

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2009
BSBO-ONWR10-7

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INTRODUCTION

Many of the long-term monitoring programs for landbirds indicate negative population trends in migrant species in eastern North America (Robbins et al. 1989, Terborgh 1989). While many trends have been downward, none of the long term programs provide data on productivity and survivorship that could indicate which parts of birds' annual cycle (breeding, migration, wintering) are responsible for the most drastic changes in their populations.

The Monitoring Avian Productivity and Survivorship (MAPS) program is a cooperative effort to provide critical long term data on population parameters for landbird species throughout the North and Central America (DeSante and Burton 1994). Adult population size and post-fledgling productivity are estimated at regional levels. Standardization from year to year and continuation of the study for at a minimum of five consecutive years at each station are necessary in order to provide reliable estimates of annual variations in productivity and survivorship.

The MAPS protocol designate target species by region of the country. Regional target species for Ohio include Downy Woodpecker, Gray Catbird, Red-eyed Vireo, Common Yellowthroat, Rose-breasted Grosbeak, Song Sparrow, and American Goldfinch. At a local level, species habitat associations are clarified, and habitat management can then be assessed by species responses.

Recent species prioritization of Ohio birds by the Ohio working group of Partners in Flight have identified grasslands and wetlands as the habitats of highest concern (Earnst and Dettmers 1995). With this in mind, the Black Swamp Bird Observatory initiated a project in 1992 that would not only meet national concerns but be able to address state and local questions. The grassland sand dune field, successional savanna, and burned and unburned oak woodland of the Oak Openings Preserve provides a valuable site to investigate species of grassland and edge on these various geographic levels. The Oak Openings region is recognized as having the greatest concentration of rare and endangered plants and animals in Ohio. 2009 is the 18th year of MAPS data collection at Oak Openings.

METHODS

The banding station was sited in a low use area known as Ostrich Lane to evaluate avian response to land management actions on four habitat types present at the site: managed grassland, mature oak forest (both control burned and unburned), and a successional area in scrub-shrub. The breeding season (June 01 - August 10 at this latitude) was divided into seven 10-day periods, and field work was conducted during these seven periods at the Ostrich Lane site. Field Work was comprised of constant effort mist netting, with additional point counts conducted at the Ostrich Lane site and in the dunes area along Girdham road.

Mist-netting and banding operations were conducted following established MAPS protocols (DeSante and Burton 1994). Sixteen 12-meter mist nets (mesh size of 30mm) were operated for six hours one day during each ten-day period with at least six days separating each sample date (DeSante and Burton 1995). Nets were checked as often as possible for captured birds. Each bird was removed and placed in a holding bag. All birds were processed at a centralized banding location and released. Data collected on each bird included band number, species, age, how aged, sex, how sexed, status, date, time of capture, station, net number, skull pneumatization, adult breeding condition, flight feather molt, and wing chord.

The study site was mapped to determine vegetation type and distribution in the study area. This will detect change in vegetation from year to year which could affect bird populations and demographic parameters, as well as be comparable to other MAPS stations. Two levels of vegetation description was conducted. First a scaled map delineating major habitat types; and secondly, an estimation of stand characteristics at each point count location to provide a more precise and quantitative assessment of each habitat's vegetation. The stand characteristics were gathered by placing a 25-meter radius circle at each point. Data on four layers of vegetation (tree canopy, sub-canopy, shrubs, and ground cover) were collected.

RESULTS

Mist Netting

In 2009, banding was conducted on seven days for a total of 672.0 net hours. One hundred eighty-seven new birds were banded and a total of 239 birds handled (Table 1). Birds per 100 net hours averaged 35.6 for the season. A total of 25 species were captured (Table 2). The most common species captured were Eastern Bluebird (34), Indigo Bunting (34), Field Sparrow (30), House Wren (23), and Chipping Sparrow (16). Banding results by habitat saw the burned woodland has the highest bird capture rate but the lowest diversity. Seventy-two individuals of 9 species were captured in the burned woodland, 59 birds of 14 species in grassland, 53 individuals of 17 species in scrub-shrub, and 23 birds of 12 species in the unburned oak woodland. The most common species in the scrub-shrub were House Wren (10), Indigo Bunting (9), Field Sparrow (5), Eastern Phoebe (3), American Goldfinch (3), and Eastern Bluebird (3). Top species captured in grassland habitat included Field Sparrow (16), American Goldfinch (9), Baltimore Oriole (7), Gray Catbird (3), and Indigo Bunting (3). The unburned woodland was dominated by Eastern Bluebird (27), Indigo Bunting (13),

Chipping Sparrow (9), House Wren (9), Baltimore Oriole (4), and Field Sparrow (4). The burned oak savanna had Chipping Sparrow (4), Black-capped Chickadee (3), Eastern Wood Pewee (2), Indigo Bunting (2), and Tufted Titmouse (2) as the most common species captured in that habitat type. Special interest species included Blue-winged Warbler captured in grassland, Olive-sided Flycatcher, Blue Grosbeak, and White-breasted Nuthatch in scrub-shrub, Red-headed Woodpecker, Acadian Flycatcher, and Hooded Warbler in unburned woodland, and Baltimore Oriole in burned woodland.

An indicator of nest success is to look at age ratios of captured birds. It is best used as an annual index for production. Age ratios of the major species are shown in Table 3. The highest ratios were found in House Wren, Eastern Bluebird, and Baltimore Oriole. Confirmed and probable breeders are listed in Table 4 (a total of 25 species). Twenty-three birds of 9 species were captured as returning banded birds in 2009 (Table 5).

DISCUSSION

This long-term study has been successful in gathering information about avian use of the Ostrich Lane region of the Oak Openings Preserve. Following the 2010 field season a cumulative report of the study with habitat relationships and management recommendations will be prepared. Data suggest the variety of habitats represented on this site has provided for a diverse bird community. Habitat manipulation that has occurred during the study provides some insight on potential affects on the avian community under various management regimes that may be chosen by the MetroParks of the Toledo Area.

LITERATURE CITATION

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Recommended Citation for this paper

Shieldcastle, M.C. 2010. Monitoring Avian Productivity and Survivorship on Oak Openings Preserve, Lucas County, Ohio. Progress Report-2009. Black Swamp Bird Observatory, BSBO-ONWR10-7.

Table 1. Daily banding totals for Ostrich Lane, 2009.

<u>Date</u>	<u>Net hours</u>	<u>#Banded</u>	<u>Birds/Net Hr</u>	Returns	Recaptures	Total Birds	Total birds/Net Hr
June 3	96	16	0.17	6	0	22	0.23
18	96	28	0.29	3	1	32	0.33
27	96	30	0.31	4	3	37	0.39
July 3	96	29	0.30	4	8	41	0.43
18	96	23	0.24	4	7	34	0.35
24	96	27	0.28	2	6	35	0.36
Aug 3	96	34	0.35	0	4	38	0.40
Totals	672	187	0.28	23	29	239	0.36

Table 2. Species banded in 2009 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland*	Scrub-Shrub	Burned Woodland	Unburned Woodland
Red-headed Woodpecker	0	0	0	1
Eastern Phoebe	1	3	1	1
Olive-sided Flycatcher	0	1	0	0
Eastern Wood Pewee	0	1	0 (2)	2 (1)
Acadian Flycatcher	0	0	0	1
Brown-headed Cowbird	0	1	0	0
Baltimore Oriole	7	2	4	0
American Goldfinch	9 (1)	3	0	0
Chipping Sparrow	0	2	9	4 (1)
Field Sparrow	16 (4)	5 (1)	4	0
Song Sparrow	2	0	0	0
Northern Cardinal	0	1	0	1
Blue Grosbeak	0	0 (1)	0	0
Indigo Bunting	3 (2)	9 (3)	13	2
Cedar Waxwing	2	1	0	0
Blue-winged Warbler	1	0	0	0
Common Yellowthroat	2	2	0	0
Hooded Warbler	0	0	0	1
Gray Catbird	3 (1)	2	0	0
House Wren	1	10 (1)	9 (2)	0
White-breasted Nuthatch	0	1	1	0
Tufted Titmouse	0	0	0	2
Black-capped Chickadee	1	0	0	3
American Robin	1	0	0	1
Eastern Bluebird	1(1)	3	27	0 (2)

* () Returns captured in addition to new banded birds.

Table 3. Age ratios of selected species captured at Ostrich Lane, 2009.

<u>Species</u>	<u>Juvenile/Adult ratio</u>	<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=30)	1.08	Chipping sparrow (N=16)	0.88
House wren (N=23)	1.86	Gray Catbird (N=6)	1.50
Eastern Bluebird (N=37)	9.33	Indigo Bunting (N=32)	0.71

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2009.

Confirmed breeders

Downy Woodpecker	Tufted Titmouse	European Starling
Field Sparrow	Song Sparrow	Blue Jay
Common Yellowthroat	House Wren	American Robin
Eastern Phoebe	Eastern Towhee	Chipping Sparrow
Hairy Woodpecker	Eastern Bluebird	White-breasted Nuthatch
Black-capped Chickadee	Lark Sparrow	Gray Catbird
Eastern Wood Pewee	Indigo Bunting	Carolina Wren
American Goldfinch	Red-headed Woodpecker	Baltimore Oriole
Northern Cardinal		

Table 5. Returning birds previously banded at Ostrich Lane, 2009.

<u>Species</u>	<u>#return</u>	<u>Species</u>	<u># return</u>
Eastern Wood Pewee	3	American Goldfinch	1
Chipping Sparrow	1	Field Sparrow	5
Blue Grosbeak	1	Indigo Bunting	5
Gray Catbird	1	House Wren	3
Eastern Bluebird	3		