

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2018

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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. 2018 was the 27th 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 2018, banding was conducted on seven days for a total of 664.0 net hours. Two hundred thirty-five new birds were banded and a total of 325 birds were handled (Table 1). Total birds per 100 net hours averaged 49.0 for the season. A total of 35 species were captured (Table 2). The most common species captured were Gray Catbird (49), Field Sparrow (40), House Wren (30), Indigo Bunting (20), and American Goldfinch (18). Banding results by habitat showed the Scrub-shrub having the highest bird capture rate in 2018. Eighty-three individuals of 18 species were captured in the Scrub-shrub, 79 individuals of 26 species (highest diversity) in Burned Woodland, 65 birds of 18 species in Grassland, and 24 birds of 15 species in the Unburned Oak Woodland. The most common species in the Scrub-shrub were Gray Catbird (25), House Wren (12), Field Sparrow (7), Common Yellowthroat (6), Ruby-throated Hummingbird (6), and Indigo Bunting (6). Top species captured in Grassland habitat included Field Sparrow (13), American Goldfinch (11), House Wren (6), Indigo Bunting (5), Common Yellowthroat (4), and Eastern Bluebird (4). The Unburned woodland top captures were Field Sparrow (4), and six species with two. The Burned oak savanna had Field Sparrow (16), Gray Catbird (15), House Wren (12), Indigo Bunting (7), Baltimore Oriole (4), Eastern Bluebird (4), and Common Yellowthroat (4) as the most common species captured in that habitat type. Special interest species included Acadian Flycatcher, Yellow-throated Vireo, and Blue-winged Warbler captured in Scrub-shrub; Lark Sparrow and Ovenbird in Grassland; Red-headed Woodpecker, Yellow-breasted Chat, and Blue-winged Warbler in Unburned woodland; and Yellow-breasted Chat in Burned woodland. There were no Golden-winged Warblers reported at the study site in 2018. Blue-winged Warblers continued a strong showing as in 2017.

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 2018. Confirmed and probable breeders are listed in Table 4 (a total of 42 species). Thirty-five birds of 15 species were captured as returning banded birds in 2018 (Table 5). Significant returns included a Indigo Bunting banded in 2013.

Point Counts

Two replicates of point counts were conducted at both Girdham/Reed management area and the Ostrich Lane banding station and in 2018. The first planned survey for both were rained out and could not be rescheduled. The Ostrich Lane site counts were conducted between 17 and 24 June and recorded 275 individuals of 34 species. The most commonly recorded species were Eastern Towhee, Eastern Wood Pewee, Mourning Dove, Indigo Bunting, Field Sparrow, and American Crow (Table 6). Twenty-nine species were recorded on both surveys. The Girdham/Reed area was surveyed between 18 and 25 June and recorded 366 individuals of 46 species. Thirty-five species were recorded on both surveys (Table 7). Top species recorded were Chipping Sparrow, Cedar Waxwing, Mourning Dove, Common Grackle, Brown-headed Cowbird,

Baltimore Oriole, Field Sparrow, and Eastern Towhee.

A total of 49 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. Woodpeckers have responded favorably to the changes as has the Summer Tanager. Yellow-breasted Chat, 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.

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, 2018.

Date	Net Hours	# Banded	Birds/NH	Returns	Recaptures	Total Birds	Total birds/NH
June 6	96	46	0.48	9	0	55	0.57
June 15	96	26	0.27	7	3	36	0.38
June 26	96	32	0.33	7	11	50	0.52
July 6	96	24	0.25	3	18	45	0.47
Jul 17	96	29	0.30	4	8	41	0.43
July 27	96	43	0.45	4	10	57	0.59
August 2	88	35	0.40	1	5	41	0.47
Totals	664	235	0.35	35	55	325	0.49

Table 2. Species banded in 2018 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland	Scrub-Shrub	Burned Woodland	Unburned Woodland
Mourning Dove	1			
Downy Woodpecker	1	1	2	1
Red-headed Woodpecker			(1)	
Ruby-throat. Hummingbird	1	6	1	
Eastern Phoebe			1	1
Eastern Wood Pewee			2	1 (1)
Yellow-bellied Flycatcher			1	
Acadian Flycatcher		1		
Brown-headed Cowbird		1 (1)	1	(1)
Red-winged Blackbird	1			
Baltimore Oriole			3 (1)	
American Goldfinch	11	3 (1)	3	
Lark Sparrow	1			
Chipping Sparrow	3	1	1	
Field Sparrow	12 (1)	6 (1)	14 (2)	(4)
Song Sparrow	1 (1)	1	1	
Eastern Towhee		(1)	2	1
Northern Cardinal		1	(1)	(2)
Indigo Bunting	4 (1)	3 (3)	4 (3)	2
Summer Tanager				2
Cedar Waxwing			2	
Red-eyed Vireo		1 (1)		
Yellow-throated Vireo		2		
Blue-winged Warbler		1	1	
Ovenbird	1		1	
Common Yellowthroat	4	5 (1)	3 (1)	1
Yellow-breasted Chat			1	1
Gray Catbird	6 (1)	23 (2)	15	2
Brown Thrasher	2			
House Wren	6	12	12	
White-breasted Nuthatch			1	
Tufted Titmouse	1	3 (1)	1	(1)
Black-capped Chickadee	1			
American Robin			3	1
Eastern Bluebird	4		3 (1)	2

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

Table 3. Age ratios of selected species captured at Ostrich Lane, 2018.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=34)	0.26
House wren (N=30)	5.20
Eastern Bluebird (N=9)	2.00
Common Yellowthroat (N=14)	0.27
Indigo Bunting (N=13)	0.08
Gray Catbird (N=49)	1.58

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2018.

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, 2018.

Species	2017	2016	2015	2014	2013	Total*
Red-headed Woodpecker	1					1
Eastern Wood Pewee	1					1
Brown-headed Cowbird	1	1				2
Baltimore Oriole	1					1
American Goldfinch				1		1
Field Sparrow	2	3	3			8
Song Sparrow	1					1
Eastern Towhee	1					1
Northern Cardinal	2		1			3
Indigo Bunting	4	1		1	1	7
Red-eyed Vireo	1					1
Common Yellowthroat	2					2
Gray Catbird			3			3
Tufted Titmouse		2				2
Eastern Bluebird			1			1
Total	17	7	8	2	1	35

Table 6. Breeding bird point counts, Ostrich Lane, 2018.

Species	Not Run	6/17	6/24	Species	Not Run	6/17	6/24
Mourning Dove		7	12	Northern Cardinal		7	4
Downy Woodpecker		1	1	Indigo Bunting		10	9
Red-headed Woodpecker		2	3	Scarlet Tanager		1	1
Red-bellied Woodpecker		2	2	Summer Tanager		1	3
Great-crested Flycatcher		1	0	Cedar Waxwing		8	4
Eastern Wood Pewee		12	8	Yellow-throated Vireo		1	2
Blue Jay		4	3	Ovenbird		1	0
American Crow		4	12	Common Yellowthroat		3	3
Brown-headed Cowbird		8	7	Yellow-breasted Chat		2	1
Red-winged Blackbird		2	1	Gray Catbird		3	5
Baltimore Oriole		5	2	House Wren		4	2
Common Grackle		0	1	White-breasted Nuthatch		5	4
American Goldfinch		0	1	Black-capped Chickadee		3	1
Lark Sparrow		2	2	Blue-gray Gnatcatcher		8	7
Chipping Sparrow		6	8	Veery		0	1
Field Sparrow		9	9	American Robin		5	2
Eastern Towhee		10	13	Eastern Bluebird		3	2

Table 7. Breeding bird point counts, Gridham Road, 2018.

Species	Not Run	6/18	6/25	Species	Not Run	6/18	6/25
Mourning Dove		15	7	Eastern Towhee		9	8
Downy Woodpecker		1	1	Northern Cardinal		2	2
Pileated Woodpecker		0	1	Blue Grosbeak		2	1
Red-headed Woodpecker		2	2	Indigo Bunting		9	6
Red-bellied Woodpecker		8	2	Scarlet Tanager		1	1
Yellow-shafted Flicker		1	0	Summer Tanager		6	7
Eastern Kingbird		3	3	Tree Swallow		0	2
Great-crested Flycatcher		3	0	Cedar Waxwing		18	10
Eastern Wood Pewee		3	2	Red-eyed Vireo		1	0
Blue Jay		1	2	Yellow-throated Vireo		2	2
American Crow		2	6	Blue-winged Warbler			
Brown-headed Cowbird		12	7	Chestnut-sided Warbler		0	1
Red-winged Blackbird		6	0	Common Yellowthroat		3	2
Orchard Oriole		1	2	Gray Catbird		3	3
Baltimore Oriole		11	6	Brown Thrasher		0	1
Common Grackle		16	5	House Wren		2	4
American Goldfinch		4	4	White-breasted Nuthatch		3	4
Grasshopper Sparrow		0	1	Tufted Titmouse		0	1
Henslow's Sparrow		2	4	Black-capped Chickadee		1	2
Lark Sparrow		8	6	Blue-gray Gnatcatcher		9	6
Chipping Sparrow		13	15	Wood Thrush		1	1
Field Sparrow		9	8	American Robin		5	4
Song Sparrow		0	1	Eastern Bluebird		3	7