

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2013

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Draft

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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 established in 1989 to provide critical long term data on population parameters for landbird species throughout 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 at a study site for a minimum of five consecutive years are necessary 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. 2011 was the 20th year of MAPS data collection at Oak Openings.

METHODS

The banding station was sited in an area with minimal human disturbance 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, typically every 30 minutes to 1 hour. Each bird was removed and placed in a holding bag and then processed at a centralized banding location and released. Data collected on each bird included band number, species, age,

age determination technique, sex, sex determination technique, reproductive status, date, time of capture, station, net number, skull pneumatization, adult breeding condition, flight feather molt, and wing chord.

Point counts were conducted to complement mist-netting operations at Ostrich Lane site, compare the avian community to the primary grassland/dunes area of Girdham/Reed management area, and document species such as larger birds that are not typically captured by mist-nets. Counts were conducted at points spaced a minimum of 100 meters apart throughout the banding station and the Girdham/Reed management area. Twelve points were used on each route. Counts for each point were conducted for five minutes in which all birds seen or heard were recorded. Counts were run three times for each route during June and early July. Point counts were canceled on extremely high wind or high bird activity days.

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 were conducted. First a scaled map delineating major habitat types was created; and secondly, an estimation was made of stand characteristics at each point count location to provide a 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) are collected every five years.

RESULTS

Mist Netting

In 2013, banding was conducted on seven days for a total of 672.0 net hours. Two hundred twenty-one new birds were banded and a total of 285 birds were handled (Table 1). Birds per 100 net hours averaged 42.4 for the season. A total of 35 species were captured (Table 2). The most common species captured were Field Sparrow (34), Eastern Bluebird (21), American Goldfinch (21), Chipping Sparrow (20), and House Wren (17). Banding results by habitat showed the grassland having the highest bird capture rate and diversity in 2013. Eighty-six individuals of 21 species were captured in the grassland, 46 birds of 17 species in scrub-shrub, 58 individuals of 19 species in burned woodland, and 36 birds of 13 species in the unburned oak woodland. The most common species in the scrub-shrub were Field Sparrow (9), House Wren (8), Indigo Bunting (4), American Goldfinch (3), Common Yellowthroat (3), and eastern Bluebird (3). Top species captured in grassland habitat included American Goldfinch (18), eastern Phoebe (11), Field Sparrow (10), Lark Sparrow (9), and Chipping Sparrow (8). The unburned woodland total captures were Eastern Bluebird (7), Chipping Sparrow (7), American Robin (3), Great-crested Flycatcher (2), Eastern Wood Pewee (2), White-breasted Nuthatch (2), and House Wren (2). The burned oak savanna had Field Sparrow (9), and Indigo Bunting (7), House Wren (7), Chipping Sparrow (5), and Eastern Bluebird (5) as the most common species captured in that habitat type. Special interest species included Traill's Flycatcher, Rose-breasted Grosbeak, Blue-gray Gnatcatcher, and Eastern Towhee captured in scrub-shrub; Lark Sparrow and Scarlet Tanager in grassland, Summer Tanager, Blue-winged Warbler, and Eastern Towhee in burned woodland; and Summer Tanager, and Wood Thrush in unburned woodland.

An indicator of nest success is to examine age ratios of captured birds 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 and Eastern Bluebird. Unusually low age ratios were recorded for Chipping Sparrow, and Indigo Bunting in 2013. Confirmed and probable breeders are listed in Table 4 (a total of 36 species). Twenty-four birds of 10 species were captured as returning banded birds in 2013 (Table 5).

Point Counts

Three replicates of point counts were conducted each at the Ostrich Lane banding station and the Girdham/Reed management area in 2013. The Ostrich Lane site counts were conducted between 10 and 27 June and recorded 809 individuals of 36 species. The most commonly recorded species were Indigo Bunting, Field Sparrow, Chipping Sparrow, Eastern Towhee, and Eastern Wood Pewee (Table 6). Twenty-two species were recorded on all three surveys. The Girdham/Reed area was surveyed between 19 and 28 June and recorded 800 individuals of 40 species. Twenty-five species were recorded on all three surveys (Table 7). Top species recorded were Chipping Sparrow, Field Sparrow, Indigo Bunting, Mourning Dove, and Lark Sparrow.

A total of 45 species were recorded between the two routes. The larger woodland tracts associated with Ostrich Lane produced more deep woods associated species while the larger grassland tract of Girdham/Reed indicated larger grassland bird communities.

DISCUSSION

This long-term study has been successful in gathering information about avian productivity at the Ostrich Lane region of the Oak Openings Preserve. 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 effects on the avian community under various management regimes that may be chosen by the MetroParks of the Toledo Area.

The tornado that ripped through the area on 5 June 2010 resulted in considerable canopy loss to the forested portions of the study area. One year is insufficient to analyze for changes to the avian community structure as a result of the storm. Land management operations will also need to be considered for affects. The 221 birds banded represented the largest total in the 22 years of the study. This was largely driven by increases in sparrows, House Wren, and American Goldfinch. This may have been a result of the more open conditions of the study area which may have attracted additional birds from surrounding habitats. Only additional years of study may tease out this result.

Proposed land management activities in the area of the study site will complicate analyzing avian response to the tornado damage. Ground clearing of the burned woodland habitat will compromise the ability to evaluate avian reaction in the tornado stricken area. Clear cutting immediately north of the study site will most likely have affects on bird movements and species composition in the immediate future.

RECOMMENDATIONS

The long-term responses of the avian community following the 2010 storm will be a priority of the study for the foreseeable future; however, one must be very careful to any temptation to infer landscape effects from this single study site. Ideally, that would require a control site with pre-storm data which isn't possible at this time. To indirectly address that question, we reinstated the point counts that were conducted at Ostrich Lane and the unaffected area of Girdham Road in 2013. This may supply an indirect method of control comparison.

It is strongly recommended that except for situations of safety to visitors, that there be no logging, tree removal, or clearing of the storm area. It is important to take advantage of opportunities like this, when rare events affect an area that already has nearly two decades of pre-event data, and such data are important to understanding more about community changes after such disturbances. Additional human-induced disturbance like tree clearing to the area disturbed by a natural event compromises the ability to learn from this rare opportunity.

A broad based ecological plan for future management of the park is of the utmost need at this time. This plan must include all habitat components and a representative suite of sentinel species. Any plan that only is represented by certain habitat components or interest will not provide the guidance for sound resource stewardship for this important habitat complex.

LITERATURE CITATION

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Table 1. Daily banding totals for Ostrich Lane, 2013.

<u>Date</u>	<u>Net hours</u>	<u>#Banded</u>	<u>Birds/Net Hr</u>	<u>Returns</u>	<u>Recaptures</u>	<u>Total Birds</u>	<u>Total birds/Net Hr</u>
June 7	96	35	0.36	12	0	47	0.49
June 14	96	20	0.21	5	6	31	0.32
June 21	96	33	0.34	2	6	41	0.43
July 5	96	42	0.44	3	2	47	0.49
July 12	96	16	0.17	0	6	22	0.23
July 26	96	47	0.49	1	8	56	0.58
Aug. 2	96	28	0.29	2	11	41	0.43
Totals	672	221	0.33	25	39	285	0.42

Table 2. Species banded in 2013 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland	Scrub-Shrub	Burned Woodland	Unburned Woodland
Downy Woodpecker	3	0	1	0
Red-bellied Woodpecker	0	0	1	1
Ruby-throated Hummingbird	1	0	1	0
Eastern Kingbird	1	0	0	0
Great-crested Flycatcher	0	0	4	2
Eastern Phoebe	11 (1)	1	2	0
Eastern Wood Pewee	0	0	0	2
Traill's Flycatcher	0	1	1	0
Blue Jay	0	0	0	1
Baltimore Oriole	1	0	3	0
American Goldfinch	18 (3)	3	0 (1)	0
Lark Sparrow	9 (1)	0	0	0
Chipping Sparrow	8 (1)	0	5 (2)	7 (2)
Field Sparrow	10 (3)	9 (11)	9 (9)	6 (3)
Song Sparrow	1	2	2	0
Eastern Towhee	0 (1)	1	2	0
Northern Cardinal	1	1	1 (1)	0
Rose-breasted Grosbeak	0	1	0	0
Indigo Bunting	3 (4)	4 (2)	7 (3)	1
Scarlet Tanager	2	0	0	0
Summer Tanager	0	0	2	1 (1)
Barn Swallow	1	0	0	0
Cedar Waxwing	0	2	0	0
Red-eyed Vireo	0	2	0	0
Blue-winged Warbler	0	0	1	0
Common Yellowthroat	1	3	0	0
Gray Catbird	1	3 (2)	0	0
House Wren	5	8 (1)	7 (2)	2
White-breasted Nuthatch	0	0	1	2
Tufted Titmouse	1	1	0	0
Black-capped Chickadee	1	0	0	0
Blue-gray Gnatcatcher	0	1	0	0
Wood Thrush	0	0	0	1
American Robin	1	0	3	3
Eastern Bluebird	6 (3)	3 (1)	5 (1)	7 (1)

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

Table 3. Age ratios of selected species captured at Ostrich Lane, 2013.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=34)	1.13
House wren (N=22)	10.00
Eastern Bluebird (N=21)	3.20
American Goldfinch (N=21)	0.91
Chipping Sparrow (N=20)	0.11
Indigo Bunting (N=14)	0.17

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2013.

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	Willow Flycatcher	Cedar Waxwing
Red-eyed Vireo	House Finch	Rose-breasted Grosbeak
Summer Tanager	Blue-gray Gnatcatcher	Ovenbird
Ruby-throated Hummingbird	Chestnut-sided Warbler	Wood Thrush

Table 5. Returning birds previously banded at Ostrich Lane, 2013.

<u>Species</u>	<u># return</u>	<u>Species</u>	<u># return</u>
Eastern Wood Pewee	1	Eastern Towhee	1
American Goldfinch	1	Indigo Bunting	5
Lark Sparrow	1	Gray Catbird	2
Chipping Sparrow	2	House Wren	1
Field Sparrow	9	Eastern Bluebird	1

Table 6. Breeding bird point counts, Ostrich Lane, 2013.

Species	6/10	6/15	6/27	Species	6/10	6/15	6/27
Mourning Dove	8	11	12	Indigo Bunting	38	33	32
Hairy Woodpecker	2	0	0	Scarlet Tanager	0	2	0
Red-headed Woodpecker	10	5	10	Summer tanager	2	0	3
Red-bellied Woodpecker	2	1	1	Cedar Waxwing	0	2	6
Great-crested Flycatcher	1	3	4	Red-eyed Vireo	0	3	2
Eastern Kingbird	1	3	2	Blue-headed Vireo	1	2	0
Ruby-throated Hummingbird	0	0	1	Ovenbird	4	0	0
Eastern Wood Pewee	25	17	13	Common Yellowthroat	10	4	6
Blue Jay	6	5	7	Gray Catbird	11	3	4
American Crow	18	12	12	Carolina Wren	0	1	0
Brown-headed Cowbird	11	12	7	House Wren	7	4	9
Baltimore Oriole	2	7	4	White-breasted Nuthatch	10	4	5
American Goldfinch	6	0	0	Tufted Titmouse	4	12	14
Lark Sparrow	1	0	5	Black-capped Chickadee	0	1	0
Chipping Sparrow	20	30	31	Blue-gray Gnatcatcher	5	11	7
Field Sparrow	24	33	24	Veery	0	2	1
Eastern Towhee	24	27	21	American Robin	19	6	18
Northern Cardinal	3	1	3	Eastern Bluebird	2	11	0

Table 7. Breeding bird point counts, Gridham Road, 2013.

Species	6/19	6/22	6/28	Species	6/19	6/22	6/28
Mourning Dove	17	23	15	Field Sparrow	24	17	38
Wild Turkey	0	1	0	Eastern Towhee	10	11	11
Yellow-billed Cuckoo	3	0	0	Northern Cardinal	2	6	0
Downy Woodpecker	0	0	1	Indigo Bunting	15	21	29
Red-headed Woodpecker	2	9	1	Scarlet Tanager	10	2	1
Pileated Woodpecker	2	2	9	Summer tanager	4	2	14
Red-bellied Woodpecker	2	0	0	Cedar Waxwing	2	3	8
Yellow-shafted Flicker	1	1	2	Warbling Vireo	8	10	6
Ruby-throated Hummingbird	0	1	0	Yellow-throated Vireo	4	2	4
Eastern Kingbird	6	6	5	Blue-headed Vireo	4	1	0
Great-crested Flycatcher	2	9	2	Blue-winged Warbler	1	0	0
Eastern Wood Pewee	12	6	7	Common Yellowthroat	2	2	1
Blue Jay	0	3	2	Gray Catbird	4	1	0
American Crow	3	7	6	House Wren	18	7	7
Brown-headed Cowbird	4	11	10	White-breasted Nuthatch	0	5	3
Orchard Oriole	8	2	0	Tufted Titmouse	0	2	0
Baltimore Oriole	11	4	0	Black-capped Chickadee	1	0	3
American Goldfinch	8	7	4	Blue-gray Gnatcatcher	11	6	13
Lark Sparrow	13	19	16	American Robin	11	4	14
Chipping Sparrow	45	29	19	Eastern Bluebird	15	15	7