



2007 Trend Analysis Volunteer Breeding Bird Monitoring Program

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In 1997, local birders were recruited by the Forest Preserve District of DuPage County (FPDDC) for a volunteer program to monitor breeding bird populations within the County. The program's goal was to monitor trends in bird populations and to help prioritize management efforts that may aid declining species. The year 2006 concluded 10 years of monitoring with the following accomplishments:

951 points surveyed	140 species
4,099 surveys	47 preserves
44,947 observations	46+ volunteers

This report summarizes trends identified by this monitoring effort.

METHODS

Data collection – Experienced volunteer birders completed point counts from 1997 through 2006 at various forest preserves throughout the County. Monitors stood at a pre-determined point for 10 minutes and recorded all birds seen or heard within a 50 m radius in woodlands and wetlands and a 100 m radius in grasslands. Surveys were conducted once per week for six weeks during the breeding season: June through mid-July. Surveys were conducted between sunrise and 9:00 am during good weather conditions (i.e. no precipitation and minimal winds).

Trend analysis – For every point-year combination, the maximum number of birds was determined for each species. For example, if a volunteer observed one scarlet tanager at the same point for each of the six weeks that point was surveyed (six total observations), the maximum number of scarlet tanagers at that point would be one.

Each species was given a habitat category that best describes its habitat preference: woodland, grassland, or wetland. Each point was also assigned one of these three habitat categories. Data was analyzed only if the point habitat and species preference were the same. That is, only data from woodland points were used to determine trends for woodland species.

Once a maximum number of birds was determined for each point-year combination for each species, an index value was computed by dividing the total number of birds for each species from all points by the number of points surveyed from that habitat that year.

Regional comparison – The directional trend for every species (positive or negative; regardless of significance) was compared with the directional trend from two other trend analyses to potentially identify regional trends that may be occurring despite lack of statistical significance. The [Bird Conservation Network \(BCN\)](#) recently compiled data across 10 Chicago Wilderness counties during 1996-2004. The [Breeding Bird Survey \(BBS\)](#) is a nationwide program coordinated through the U.S. Geological Survey. Only Illinois BBS data collected from 1985-2005 was used for comparison.

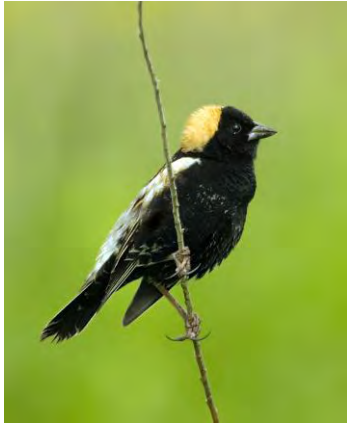


Eastern Meadowlark

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RESULTS

Significant trends ($P \leq 0.05$) were detected for 8 species (4 positive and 4 negative) and a near-significant positive trend detected for bobolinks ($P = 0.06$; Table 1).



Bobolink

Directional trends agreed for 17 species from the three regional analyses (Table 2). Eleven species indicated positive trends from the different analyses, while 6 species indicated negative trends.

Five species appear to be increasing in DuPage County: blue-gray gnatcatcher, bobolink, eastern towhee, field sparrow, and Henslow's sparrow; four species appear to be decreasing: American crow, Canada goose, grasshopper sparrow and ovenbird. The reasons for these changes in abundance may be unclear and complex. Habitat management and restoration within the FPDDC may be affecting some populations, while forces outside our control may influence other species. The increase in abundance of these five desirable species is a good sign that these species are doing well. The indication that desirable species are declining is never welcome. These four species are addressed next.

American crow – Many biologists believe that the emergence of West Nile Virus (WNV) during summer 2002 may have caused crow populations to crash. A noticeable decrease was evident beginning in 2003, and their populations have yet to recover. Crows have a wide distribution across the U.S., do not have special habitat requirements, and forage on a variety of plant and animal species. Management techniques other than those utilized by the FPDDC to promote biodiversity will probably not help this species. As WNV-tolerant crows breed, it is hoped that populations will recover to pre-2003 levels.

Canada goose – Goose populations have increased during the past couple of decades in DuPage County as more retention ponds were built in concert with sprawling development. Geese have become viewed as a nuisance species by many, and their populations have been controlled by professionals. FPDDC and BCN analyses indicate declining population trends; although the BBS analysis during 1985-2005 indicates an increasing trend, a closer look at the data shows a sharp decline in Illinois since 2001. Despite recent declines, their current population seems to be greater than in the early 1990s and previous decades. However, if populations continue to decline, public attitudes toward this species must change.

Grasshopper sparrow – Grasshopper sparrows are habitat specialists, preferring open prairie with little woody vegetation. Swanson¹ indicated that this species prefers shorter grasses over tall, less litter, greater grass cover than forb cover, and some bare ground. Grasshopper sparrows are also ground nesters. The reason for their decline in DuPage County is unclear. A prescribed fire cycle every 2-3 years will promote grasshopper sparrow habitat by promoting native grasses over weedy forbs and eliminate dense build-up of litter. Removal of treelines that separate grasslands and provide predator access is also desirable.

Ovenbird – Ovenbirds are considered forest interior specialists. They prefer large, open woodlands with little underbrush, a deep litter layer and a large insect prey base.² Ovenbirds prefer to nest 250 m from a forest edge.³ Most woodlands in northeastern Illinois may be too small for many ovenbirds to breed. Woodlands that are managed by FPDDC have the relatively sparse underbrush preferred by ovenbirds, yet are regularly burned to control invasive species, which eliminates the thick leaf litter that they favor. If a female ovenbird finds habitat to be unacceptable, she will likely move on, regardless of the presence of singing males. A lack of recruitment in the local landscape will cause a population decline. To manage for and promote ovenbird habitat, dead material in the landscape should be left to encourage an abundant insect population.



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Wintering habitat also plays a crucial role in the survival of all species. Despite the best efforts to provide breeding habitat for a species, winter habitat destruction can cause population declines. The most susceptible species are long-distance migrants, such as grasshopper sparrows and ovenbirds, which migrate to Mexico and further south in the winter. In developing countries especially, much habitat is unprotected and destruction is occurring at a rapid rate.

Regional comparison

Eleven species were identified as increasing in all three regional analyses: common grackle, eastern towhee, mallard, mourning dove, red-bellied woodpecker, red-eyed vireo, scarlet tanager, tree swallow, warbling vireo, white-breasted nuthatch, and wood duck (Table 2). Six species showed decreasing trends in all three analyses: American crow, blue jay, dickcissel, eastern meadowlark, marsh wren, and wood thrush.

Whether these six species are actually declining is debatable since statistical significance did not occur in all three trend analyses. Most biologists agree that WNV caused a decline in both American crow and blue jay populations. As generalists, suitable habitat exists throughout the landscape, and there may be very little that land managers can do to assist population increases.

Dickcissel and eastern meadowlark both prefer old fields, pastures, and young grasslands. These species will also nest in alfalfa and bean fields. Dickcissels can be nomadic nesters, colonizing a field one year and abandoning it the next. This breeding strategy makes it difficult for managers to implement management plans to attract dickcissels. Providing a variety of diverse habitats may be the best approach for sustaining dickcissels and meadowlarks.

Marsh wrens occupy a variety of wetland habitats, especially if cattails or other tall structure is present. The reason for this species' population decline is unclear considering the ongoing wetland restoration projects in DuPage and abundance of cattails. The primary diet of most wrens is insects and spiders. Decreasing water quality in our urbanized landscape may be affecting aquatic insect populations, which would impact marsh wrens. Management aimed at increasing water quality may help this species.

Wood thrushes have been steadily declining throughout the majority of its range, possibly due to winter habitat destruction and forest fragmentation. Wood thrushes prefer large mature forests with well-developed shrub and litter layers. Despite factors contributing to the population decline outside of DuPage, providing suitable habitat, including a developed shrub layer, may help this species locally.

MANAGEMENT IMPLICATIONS

- Providing a variety of habitats at different successional stages will satisfy a range of habitat requirements, promote the greatest biodiversity, and assist declining bird populations.
- Besides habitat, an abundant food source must also be available to sustain bird populations. Practices that promote prey bases are recommended.
- Disease, winter habitat destruction, and other factors out of the control of FPDDC managers can play an important role in regulating local populations.



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LITERATURE CITED

¹Swanson, D.A. 1996. Nesting ecology and nesting habitat requirements of Ohio's grassland-nesting birds: A literature review. Ohio Department of Natural Resources, Division of Wildlife, Ohio Fish and Wildlife Report 13. Jamestown, ND: Northern Prairie Wildlife Research Center Online.
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²Godfrey, W.E. 1986. The birds of Canada Revised Edition. National Museum of Canada, Ottawa.

³Burke D.M., and E. Nol. 1998. Influence of food abundance, nest-site habitat, and forest fragmentation on breeding birds. *The Auk* 115: 96-104.

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Table 1. Species with significant trends identified through point count data collected within DuPage County forest preserves from 1997-2006. Trend value indicates annual percent change.

Species	Trend	P value
American crow	-31%	0.01
Blue-gray gnatcatcher	+23%	0.05
Bobolink	+7%	0.06
Canada goose	-35%	0.03
Eastern towhee	+12%	0.05
Field sparrow	+10%	0.04
Grasshopper sparrow	-18%	0.01
Henslow's sparrow	+31%	0.02
Ovenbird	-23%	0.04

Table 2. Directional trends from 3 separate regional trend analyses. Bolded species indicate agreement among all 3 analyses.

Species	FPDDC 1997- 2006	BCN 1996- 2004	BBS 1985- 2005
Woodlands			
Baltimore oriole	+	+	-
Black-capped chickadee	±	-	-
Blue-gray gnatcatcher	+	+	-
Blue jay	-	-	-
Brown thrasher	-	±	-
Common grackle	+	+	+
Cooper's hawk	+	-	+
Downy woodpecker	+	+	-
Eastern bluebird	-	+	+
Eastern phoebe	-	-	+
Eastern towhee	+	+	+
Eastern wood-pewee	+	-	+
Great-crested flycatcher	+	-	-
Great horned owl	-	n/a	-
Hairy woodpecker	+	+	-
Hooded warbler	+	n/a	+
Indigo bunting	+	+	-
Northern cardinal	+	+	±
Northern flicker	+	-	-
Orchard Oriole	-	+	-
Ovenbird	-	-	+
Rose-breasted grosbeak	+	+	-
Red-bellied woodpecker	+	+	+
Red-eyed vireo	+	+	+
Scarlet tanager	+	+	+



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Species	FPDDC 1997- 2006	BCN 1996- 2004	BBS 1985- 2005
Warbling vireo	+	+	+
White-breasted nuthatch	+	+	+
Wood thrush	-	-	-
Yellow-billed cuckoo	+	+	-
Grassland			
American crow	-	-	-
American goldfinch	+	+	+
American kestrel	-	-	+
American robin	±	-	+
Barn swallow	+	-	+
Brown-headed cowbird	+	-	+
Bobolink	+	-	-
Blue-winged warbler	-	+	+
Cedar waxwing	-	+	+
Common yellowthroat	+	-	-
Dickcissel	-	-	-
Eastern kingbird	-	+	-
Eastern meadowlark	-	-	-
Field sparrow	+	±	-
Gray catbird	+	-	+
Grasshopper sparrow	-	+	-
Henslow's sparrow	+	+	-
House wren	-	-	+
Mourning dove	+	+	+
Northern rough-winged swallow	-	+	+
Ring-necked pheasant	-	n/a	-
Red-tailed hawk	-	+	+
Savannah sparrow	+	+	-
Sedge wren	+	-	-
Song sparrow	+	-	+
Tree swallow	+	+	+
Willow flycatcher	+	-	-
Yellow-breasted chat	+	-	-
Yellow warbler	-	-	+
Wetland			
American coot	-	+	n/a
Canada goose	-	-	+
Great-blue heron	-	+	+
Great egret	-	-	+
Killdeer	+	-	+
Mallard	+	+	+
Marsh wren	-	-	-
Ring-billed gull	-	+	+
Red-winged blackbird	-	+	±
Spotted sandpiper	-	+	+
Swamp sparrow	-	-	+
Wood duck	+	+	+
