

**Breeding Season Avian Use and Nesting Census of Milan Bottoms, Rock Island County,
Illinois – Final Report, Years 1 and 2**

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EXECUTIVE SUMMARY

1. The Milan Bottoms (MB) bird community was censused at 51 points during the summers of 1999 and 2000 by Kelly McKay.
2. Ninety-one species were recorded, which makes this an unusually diverse bird community for a forest tract of this size.
3. The community was dominated by very large populations of a few species that prefer swampy backwaters and open, disturbed forest (e.g. Great Blue Heron, Wood Duck, Red-headed Woodpecker, Black-capped Chickadee, House Wren, Tree Swallow, Warbling Vireo, Prothonotary Warbler, American Redstart, Song Sparrow, Baltimore Oriole, Common Grackle, and Red-winged Blackbird). Several species occurred at higher abundances than have been estimated in any other forest site in Illinois (Wood Duck, Turkey Vulture, Downy Woodpecker, American Crow, Black-capped Chickadee, House Wren, Warbling Vireo, Song Sparrow, and Baltimore Oriole). Most of these species nested on the site, but some may only feed and roost on the site (e.g. Turkey Vulture, and Common Grackle).
4. Illinois Threatened and Endangered Species included the Red-shouldered Hawk (three nests), Yellow-crowned Night-Heron, and one of the state's largest populations of Brown Creepers.
5. Relatively low populations were detected of species that depend upon mature, closed forest on natural levees and other slightly elevated areas (e.g. Cerulean Warbler, Scarlet Tanager, Acadian Flycatcher, Northern Parula, and Yellow-throated Warbler).

6. There is a large, long-term rookery of Great Blue Herons to complement the healthy winter roost of Bald Eagles.
7. Although occasional nest predators such as House Wrens, Common Grackles, Blue Jays, and American Crows were abundant in the forest, relatively few Brown-headed Cowbirds were detected. Nest predation rates could not be measured, but parasitism by cowbirds of the few species that accept cowbird eggs was infrequent (ca. 18%).
8. Most of the dominant species nesting in Milan Bottoms are relatively well protected from nest predators by nesting in cavities, defending their nests aggressively, and renesting many times following nest predation.
9. I recommend a management program aimed at maintaining and enhancing mature portions of the forest to attract and maintain species that depend upon larger trees (e.g. Cerulean Warblers, nesting raptors and herons, and roosting raptors).

INTRODUCTION

The Milan Bottoms represents one of the largest remaining tracts of floodplain forest along the Mississippi River of Illinois. Because of widespread habitat destruction and damage by the extreme floods of 1993 and 1995, remaining floodplain forest has great potential value as breeding habitat for a variety of regionally rare species. Several species on the List of Endangered and Threatened Species for Illinois depend mostly on floodplain forest, including the Yellow-crowned Night-Heron, Red-shouldered Hawk, and Brown Creeper, all of which nest in northern Illinois. In addition, regionally rare Cerulean Warblers reach their greatest abundance in floodplain forest (G. Vanderah, unpublished data). Large floodplain forests also

have the potential to provide a buffer against high abundances of nest predators such as Blue Jays and brood-parasitic Brown-headed Cowbirds.

For these reasons, we undertook a census of the bird community of the Milan Bottoms. Our overall goal was to help guide management of the forest. Our specific objectives were: (1) to search for populations of threatened, endangered, and rare species; (2) estimate abundances of all breeding species; (3) estimate abundances of nest predators and brood parasites; (4) look for evidence of edge effects on avian abundance, both aquatic and agricultural edges; and (5) document nesting activities by resident birds.

METHODS

Censuses were conducted from 5 June to 15 July, 1999, and from 7 June to 15 July, 2000, during the morning hours 0530-1130. Censuses were not begun earlier in the season because of high water levels. All censuses used in this report were conducted by Kelly McKay. Census points were established on an approximate grid at 300 meter intervals (Fig. 1). Census points that were in standing water were either eliminated entirely or moved to the nearest dry land if that land was located less than 50 meters away. River edge points were located within 20 meters of the river, whereas points located near the agricultural edge were located at least 50 meters from the nearest edge. Many census points in the forest interior were actually located along river channels and other backwater openings (Fig. 1).

Each census point was visited twice, the first time in June and the second visit in July. As soon as the observer arrived at the point, he began describing all birds heard or observed into a portable tape recorder. The identity, compass direction, and distance to the point were

estimated for every bird. For territorial species, only singing males or family groups were counted. For non-territorial species (Common Grackles, herons, waterfowl, European Starlings, and swallows), individuals were counted. Birds identified during four time periods (0-5 minutes, 5-6 minutes, 6-8 minutes, 8-10 minutes) were recorded separately to facilitate comparisons with other studies. Because of the extraordinary abundance of birds in many floodplain forests, we elected to use all birds recorded within 50 meters of the census point during the entire 10-minute count as our basic descriptor of abundance. There were often too many birds to record during a “standard” 5-minute count and the high density near the point may reduce detection efficiency beyond 50 meters, as evidenced by a very rapid detection rate/unit area beyond 50 meters (unpublished analysis).

Census points were divided into river edge points (those located within 50 meters of the Mississippi River) (N=14), forest interior points (those located at least 300 meters from agriculture or the river) (N=25), and agricultural edge points (those within 100 meters of the row crops) (N=12).

RESULTS

Species Richness

Of the 91 species recorded, 69 were recorded on the formal censuses, two were migrants (both sandpipers), and two were only recorded overhead (Chimney Swift and Double-crested Cormorant). One other species was only recorded along the agricultural edge (Brown Thrasher).

Threatened And Endangered Species

Yellow-crowned Night-Herons were rarely recorded on the census. Diurnal censuses, however, do not census this nocturnal/crepuscular species very efficiently. Red-shouldered Hawks were detected at a number of points and three nests were located in 1993. Brown Creepers were by far the most abundant Threatened Species in the forest with several sub-populations in areas with standing live and dead trees in shallow water. The overall abundance of 0.2-0.3 birds/50 meter radius point is one of the highest abundances ever recorded in the state for this inconspicuous and non-vocal species. There may be over 50 pairs in the Milan Bottoms, which would make it one of the most important populations in the state.

Numerically Dominant Territorial Species

More than most forest bird communities, Milan Bottoms was dominated by a few very abundant species. The House Wren abundance was, by far, the highest ever recorded in the state in both years of the census. The overall population of this species in Milan Bottoms likely exceeds 1,000 pairs. Given the nest-predatory habits of this species, this huge population may pose a significant threat to some other species. Downy Woodpeckers were more abundant in this forest than in any other area I have censused to date, as were Black-capped Chickadees. Song Sparrows reached extraordinarily high population densities in more disturbed sections of the forest. The population density of Song Sparrows in Milan Bottoms was by far the highest yet recorded in a mostly forest habitat in Illinois. This species, however, also reaches comparable population densities in many non-forested habitats. The Baltimore Oriole and Warbling Vireo, two species of relatively open habitats with scattered trees, were also common in Milan Bottoms, mainly in heavily disturbed sections, especially along the river. American Redstarts were abundant, especially in Silver Maples near water. This species is generally abundant in the floodplain forests of the Upper Mississippi River. Red-winged Blackbirds were patchily

abundant in shrub-dominated Buttonbush swamps. All of the most abundant species in Milan Bottoms were typical of highly disturbed forests and more open habitats in general.

Numerically Dominant Non-territorial Species

One of the most striking aspects of the Milan Bottoms community was the very high abundance of non-territorial species. There is a large rookery of Great Blue Herons and, apparently, a nearby colony of Bank Swallows, which forage abundantly over the river. Wood Duck populations were also very high in the backwaters of the Milan Bottoms where they were recorded at a higher rate than in any other forest I have censused – 29 fledged families were found in 1999. Tree Swallows nested in and foraged abundantly over the backwaters of the forest. The counts for Milan Bottoms are the highest I have ever recorded in a floodplain forest, no doubt because of the many open backwater areas. Northern Rough-winged Swallows mainly appeared as post-breeding wanderers, but were sometimes observed in flocks of up to 60. Turkey Vultures roosted along the river and were routinely observed flying overhead. Chimney Swifts were also regularly observed overhead and may nest in some of the larger snags. European Starlings nested abundantly throughout Milan Bottoms in snags. Their abundance was the highest ever recorded in a forest habitat in Illinois. Common Grackles, a facultative nest predator, were very abundant, especially in June.

Other Typical Floodplain Forest Species

In addition to the species already described, several other floodplain species were typically abundant. Prothonotary Warblers were recorded near all backwater areas in numbers typical of Mississippi River forests. Red-headed Woodpeckers were also patchily abundant within the forest.

Southern Species

Several rare species are at or near the northern limit of their breeding ranges. Yellow-throated Warblers were present, but probably only a few pairs nested in the entire forest. One pair of Carolina Wrens was detected. Northern Parulas were detected once. Milan Bottoms is in the middle of an area that has historically lacked this species. A few pairs of Blue-gray Gnatcatchers were scattered throughout Milan Bottoms and nested uncharacteristically late.

“Forest Interior” Species

In general, species characteristic of closed-canopy forests were rare or uncommon in Milan Bottoms. Only one male Cerulean Warbler was detected (1999 only) and Red-eyed Vireos were less abundant than usual. No Scarlet Tanagers were detected, but they are rare in most floodplain forests in Illinois. Yellow-throated Vireos, Eastern Wood-Pewees, and Great Crested Flycatchers, which occur in both closed and moderately disturbed canopies, were detected at typical abundances in Milan Bottoms compared with other floodplain forests. Pileated Woodpeckers, which also tolerate moderate disturbances, were recorded at low population densities throughout Milan Bottoms.

Shrubland Species

Perhaps because of late floods, species that nest in shrubs and in annual plants were comparatively uncommon in Milan Bottoms. Gray Catbirds, Yellow Warblers, Common Yellowthroats, and Indigo Buntings were all recorded only in relatively low population densities.

Nest Predators And Parasites

Brown-headed Cowbirds were unusually scarce in Milan Bottoms, perhaps because of the scarcity of suitable hosts other than Song Sparrows. Common Grackles were abundant, but foraged mainly on the ground. House Wrens were also abundant, usually close to the ground as

well. American Crows were heard regularly and were unusually common in Milan Bottoms, but were rarely observed foraging within the forest. Blue Jays, which are usually rare in floodplain forests, were relatively common, especially along the river. Brown-headed Cowbirds were most abundant along agricultural edges in both years of the study.

Other Species

Several species occurred at “typical” population densities for forests at this latitude, including the Yellow-billed Cuckoo, Red-bellied Woodpecker, Hairy Woodpecker, White-breasted Nuthatch, and Northern Cardinal. Ruby-throated Hummingbirds were unaccountably rare. Eastern Bluebirds nested in a few snags in swamps. Hooded Mergansers were only recorded once.

Absent Species

Ground-foraging forest species such as Kentucky Warblers, Wood Thrushes, and Ovenbirds were not recorded, perhaps because of the seasonal flooding regime. Scarlet Tanagers and Hooded Warblers are rare in floodplain forests statewide, so it is not surprising that they were not found in Milan Bottoms. The lack of Acadian Flycatchers, however, is puzzling given their abundance in floodplain forests elsewhere in the state.

Annual Variation

In general, the community profiles as indexed by censusing were strikingly similar in the two years of the study. The numerically dominant species in 1999 remained dominant in 2000 as well. Wood Ducks, Bank Swallows, and Tufted Titmouses were detected less often in 2000 than in 1999 whereas Chimney Swifts, Pileated Woodpeckers, American Crows, American Robins, and Gray Catbirds were detected more often in 2000 than in 1999.

Parasitization

There was little evidence of frequent parasitization by Brown-headed Cowbirds. Two of the four Song Sparrow nests were parasitized, but none of the four fledged families located contained Brown-headed Cowbirds. Otherwise, the only evidence of parasitization came from an Indigo Bunting seen feeding a Brown-headed Cowbird and one out of nine fledged families of Prothonotary Warblers. Overall, only 4 of the 22 nests (18%) of frequently parasitized species (Eastern Wood-Pewee, American Redstart, Prothonotary Warbler, Northern Cardinal, Indigo Bunting, and Song Sparrow) were parasitized. This level is one of the lowest ever recorded in the state (S. Robinson, unpublished data).

PRELIMINARY MANAGEMENT RECOMMENDATIONS

The “forest interior” bird community appears to need the most management consideration. The extensive system of backwaters and flood-damaged stands creates abundant habitat for open-forest species and swamp specialists. The species that nest in large trees on natural levees, however, were rare or absent. Maintaining and enhancing existing mature timber therefore appears to be a very high priority for the site. Large trees also provide good nest and roost sites for many species, including raptors and colonial herons.

The breeding community of Milan Bottoms is currently dominated by species that are resistant to nest predation (e.g. cavity nesters) and to Brown-headed Cowbird parasitism (e.g. rejecters). As a result, this bird community may be less affected by fragmentation than many upland forest bird communities. Milan Bottoms therefore has high potential to be a source population for many nesting species.

The swamp-dependent and open-forest species that nest in Milan Bottoms appear to have large, healthy populations and do not require special management. Likewise, the shrubland bird community should recover rapidly as saplings re-grow under dead trees and after a period of relatively low floods when these forests regenerate.

Table 1. Estimated abundances of birds in the Milan Bottoms, 1999 and 2000 (June and July).

Number recorded / 10 census points (50m. radius ; 10min. count)

	River		Interior (25)		Agricultural	
	Edge (14)		1999	2000	Edge (12)	
Double-crested Cormorant	+	0	+	0.4 i	0	0.8
Great Blue Heron	1.8 i	0.4 i	11.0 i	6.8 i	2.1 i	4.6 i
Great Egret	0	0	+	0	0	0
Green Heron	0	0	+	0.6 i	0.8 i	0.4 i
Yellow-crowned Night-Heron	0	0	0.2 i	0	0	0
Canada Goose	0	0	0	+	0	0
Wood Duck	0.4 i	1.1 i	8.0 i	1.8 i	18.8 i	2.9 i
Mallard	1.4 i	1.8 i	0	0	0.4 i	0
Hooded Merganser	0	0.7 i	0	1.8 i	0	0
Turkey Vulture	20.4 i	34.3 i	0.4 i	5.0 i	0	0.4 i
Bald Eagle	0	+	0	0	0	0
Cooper's Hawk	0	0	0	0	0	+
Red-shouldered Hawk	0	0	0.2	0.2	+	+
Red-tailed Hawk	0	0	0.2	0.2	0.8	0
American Kestrel	0	0	0	0.4	0	0
American Coot	0	0	0	+	0	0
Killdeer	1.1	0	0.2	0.6	2.1	2.1
Solitary Sandpiper	0	0	0.2	0.2	0	0
Spotted Sandpiper	0	0.4 i	0.4	0	0	0
Ring-billed Gull	0	+	0	0	0	0
Forster's Tern	0	+	0	0	0	0
Rock Dove	0	2.9 i	0	0	0	0
Mourning Dove	0	0	+	0	+	0
Black-billed Cuckoo	0	0	0	+	0	0
Yellow-billed Cuckoo	1.8	0	0.8	0.4	1.3	2.5
Great Horned Owl	0	0	0	0	0.8	+
Barred Owl	0	0	0.4	0.2	0	0
Chimney Swift	+	3.2 i	3.8 i	9.6 i	+	1.3
Ruby-throated Hummingbird	0	0.7 i	0.2 i	0.2 i	0	0
Belted Kingfisher	1.1	0.4 i	0.4 i	0.2 i	+	0.4
Red-headed Woodpecker	3.6	6.4	6.4	4.0	2.9	3.3
Red-bellied Woodpecker	2.5	5.0	4.2	3.8	4.6	3.8
Downy Woodpecker	7.9	4.6	4.6	8.0	9.2	9.2
Hairy Woodpecker	2.1	2.5	1.4	2.6	3.8	1.7
Northern Flicker	+	1.4	1.2	1.0	+	0.4
Pileated Woodpecker	+	1.4	0.4	0.6	0.4	1.3
Eastern Wood-Pewee	5.0	3.6	3.0	4.0	3.3	1.7

Table 1. (cont.).

	River Edge (14)		Interior (25)		Agricultural Edge (12)	
	1999	2000	1999	2000	1999	2000
Eastern Phoebe	0	0	0.6	0.2	1.3	0
Great Crested Flycatcher	3.9	6.4	5.0	3.4	7.1	7.9
Eastern Kingbird	0	0	0	0.2	0	0
Horned Lark	0	0	0	0	0	+
Purple Martin	0.7 i	0.4 i	0	0.6 i	0	0
Tree Swallow	46.4 i	10.0 i	22.8 i	18.4 i	13.3 i	15.0 i
Northern Rough-wg. Swallow	0.4 i	0.7 i	15.8 i	5.4 i	0	0
Bank Swallow	23.4 i	0.4 i	1.8 i	0.2 i	0	0
Cliff Swallow	0	+	0	0	0	0
Barn Swallow	0	0	0.2 i	0.2 i	0.4 i	0
Blue Jay	5.0	6.1	2.8	2.2	1.3	3.3
American Crow	1.8	3.2	1.2	2.6	2.9	2.5
Black-capped Chickadee	7.5	10.7	9.4	16.2	13.8	7.9
Eastern Tufted Titmouse	3.2	0.4	0.2	0.8	0.4	0.8
White-breasted Nuthatch	4.6	8.2	5.8	7.2	7.9	5.0
Brown Creeper	0	1.1	3.4	3.0	2.5	1.7
Carolina Wren	0	1.1	0.2	0.2	0	0
House Wren	23.6	22.5	25.4	27.0	30.0	27.9
Sedge Wren	0	0	0	0	0	+
Blue-gray Gnatcatcher	0.7	0.4	2.0	3.2	0	2.9
Eastern Bluebird	0	0.7	0.4	1.6	+	0.4
American Robin	0.7	2.5	+	2.4	+	1.7
Gray Catbird	1.4	4.3	1.4	5.2	0.8	0.8
Brown Thrasher	1.4	0	1.4	0	0.8	0
Cedar Waxwing	3.2	2.5	2.6	1.6	1.3	0.8
European Starling	13.2 i	9.3 i	17.8 i	12.2 i	5.8 i	7.5 i
Yellow-throated Vireo	1.8	0.4	2.6	2.6	0.4	1.3
Warbling Vireo	4.6	4.6	3.8	3.2	5.0	2.5
Red-eyed Vireo	3.9	3.6	3.0	2.4	0.8	1.7
Northern Parula	0	0	0.4	0.4	0	0
Yellow Warbler	0	0	0.2	0	+	0.4
Yellow-throated Warbler	0	0	+	0.2	0.4	0.4
Cerulean Warbler	0	0	0.2	0	0	0
American Redstart	11.4	10.4	17.4	17.0	4.2	2.9
Prothonotary Warbler	5.7	6.8	6.8	5.0	4.6	2.5
Common Yellowthroat	1.4	0.4	0.8	1.4	2.1	1.7
Northern Cardinal	4.6	6.4	7.0	5.3	6.3	5.8
Rose-breasted Grosbeak	+	+	0	0	0	0
Indigo Bunting	2.5	4.3	3.4	4.8	8.3	7.5

Table 1. (cont.).

	River Edge (14)		Interior (25)		Agricultural Edge (12)	
	1999	2000	1999	2000	1999	2000
Song Sparrow	18.6	14.6	10.8	11.8	8.8	8.3
Red-winged Blackbird	9.3	9.3	12.8	7.6	12.5	22.5
Common Grackle	23.6 i	16.1 i	29.8 i	16.8 i	7.9 i	10.4 i
Brown-headed Cowbird	0.4	1.4	1.6	1.2	2.1	5.0
Baltimore Oriole	9.3	15.4	4.2	4.8	2.5	2.5
American Goldfinch	1.1	1.4	1.0	1.6	4.6	4.2
House Sparrow	0	0	0	0	0	+
Eurasian Tree Sparrow	0	0	0	0	0	+

Table 2. Nesting data from Milan Bottoms, 1999 and 2000.

	Nests Located (Parasitized)		Fledged Families (Parasitized)	
	1999	2000	1999	2000
Great Blue Heron	20+	34	---	---
Canada Goose	0	0	2	0
Wood Duck	0	0	27	7
Mallard	0	0	0	2
Hooded Merganser	0	0	0	1
Cooper's Hawk	0	0	0	1
Red-shouldered Hawk	3	0	0	0
Red-tailed Hawk	1	0	0	0
Ruby-throated Hummingbird	0	1	0	0
Red-headed Woodpecker	5	2	2	2
Red-bellied Woodpecker	0	0	3	1
Downy Woodpecker	0	3	0	1
Pileated Woodpecker	2	1	0	0
Eastern Wood-Pewee	0	1	0	1 (0)
Great Crested Flycatcher	3	1	1 (0)	0
Tree Swallow	5	9	4	0
Black-capped Chickadee	1	0	1	1
White-breasted Nuthatch	0	0	0	2
Carolina Wren	0	0	0	1 (0)
House Wren	9	6	3	1
Blue-gray Gnatcatcher	5	1	0	0
Eastern Bluebird	0	0	2 (0)	0
Gray Catbird	0	1 (0)	1 (0)	0
European Starling	3	1	0	0
American Redstart	1	0	1 (0)	0
Prothonotary Warbler	0	3	1 (0)	8 (1)
Northern Cardinal	1 (0)	0	2 (0)	0
Indigo Bunting	0	0	1 (1)	0
Song Sparrow	2 (1)	2 (1)	3 (0)	1 (0)
Red-winged Blackbird	1 (0)	5 (0)	0	1 (0)
Baltimore Oriole	3	0	1 (0)	0
Eurasian Tree Sparrow	1	0	0	0

UTM / UPS POSITIONS OF MILAN BOTTOMS POINT LOCATIONS AS DETERMINED BY GPS

Point 1	15 T 0697217 UTM 4593724	Point 14	15 T 0694237 UTM 4591705
Point 2	15 T 0697050 UTM 4593553	Point 15	15 T 0694386 UTM 4591389
Point 3	15 T 0696872 UTM 4593335	Point 16	15 T 0694687 UTM 4591568
Point 4	15 T 0696690 UTM 4593060	Point 17	15 T 0694897 UTM 4591734
Point 5	15 T 0696557 UTM 4592797	Point 18	15 T 0695244 UTM 4591855
Point 6	15 T 0696298 UTM 4592642	Point 19	15 T 0695421 UTM 4591737
Point 7	15 T 0696067 UTM 4592411	Point 20	15 T 0695684 UTM 4591906
Point 8	15 T 0695889 UTM 4592251	Point 21	15 T 0696074 UTM 4592076
Point 9	15 T 0695564 UTM 4592199	Point 22	15 T 0696348 UTM 4592275
Point 10	15 T 0695271 UTM 4592149	Point 23	15 T 0696674 UTM 4592442
Point 11	15 T 0694987 UTM 4592133	Point 24	15 T 0696920 UTM 4592645
Point 12	15 T 0694722 UTM 4592073	Point 25	15 T 0696922 UTM 4592972
Point 13	15 T 0694500 UTM 4591843	Point 26	15 T 0697144 UTM 4593182

Point 27	15 T 0697302 UTM 4593439	Point 42	15 T 0697311 UTM 4591140
Point 28	15 T 0697354 UTM 4592997	Point 43	15 T 0697488 UTM 4591554
Point 29	15 T 0697161 UTM 4592797	Point 44	15 T 0697352 UTM 4591929
Point 30	15 T 0697086 UTM 4592468	Point 45	15 T 0697297 UTM 4592299
Point 31	15 T 0697486 UTM 4592745	Point 46	15 T 0697722 UTM 4591505
Point 32	15 T 0697710 UTM 4592527	Point 47	15 T 0698024 UTM 4591886
Point 33	15 T 0694637 UTM 4591078	Point 48	15 T 0697792 UTM 4592156
Point 34	15 T 0695018 UTM 4591230	Point 49	15 T 0696790 UTM 4591235
Point 35	15 T 0694872 UTM 4591445	Point 50	15 T 0696432 UTM 4591709
Point 36	15 T 0695179 UTM 4591485	Point 51	15 T 0696044 UTM 4591464
Point 37	15 T 0695567 UTM 4591361		
Point 38	15 T 0695865 UTM 4591767		
Point 39	15 T 0695926 UTM 4591747		
Point 40	15 T 0696274 UTM 4591878		
Point 41	15 T 0697221 UTM 4591492		