+	1	13
Blue-winged Teal	+	3	5
Northern Harrier	—	—	1
Broad-winged Hawk	+	—	—
Red-tailed Hawk	+	—	—
Ring-necked Pheasant	1	—	—
Sharp-tailed Grouse	—	—	10
Yellow Rail	+	—	4
Virginia Rail	+	2	+
Sora	+	2	2
Sandhill Crane	2	6	2
Killdeer	+	—	—
Upland Sandpiper	—	—	1
Common Snipe	+	6	8
American Woodcock	+	1	—
Wilson's Phalarope	—	3	18
Mourning Dove	+	—	—
Short-eared Owl	—	—	1
Common Nighthawk	+	—	—
Chimney Swift	+	—	—
Belted Kingfisher	+	+	—
Downy Woodpecker	+	—	—
Northern Flicker	+	—	—
Willow Flycatcher	15	—	—
Eastern Kingbird	+	—	1
Purple Martin	+	—	—
Tree Swallow	1	—	—
Northern Rough-winged Swallow	+	—	—
Bank Swallow	+	—	—
Barn Swallow	1	—	—
American Crow	+	—	—
Sedge Wren	23	+	23
Marsh Wren	+	2	—
American Robin	+	—	—
Gray Catbird	2	—	—
Cedar Waxwing	1	—	—
Warbling Vireo	+	—	—
Yellow Warbler	7	—	—
Common Yellowthroat	47	+	9
Northern Cardinal	+	—	—
Indigo Bunting	+	—	—
Savannah Sparrow	—	—	19
Henslow's Sparrow	+	—	—
Le Conte's Sparrow	—	1	7
Sharp-tailed Sparrow	—	—	7
Song Sparrow	3	—	—
Swamp Sparrow	29	17	18
Bobolink	—	43	19

continued

Table 2. (Continued)

Species	Number of Birds Encountered at:		
	Cherokee	Comstock	Reeds Lake
Red-Winged Blackbird	51	63	74
Eastern Meadowlark	1	—	—
Common Grackle	1	—	—
Brown-headed Cowbird	1	—	—
Northern Oriole	+	—	—
American Goldfinch	5	—	—

*+ Recorded on other visit(s) during breeding season.

Access.—From Montello, drive north five miles on Highway 22, then east on Highway J for almost a mile. Turn north and east on Edgewood Road one mile to a parking lot at the southeast corner of the site. View the marsh from the old beach ridge northwest of this lot, or from the wood's edge to the north.

Site Description.—The southern end of the meadow is a quaking bog dominated by wiregrass and tussock sedges, with sphagnum and an unusual mixture of acid-bog species such as sundew and bladderwort, and others that are characteristic of calcareous conditions. Northward within the meadow, sphagnum and acid-loving species decrease while sedges increase.

The site is usually wet. For instance, during our survey in June 1984 the water was 1/2–6 inches deep and up to a foot deep when the bog mat sank beneath a person's weight. The meadow dried considerably in 1988 and 1989, from drought conditions that began in 1987. In 1989 there was no standing water although a person standing on the mat brought water just over the surface. There are also scattered low willow shrubs and patches of cane.

Birds.—Table 2 lists the birds encountered during a walk/stand survey in the southern half of the meadow on 7 June 1984. The absence of Sedge Wrens and Common Yellowthroats, and but one Swamp Sparrow, attest to the site's characteristic wetness, dense sphagnum, and sparse wiregrass sedges. The large population of Bobolinks was apparently encouraged by the presence of scattered willow shrubs. The site's high quality is indicated by the presence of sedge meadow specialists—the LeConte's Sparrow and Wilson's Phalarope. During the dry years of 1988 and 1989, Randy Hoffman noted an invasion of Henslow's Sparrows here, as well as the presence of Virginia Rails and—in patches of cane—Sedge Wren and Yellowthroat. Martin (1988) discussed the importance of this wetland as a staging area for a burgeoning population of Sandhill Cranes.

REEDS LAKE BOG-MEADOW

Size.—1200 acres, within a complex of sedge meadows, marshes, and shrubby barrens many square miles in extent.

Location.—In the northeastern por-

tion of Crex Meadows Wildlife Area, Burnett County.

Access.—From Grantsburg, follow road signs to the Crex Meadows Wildlife Area headquarters on the north side of town, at the junction of Highways D and F. It is usually worth stopping here for maps, directions, advice on recent bird sightings, and information on the interesting history and management of the wildlife area. Continue north and then east on Highway F about 11 miles, then east 1 1/2 miles on Reeds Lake Road, and south about 1/2 mile on North Refuge Road, beyond the water control structure and “Reeds Lake” sign, to where the meadow extends to the east and south. Listen and view from the roadside or adjacent ditch bank. To reach the south end of the meadow, continue west on North Refuge Road, then south (left) almost two miles on East Refuge Road, and turn east (left) on Main Dike Road about 1/2 mile to the Dike One pumphouse. Additional meadow extends even farther southward from here.

Site Description.—This site is of especially high quality, and is perhaps the largest undisturbed sedge meadow in the State. It extends from Reeds Lake south two miles to the Main Dike, interrupted by only a few narrow, wooded ridges and islands. Many bird watchers are familiar with the Dike One pumphouse area along the Main Dike, as a reliable site for Yellow Rail and Sharp-tailed Sparrow. However, the upper end of the meadow, nearer Reeds Lake, is less accessible and less disturbed, being relatively unaffected by water level manipulations and natural surface water flow near the pump-

house. The Reeds Lake meadow includes an ericaceous bog about a half mile east of the observation site described above on North Refuge Road, and a huge wiregrass tract adjacent and south of the observation site. The ericaceous bog is composed of a very deep layer of sphagnum, with a lush low growth of leatherleaf, and some bog birch, rosemary, laurel, and willow. Wiregrass and broad-leaved sedges, relatively deep prostrate residual material, and some standing water also occur. The majority of the meadow is thinly vegetated with wiregrass and a few broad-leaved sedges, bluejoint, purple cinquefoil (*Potentilla palustris*), and widely scattered low shrubs of bog birch, willow, meadow sweet, and leatherleaf. Prostrate residual material was thick and extensive when we visited in June 1989, and much of the area had standing water which in some spots reached above the knees when we traversed the quaking mat.

Birds.—We surveyed the site by the walk/stand method in two sections, including the leatherleaf-sedge bog, on the mornings of 9 and 10 June 1989 (Table 2), and also on the night of 9–10 June. Its value as a refuge for breeding birds is apparent from the large numbers of uncommon and rare sedge meadow specialists: Yellow Rail, Wilson's Phalarope, LeConte's Sparrow and Sharp-tailed Sparrow. Four other species of special concern are here, not because of specialized requirements for particular habitat structures, but because of their need for large tracts of grassland or marsh habitat: Northern Harrier, Sharp-tailed Grouse, Upland Sandpiper, and Short-eared Owl. Most bird species

here occur in both the wiregrass and leatherleaf habitats, although the rail, phalarope, LeConte's Sparrow, and Sharp-tailed Sparrow were restricted to the wiregrass. Furthermore, the rails and Sharp-tailed Sparrows were concentrated in one area far out in the meadow. The south end of the meadow near the pumphouse was flooded in 1989, and supported no Yellow Rails or either of the sparrows, although phalaropes were abundant.

SEDGE MARSHES

Many excellent sedge-dominated marshes occur in diked impoundments at Crex Meadows Wildlife Area (Burnett County) and can be readily observed from dikes, for example Refuge Extension, the upper part of Phantom Flowage, Dikes 1, 4, and 5, and Upper North Fork Flowage. Check the headquarters for maps. These marshes have especially good breeding populations of Common Loon, Pied-billed Grebe, Canada Goose, Ring-necked Duck, Bald Eagle, Wilson's Phalarope, and Black Tern.

In northeastern Wisconsin, good sedge marsh occurs at Peshtigo Harbor Wildlife Area (Marinette County). This is one of but a few remnants of the extensive marshes that once lined Green Bay's western shore. From the City of Peshtigo, drive southeast on East Front Street, and continue on Highway BB about 6 miles. Turn south on Johnson Road, and park before you reach the causeway, which will lead you, on foot, across the marsh. This is a good site from which to launch a canoe for explorations upstream. If you canoe downstream, be careful not to venture into the open water near the bay. The marsh includes a mixture of

cattail, sedges, bluejoint, reed canary grass, bulrushes, burreed (*Sparganium* spp.), arrowhead (*Sagittaria* spp.), and shrubs. During the breeding season notable bird species include Black-crowned Night-Heron, American Bittern, Sora, Herring and Ring-billed Gulls, Black Tern, Yellow-headed Blackbird, and sometimes Wilson's Phalarope and Forster's Tern. Yellow Rails have been reported within earshot of the causeway at least as recently as 1983. High quality sedge meadows occur on the south side of the marsh along Harbor Road.

High quality, sedge-dominated marshes in southern Wisconsin have generally poor access except by canoe. However, the nature of many sites varies with annual water level changes. In Columbia County, near Grassy Lake Wildlife Area, some small wetlands are often dominated by sedges, bluejoint, and various emergents. To reach these from Highway 16 at Rio, travel east on Highway B/Z 3 miles to the ponds at the intersection with Erdman Road. Black Tern, Pied-billed Grebe, American Coot, and Sora often nest here.

The Fox River Crane Marsh (Marquette County) includes sedge meadow and marsh, canary grass stands, and deeper marsh, and is worth a 4-hour canoe trip. Leave a car at the take-out site, which is a public landing in the village of Endeavor, on the upper end of Buffalo Lake. To reach the "put-in", drive southeast about 4 miles on Highway T, then east on Highway O 1½ miles to the river crossing. Sedge-canary grass-bluejoint meadow and marsh begin about ½ mile downstream, and this eventually grades into cattail marsh nearer Buffalo Lake. Recent breeding birds include Least Bittern, Sandhill Crane, Common

Moorhen, American Coot, Black Tern, Marsh and Sedge Wrens and Yellow-headed Blackbird.

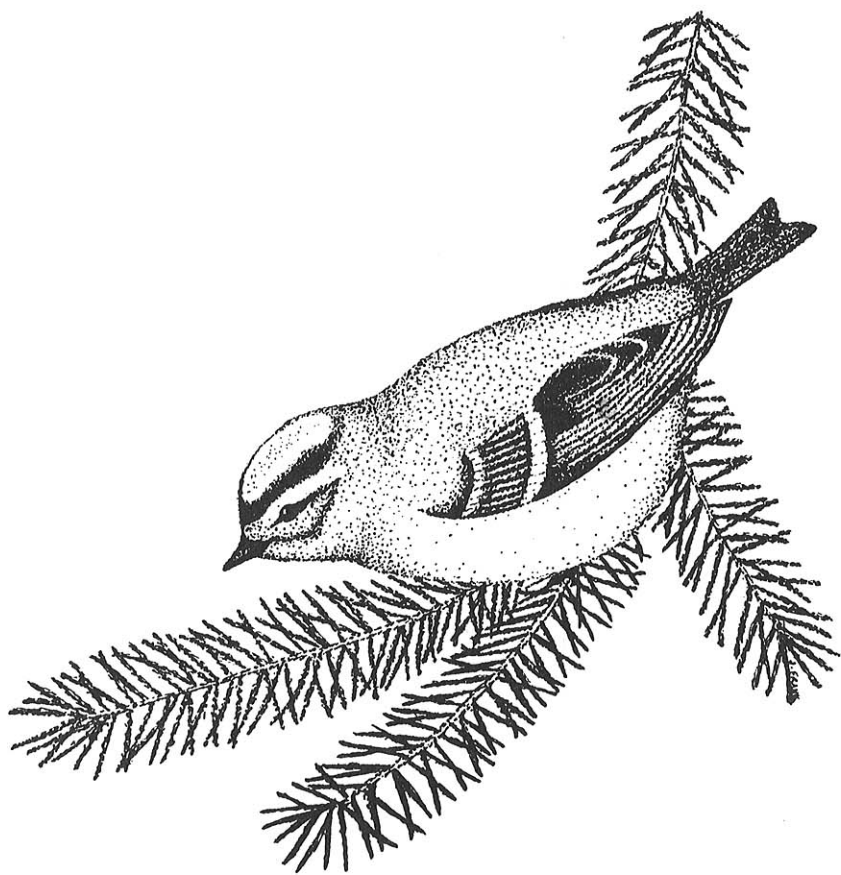
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Golden-crowned Kinglet by *James C. Frank*