

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2017

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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. 2017 was the 26th 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.

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 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 2017, banding was conducted on seven days for a total of 672.0 net hours. Two hundred fifty-one new birds were banded and a total of 333 birds were handled (Table 1). Total birds per 100 net hours averaged 50.0 for the season. A total of 35 species were captured (Table 2). The most common species captured were Field Sparrow 52, House Wren (46), Gray Catbird (33), Indigo Bunting (28), and Common Yellowthroat (18). Banding results by habitat showed the Scrub-shrub having the highest bird capture rate in 2017. Ninety-nine individuals of 19 species were captured in the Scrub-shrub, 85 birds of 19 species in Grassland, 71 individuals of 21 species (highest diversity) in Burned Woodland, and 27 birds of 13 species in the Unburned Oak Woodland. The most common species in the Scrub-shrub were Gray Catbird (26), House Wren (14), Field Sparrow (12), Common Yellowthroat (11), and Indigo Bunting (9). Top species captured in Grassland habitat included Field Sparrow (15), House Wren (14), Indigo Bunting (9), Eastern Bluebird (8), and American Goldfinch (8). The Unburned woodland total captures were Field Sparrow (10), House Wren (4), Indigo Bunting (2), eastern Bluebird (2), and nine species with one. The Burned oak savanna had Field Sparrow (15), House Wren (14), Indigo Bunting (8), Baltimore Oriole (4), Eastern Phoebe (4), and Common Yellowthroat (4) as the most common species captured in that habitat type. Special interest species included Blue Grosbeak, Blue-gray Gnatcatcher, and Blue-winged Warbler captured in Scrub-shrub; Lark Sparrow, Summer Tanager, and Yellow-breasted Chat in Grassland; Red-headed Woodpecker, and Whip-poor-will in Unburned woodland; and Red-headed Woodpecker, Lark Sparrow, and Summer Tanager in Burned woodland. There were no Golden-winged Warblers reported at the study site in 2017. Blue-winged Warblers continued a strong showing as in 2017. This was the first Whip-poor-will ever captured at the study site.

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 Common Yellowthroat, Indigo Bunting, and Field Sparrow in 2017. Confirmed and probable breeders are listed in Table 4 (a total of 42 species). Thirty-one birds of 11 species were captured as returning banded birds in 2017 (Table 5). Significant returns included a Blue Grosbeak banded in 2008, Lark Sparrow in 2008, and a Blue-winged Warbler banded in 2015.

Point Counts

Three replicates of point counts were conducted at the Girdham/Reed management area and two at the Ostrich Lane banding station and in 2017. The first planned survey for Ostrich Lane was rained out and could not be rescheduled. The Ostrich Lane site counts were conducted between 19 June and 2 July and recorded 409 individuals of 44 species. The most commonly recorded species were Indigo Bunting, Mourning Dove, American Robin, Eastern Towhee, Field Sparrow, eastern Bluebird, and Blue Jay (Table 6). Twenty-nine species were recorded on both surveys. The Girdham/Reed area was surveyed between 07 and 26 June and recorded 578 individuals of 48 species. Twenty-eight species were recorded on all

three surveys (Table 7). Top species recorded were Chipping Sparrow, Field Sparrow, Indigo Bunting, Eastern Bluebird, and American Robin.

A total of 52 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 05 June 2010 resulted in considerable canopy loss to the forested portions of the study area. This study represents an on-going analysis of changes to the avian community structure as a result of the storm. Land management operations will also need to be considered for affects. The 251 birds banded represented the highest total since the project inception. Woodpeckers have responded favorably to the changes as has the Summer Tanager. Yellow-breasted Chat, White-eyed Vireo, Blue Grosbeak, and Blue-gray Gnatcatcher show upward use of the site. The continued recovery of the tornado damaged area has resulted in a heavy understory layer at this time. More surface sun has accelerated new group in understory trees and shrubs. Species showing the greatest increase all represent pioneer species of early succession habitats such as the tornado ravaged area. The heavy understory appears to be very valuable to breeding birds and the rearing of young. It could be expected that the present avian community will continue changing over the short term.

The separate red-headed Woodpecker project initiated in 2017 resulted in several study site birds being captured in other portions of the Oak Openings. This highlights the cautions that should be heeded when attempting to establish survivorship and retention to a population. The Blue Grosbeak was captured nearly a decade after it was last handled indicating site fidelity to the region and potential tornado disruption in territories (Jacob 2018, in publication).

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.

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Table 1. Daily banding totals for Ostrich Lane, 2017.

Date	Net Hours	# Banded	Birds/NH	Returns	Recaptures	Total Birds	Total birds/NH
June 9	96	43	0.45	8	0	51	0.53
June 15	96	36	0.38	8	4	48	0.50
June 27	96	25	0.26	8	10	43	0.45
July 5	96	26	0.27	3	11	40	0.42
Jul 14	96	53	0.55	4	10	67	0.70
July 20	96	23	0.24	1	8	32	0.33
August 1	96	45	0.47	0	7	52	0.54
Totals	672	251	0.37	32	50	333	0.50

Table 2. Species banded in 2017 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland	Scrub-Shrub	Burned Woodland	Unburned Woodland
Mourning Dove		1		
Downy Woodpecker	1			1
Red-headed Woodpecker			(1)	1
Red-bellied Woodpecker	1			
Whip-poor-will				1
Eastern Kingbird				1
Eastern Phoebe	6		4	
Eastern Wood Pewee	1		3	1
Traill's Flycatcher		1		
Brown-headed Cowbird	1			
Baltimore Oriole			4	
American Goldfinch	8	3	1	
Lark Sparrow	3 (1)		1	
Chipping Sparrow	2 (1)		2	
Field Sparrow	12 (3)	7 (5)	13 (2)	6 (4)
Song Sparrow	1	1	1	
Eastern Towhee		3	1	1
Northern Cardinal		1	1	1
Blue Grosbeak		1 (1)		
Indigo Bunting	9	6 (3)	7 (1)	2
Summer Tanager	2		1	
Cedar Waxwing		1	1	
Red-eyed Vireo		1		
Blue-winged Warbler		1 (1)		
Yellow Warbler		6		
Common Yellowthroat	3	11	4	
Yellow-breasted Chat	1	3		
Gray Catbird	3 (1)	21 (5)	2	1
Carolina Wren		1	2	
House Wren	13 (1)	14	14	4
Tufted Titmouse	1			
Black-capped Chickadee	2		1	
Blue-gray Gnatcatcher		1		
American Robin			1	1
Eastern Bluebird	7 (1)		3	2

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

Table 3. Age ratios of selected species captured at Ostrich Lane, 2017.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=52)	0.49
House wren (N=46)	3.60
Eastern Bluebird (N=13)	2.25
Common Yellowthroat (N=18)	0.38
Indigo Bunting (N=28)	0.17
Gray Catbird (N=32)	0.88

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2017.

Mourning Dove	Lark Sparrow	Chestnut-sided Warbler
Hairy Woodpecker	Chipping Sparrow	Ovenbird
Downy Woodpecker	Field Sparrow	Common Yellowthroat
Red-headed Woodpecker	Song Sparrow	Yellow-breasted Chat
Red-bellied Woodpecker	Eastern Towhee	Gray Catbird
Ruby-throated Hummingbird	Northern Cardinal	Carolina Wren
Eastern Phoebe	Rose-breasted Grosbeak	House Wren
Eastern Wood-Pewee	Blue Grosbeak	White-breasted Nuthatch
Willow Flycatcher	Indigo Bunting	Tufted Titmouse
Blue Jay	Summer Tanager	Black-capped Chickadee
European Starling	Cedar Waxwing	Blue-gray Gnatcatcher
Baltimore Oriole	Red-eyed Vireo	Wood Thrush
House Finch	Blue-winged Warbler	American Robin
American Goldfinch	Yellow Warbler	Eastern Bluebird

Table 5. Returning birds previously banded at Ostrich Lane, 2017.

<u>Species</u>	<u># return</u>	<u>Species</u>	<u># return</u>
Red-headed Woodpecker	1	Ovenbird	1
Lark Sparrow	1	Gray Catbird	5
Field Sparrow	14	House Wren	1
Blue Grosbeak	1	White-breasted Nuthatch	1
Indigo Bunting	4	Eastern Bluebird	1
Blue-winged Warbler	1		

Table 6. Project birds reported by other researchers or observers in the Oak Openings, 2017.

Species	Band Number	Banding Date	Recovery Date
Red-headed Woodpecker	1292-25735	07-05-2016	06-08-2017
Brown-headed Cowbird	0841-43379	06-20-2012	06-14-2017
Lark Sparrow	1871-85436	05-10-2008	05-18-2017
Lark Sparrow	2431-18951	06-21-2013	05-20-2017
Field Sparrow	2710-18313	08-01-2014	06-21-2017
Field Sparrow	2710-18344	06-22-2015	05-15-2017
Blue Grosbeak	2281-42527	06-14-2008	07-05-2017
Indigo Bunting	1551-91705	07-03-2014	06-20-2017
Blue-winged Warbler	2260-02872	06-05-2015	06-16-2017
Gray Catbird	2331-74866	06-26-2015	06-30-2017

Table 7. Breeding bird point counts, Ostrich Lane, 2017.

Species	Not Run	6/19	7/2	Species	Not Run	6/19	7/2
Mourning Dove		10	19	Blue Grosbeak		0	2
Red-shouldered Hawk		1	0	Indigo Bunting		13	17
Downy Woodpecker		6	3	Scarlet Tanager		2	1
Pileated Woodpecker		1	0	Summer Tanager		3	6
Red-headed Woodpecker		13	4	Barn Swallow		1	0
Red-bellied Woodpecker		4	5	Tree Swallow		2	0
Yellow-shafted Flicker		2	1	Cedar Waxwing		2	0
Ruby-throated Hummingbird		1	0	Red-eyed Vireo		5	3
Great-crested Flycatcher		2	1	Yellow-throated Vireo		0	2
Eastern Wood Pewee		12	7	Ovenbird		0	1
Blue Jay		13	8	Common Yellowthroat		3	3
American Crow		10	7	Yellow-breasted Chat		4	6
Brown-headed Cowbird		0	4	Gray Catbird		7	5
Red-winged Blackbird		3	1	Brown Thrasher		0	1
Baltimore Oriole		4	3	House Wren		5	6
Common Grackle		0	1	White-breasted Nuthatch		6	8
American Goldfinch		9	2	Red-breasted Nuthatch		1	0
Lark Sparrow		1	2	Tufted Titmouse		0	2
Chipping Sparrow		13	7	Black-capped Chickadee		3	0
Field Sparrow		11	12	Blue-gray Gnatcatcher		3	1
Eastern Towhee		14	11	American Robin		18	9
Northern Cardinal		4	10	Eastern Bluebird		16	6

Table 8. Breeding bird point counts, Gridham Road, 2017.

Species	6/7	6/15	6/26	Species	6/7	6/15	6/26
Mourning Dove	19	4	8	Northern Cardinal	3	0	2
Downy Woodpecker	8	2	0	Blue Grosbeak	4	2	1
Pileated Woodpecker	1	1	1	Indigo Bunting	10	11	15
Red-headed Woodpecker	4	3	0	Scarlet Tanager	2	0	2
Red-bellied Woodpecker	5	1	0	Summer Tanager	4	4	3
Yellow-shafted Flicker	2	1	2	Tree Swallow	0	1	1
Eastern Kingbird	5	4	6	Cedar Waxwing	6	1	2
Great-crested Flycatcher	0	2	2	Red-eyed Vireo	1	2	2
Eastern Phoebe	1	0	0	Warbling Vireo	0	2	0
Eastern Wood Pewee	3	3	4	Yellow-throated Vireo	4	3	1
Blue Jay	4	5	0	Blue-winged Warbler	0	1	0
American Crow	8	5	4	Chestnut-sided Warbler	0	2	0
Brown-headed Cowbird	11	9	8	Common Yellowthroat	1	2	2
Red-winged Blackbird	1	1	1	Yellow-breasted Chat	1	0	0
Orchard Oriole	0	4	0	Gray Catbird	4	2	1
Baltimore Oriole	4	11	6	Brown Thrasher	1	0	0
Common Grackle	11	11	0	House Wren	6	4	1
American Goldfinch	1	2	4	White-breasted Nuthatch	9	4	4
Henslow's Sparrow	0	3	0	Tufted Titmouse	3	1	3
Lark Sparrow	7	0	3	Black-capped Chickadee	2	2	1
Chipping Sparrow	18	12	22	Blue-gray Gnatcatcher	6	5	3
Field Sparrow	18	14	18	Wood Thrush	1	0	0
Song Sparrow	0	0	1	American Robin	13	6	13
Eastern Towhee	9	11	11	Eastern Bluebird	16	12	7