

CONSERVING LOCAL HABITAT FOR DECLINING GRASSLAND BIRDS AUTHOR: DUANE HEATON

PURPOSE OF THIS PAPER

The Bird Conservation Network (BCN), a coalition of bird conservation groups, believes that maintaining a place for our native wildlife is a fundamental role of our preserves in this large metropolitan area. We suggest that by maintaining adequate habitat for such a large and diverse group as birds, other groups of wildlife would also benefit. We propose that one of the most immediate and pressing needs is to maintain grasslands that are large enough to provide critical habitat for grassland birds, which have shown consistent declines in recent decades (Illinois Wildlife Habitat Commission, 1985; Herkert, 1995; Sauer et al., 1997).

We are therefore offering this paper (1) to outline our concerns that habitat in our forest preserves is steadily decreasing for grassland birds, and (2) to recommend actions we believe are needed to provide adequate habitat for them.

OUR FOREST PRESERVES: VALUABLE ASSETS

In the Chicagoland area, we are fortunate that wise public leaders have protected sizeable pieces of the landscape in a system of county preserves. These preserves offer opportunities for recreation (both passive and active), education in the form of outdoor classrooms, and places where people can go for a quiet walk to offset the fast-paced world of everyday life.

Our preserves also allow those of us who have chosen to live in or near Chicago a chance to experience a part of the region's rich natural heritage – its woodlands, grasslands, wetlands, and waterways – and the wildlife they support. Just driving by a preserve and seeing a Red-tailed Hawk soaring effortlessly overhead or a White-tailed Deer bounding across a field adds to the quality of our lives in ways we hardly realize.

GRASSLAND BIRDS ARE IN SERIOUS DECLINE

Although we are concerned about all our native wildlife, including plant life, and the overall health of our preserves, we would like to focus specifically on habitat requirements of grassland birds. In



this paper, we use the term "grassland" to describe a treeless area comprised mainly of herbaceous vegetation, and with no more than a minor shrub component. A grassland can be an old field, a hay meadow, a native prairie remnant, or a prairie restoration. For the purposes of bird conservation, a practical way to describe a grassland is as a habitat of size and structure such that the birds of the original prairie will nest there.

The Breeding Bird Survey (BBS), established by the U.S. Fish and Wildlife Service in 1966 to evaluate bird population trends, has documented that the declines exhibited by grassland birds have been steeper, more consistent, and more geographically widespread than declines in any other ecological or behavioral grouping of birds (Knopf, 1994; Peterjohn et al., 1995; Sauer et al., 1997).

In Illinois, there have been dramatic declines in grassland birds. During the 25-year period ending in 1984, grassland songbirds (e.g., Henslow's Sparrows, Grasshopper Sparrows, Savannah Sparrows, Bobolinks, Eastern and Western Meadowlarks, and Dickcissels) in Illinois declined by 75 - 95% (Illinois Wildlife Habitat Commission, 1985). BBS data for the period from 1966-1996 also indicate alarming annual declines in Illinois: 9.8% for Bobolink, 6.4% for Grasshopper Sparrow, 5.4% for Savannah Sparrow, and 2.6% for Eastern Meadowlark (Sauer et al., 1997). Henslow's Sparrows are generally too rare in Illinois to permit BBS trend estimation, but Illinois Spring Bird Count data from 1975-1995 showed an annual decline of 7.1% (Herkert, 1997). It is important to note that a 2.3% annual decline is equivalent to a 50% decline over 30 years; similarly, a 4.6% annual decline is equivalent to a 50% decline over only 15 years.

A 1997 gathering of the region's birders and ornithologists who convened as part of the Chicago Wilderness Recovery Plan process reviewed the bird life of the region. They concluded that the highest bird conservation priority, which they characterized as "globally critical", is for birds of wet to mesic grasslands, with and without shrubs. Their report reads, "The Chicago Wilderness region is very important for the overall (global) well-being of these communities and many constituent species". They report that globally, only a few high quality sites are left anywhere, and that nearly all characteristic species are showing large declines in the upper Midwest. Species in this group that are especially vulnerable to habitat degradation are Willow Flycatcher, Yellow-breasted Chat, Bell's Vireo, American Bittern, Northern Harrier, Sandhill Crane, Upland Sandpiper, King Rail, Shorteared Owl, Henslow's Sparrow, and Bobolink. Other characteristic species are Brown Thrasher, Swamp Sparrow, Field Sparrow, Dickcissel, Loggerhead Shrike, Eastern Meadowlark, Sedge Wren, Savannah Sparrow, and Grasshopper Sparrow (Chicago Wilderness Taxonomic Workshop - Birds, 1997). Several of these species once commonly nested in Illinois, but are now listed as endangered by the Illinois Endangered Species Protection Board (Illinois Endangered Species Protection Board, 1999).



The community of birds of grasslands with shrubs includes Brown Thrasher, Swamp Sparrow, Field Sparrow, Willow Flycatcher, Yellow-breasted Chat, Bell's Vireo, and Loggerhead Shrike (Chicago Wilderness Taxonomic Workshop - Birds, 1997). Management for this group of birds is not treated in this paper. Nonetheless, as part of the management of grasslands, we urge that shrublands also receive consideration and be incorporated into plans to manage grasslands, since shrubland birds are also declining due to the succession of shrublands to wooded areas. Management activities to maintain shrublands should be considered in conjunction with managing grasslands.

THE IMPORTANCE OF VARIOUS HABITAT TYPES

Our wildlife has varying needs. Different species need different habitat, and what is good for some is detrimental to others. Therefore, to maintain healthy wildlife populations, a variety of habitats must be available at different sites on a region-wide scale.

Because woodland-grassland edges have an abundance of wildlife, it was once thought that creating extensive edge areas would be of the greatest benefit to wildlife. It is now known, however, that extensive edges are detrimental to many species, and certain species are excluded from them (Herkert et al., 1993).

A major reason many species are declining is an inability to raise young successfully, rather than adults dying through predation or other factors (Herkert et al., 1993). Because nest predators, such as raccoons, commonly patrol edges, edges have much higher nest predation than is found in the portions of woodlands or grasslands away from the edge (Burger et al., 1994). In grasslands, the impact of nest predation near woody edges has been shown to extend at least 50 yards into some habitat blocks (Johnson and Temple, 1990). It is not uncommon for more than 80 percent of nests to fail to produce young birds (Herkert et al., 1993).

Another frequently discussed impact on nesting birds is brood parasitism by Brown-headed Cowbirds. Cowbirds lay their eggs in other birds' nests, and the host species then raise the young cowbirds to the detriment of their own young. Although cowbirds can be serious brood parasites of woodland birds, grassland birds co-evolved with cowbirds and have adaptations that help them deal with cowbirds. For example, grassland birds often land away from their nests and then walk to them, making the nests more difficult for cowbirds to locate. Cowbird parasitism is thus not considered as serious a problem for grassland birds as it is for other groups of birds in Illinois (Herkert, personal communication).

The grassland specialists are the species that cause us the greatest concern and warrant the most immediate attention. Some species of grassland birds are area-sensitive and will nest only in large grasslands. Different species show different degrees of area-sensitivity. For example, Henslow's



Sparrows, Savannah Sparrows, and Bobolinks are highly sensitive, and need large blocks of grassland, but Field Sparrows, Song Sparrows, and Common Yellowthroats are less sensitive to area, and will nest in smaller grasslands (Herkert et al., 1993). Many of the area-sensitive species will not nest even in large grasslands if too many small trees or shrubs are present.

HABITAT CHANGES WITH THE PASSAGE OF TIME

Loss of habitat is widely recognized as the greatest threat to wildlife today, followed by competition from exotic (non-native) species. Habitat loss is readily apparent in the rapidly-expanding Chicagoland area, making our preserves all that much more important. But even on land that has been permanently protected within our preserves, habitat does not remain constant over time. It is normal for changes in vegetation to occur as a result of long periods of wet or dry weather, fire, and other natural causes. Species inhabiting our woodlands and grasslands have adapted over time to these natural processes. However, when natural processes are stopped or altered too severely, the habitat changes that result are not natural and are detrimental to our wildlife.

In the absence of these natural disturbances, our grasslands are being overtaken by scattered shrubs and trees of various species, both native and exotic. While this provides important short-term habitat for birds requiring shrubland habitat, these areas eventually become overgrown and unsuitable for either shrubland or grassland birds, both of which are generally declining in numbers. Also, in many areas, hedgerows and woody fencelines still exist from earlier times, dividing grass-lands into smaller fragments.

Grasslands are disturbance-maintained. Without some form of disturbance, natural or otherwise, they change to wooded areas over time. The fires that were once a natural part of the landscape have largely been stopped, although controlled burns have been reinstated on isolated preserves. Bison and elk no longer graze the prairies, keeping down woody growth. Unless some action is taken to reverse the unnatural succession of grasslands to wooded thickets, grasslands will continue to be lost and degraded, and extensive areas of our preserves will continue to become wooded thickets.

BIRDS AS INDICATORS OF HEALTHY PRESERVES FOR WILDLIFE

There are several reasons we think birds are an appropriate group of wildlife to draw upon for evaluating terrestrial wildlife habitat. First of all, more species of birds are found in the Chicago region than most other groups of wildlife. About 300 species either migrate through or reside in the Chicago area during at least part of the year (Mlodinow, 1983). With so many different species of birds each requiring adequate habitat as they reside or pass through the region, we believe birds



serve as a good indicator of adequate habitat types for terrestrial wildlife in general at all times of the year.

Second, birds are generally less secretive and easier to find than other groups of wildlife. Even though many birds do have secretive lifestyles, the songs and calls are distinct for each species. During the breeding season, songs and calls are especially useful in detecting the presence of different species. The immense popularity of birding has produced a large number of experienced people who are very capable of accurately identifying birds by both sight and sound.

Third, the Bird Conservation Network has already addressed the need for monitoring bird populations through the BCN Survey (http://www.fmnh.org/birdcensus/). Over 100 experienced birders in six counties are following a procedure that is widely used and accepted for estimating bird populations. All species and the number of each that are seen or heard at established points along a route are recorded. Information is also recorded on breeding success, such as the presence of recently fledged young. This monitoring procedure is non-intrusive and does not disrupt the birds being monitored.

The BCN Survey data are entered over the Internet into a site maintained by the Field Museum of Natural History, where it is available for review by any interested party. This ongoing monitoring program will allow correlation of bird populations to other factors, such as habitat. In addition, the BCN and the Field Museum are working with the National Audubon Society to initiate a study in 2000, which will provide a better understanding of what types of vegetation may best sustain grassland bird populations.

Last, but most important, if our preserves are to provide the habitat that is so critical to birds and other wildlife, public support for management is essential. We believe birds, which are watched and admired by huge numbers of people, can provide a clear connection between wildlife in general and the need to maintain adequate habitat in a way that is both readily appreciated and scientifically valid.

WHAT CAN BE DONE?

Our actions as residents of the region have resulted in the decline of grassland bird habitat, but our actions can also do much to restore this degraded habitat. As mentioned earlier, grasslands are disturbance-maintained, and without some form of disturbance, natural or otherwise, they will change to wooded areas over time. The options available for maintaining grasslands are prescribed grazing, burning, and mowing.



Grazing on our preserves seems the most difficult to implement, but controlled burning and mowing are very viable options which are currently used successfully to maintain healthy grasslands. Controlled burns can help control woody invasions of brush and stimulate new growth of grasses and forbs (herbaceous species other than grasses; wildflowers), but require trained personnel and care must be taken to ensure that smoke does not obscure visibility on adjacent roads or cause problems in residential areas. Mowing can also help control invasions of brush, but should only be done in late summer or fall, after grassland birds have fledged.

Managing for large tracts of grassland habitat is the best strategy for supporting viable populations of grassland birds. Because the habitat requirements of grassland birds are diverse, management designed to benefit one or a few species will not adequately accommodate the needs of all other species (Sample and Mossman, 1997). Recent studies have shown that grasslands as large as 250 acres are required for there to be a 50% likelihood of attracting grassland species that are highly sensitive to habitat fragmentation (Herkert et al., 1993). Large sites have the advantage of accommodating the needs of species requiring large areas (i.e., area-sensitive species) as well as those that do not (Sample and Mossman, 1997). Large tracts of grassland also have a high ratio of interior to edge, thus minimizing the negative edge effects, which can reduce nest productivity on small habitat blocks (Johnson and Temple, 1990). In addition, large tracts are generally easier to manage than a larger number of small sites, and multiple large areas on a region-wide scale are recommended (Sample and Mossman, 1997). In most cases, woody cover over 1 meter high should be kept to a maximum of 5% for obligate grassland species (Sample and Mossman, 1997).

Grassland birds will breed successfully in original prairies and in fields of Eurasian grasses. However, some low quality prairie restorations consist of dense stands of a few species of tall grasses, and seem to be of little value for most prairie bird species. It is thus an important research need to determine what kinds of restoration provide the most suitable habitat for grassland birds.

BCN RECOMMENDATIONS FOR ENHANCING HABITAT FOR GRASSLAND BIRDS

A 1993 publication, "Habitat Establishment, Enhancement and Management for Forest and Grassland Birds in Illinois" by James R. Herkert, Robert E. Szafoni, Vernon M. Kleen, and John E. Schwegman, offers some excellent management guidelines for grassland areas. The following management guidelines for grassland areas are adapted with some modifications from this publication:

Avoid fragmentation of existing grassland areas.

The preservation and proper management of existing grassland areas, especially those presently used by area-sensitive species, is the most effective means of conserving grassland birds.



Grasslands aimed at benefiting bird species that are most sensitive to grassland fragmentation should be at least 125 acres and preferably more than 250 acres in area.

Smaller grasslands of less than 50 acres will benefit grassland bird species least sensitive to habitat fragmentation, but much larger tracts are necessary to benefit grassland bird species with high sensitivity to habitat fragmentation.

Minimize the amount of linear edge, especially for grasslands utilized by area-sensitive birds. While circular plots are ideal, square plots are preferred to rectangular plots of similar acreage. Avoid very irregular borders.

Where contiguous grasslands of 50 acres or greater are not possible, establish several smaller scattered grasslands.

Individual patches should be at least 15-20 acres in size within the same preserve. Guidelines for minimizing edge on these patches should be followed. It is highly desirable that any adjacent, grassy habitats such as pastures, hayfields, and grassed waterways be incorporated by using them as connections between grassland patches or as non-woody, open edges.

Removal of woody fencelines can reduce nest predation and nest parasitism, and combine smaller adjacent grasslands into the large grasslands needed by area-sensitive species.

Maintain grasslands with a mix of grasses and forbs (herbaceous species other than grasses; wildflowers).

Most grassland bird species prefer at least low to moderate forb cover. Forbs provide vital habitat components such as song perches and above-ground nesting substrates for many species.

Conduct prescribed burns on grasslands managed for breeding bird habitat in early spring (March or April) or late fall (October or November).

For grasslands over 100 acres in size, burn 20-30% of the area annually.

Some species of grassland birds prefer recently burned areas whereas others prefer unburned areas. On small, isolated grassland areas, burn compartments may consist of a larger percentage of the total area, but should not exceed 50% in any burn season. Where several small grasslands are in the same preserve, management should be directed toward providing both recently burned and unburned habitat by selectively burning parcels on a rotational schedule.

Where possible, use existing 'natural' firebreaks as grassland borders.

Service roads, lakes, streams, and frequently mowed areas are good examples of firebreaks. In addition, these breaks may help retard the encroachment of exotic weeds and woody vegetation into the grassland.



Where existing grassland habitats border forested tracts, allow prescribed fires to burn slowly through the adjacent forest edge into the woods as opposed to installing a firebreak along the forest edge.

This management technique will create a more natural open or 'feathered' edge between the grassland and forest rather than a sharp, contrasting wall of woody vegetation. Research indicates that sharply contrasting edges have higher nest predation rates than 'feathered' edges.

Control woody vegetation according to current best practices.

Grassland birds are greatly affected by the amount of woody vegetation within a grassland. Several Midwestern studies also have shown that grassland birds nesting in proximity to woody vegetation suffer significantly higher nest predation and nest parasitism rates than birds nesting farther from woody vegetation.

Restrict hiking trails to the edges of the area to minimize impacts.

Grassland birds are visible and audible from a long distance and trails through grasslands are not necessary.

Mow parts of grassland areas for hay or for weed or woody vegetation control as another grassland management alternative.

However, several studies have documented high rates of fledgling and nest mortality in grassland areas subjected to mid-season cutting. As with burning, manage mowed grasslands on a rotational system with some subunits left idle each year.

Use monitoring data to make adjustments to management plans.

Monitoring data from the BCN Survey or other sources should be utilized to assess the impact of management techniques on bird populations and adjust management activities when appropriate.

The above are general guidelines. It is important to note, however, that different species naturally have different habitat requirements. For example, some species require sparse ground litter, while others need two or more years of ground litter for nesting. Some species, such as Henslow's Sparrows, can nest into September (Graber, 1968), and are thus subject to hazards of mowing or burning later in the year. Such special factors warrant special management, but generally, mowing can take place after August 1.

We believe it is important that every effort be made to make our grasslands as large and contiguous as possible. We urge that maintenance and expansion of our remaining grasslands, especially large grasslands, receives the high priority needed to ensure adequate habitat for nesting and wintering grassland birds. Monitoring data from the BCN Survey should be utilized to assess the impact of management techniques on bird populations and adjust methods when needed.



The Bird Conservation Network welcomes the opportunity to work with preserve managers to discuss any issues that will benefit the birds of our preserves.

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