

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2015

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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. 2015 was the 24th 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 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 2015, banding was conducted on six days for a total of 576.0 net hours. A seventh session was rained out with no backup day possible. Two hundred thirty-two new birds were banded and a total of 297 birds were handled (Table 1). Total birds per 100 net hours averaged 52.0 for the season. A total of 32 species were captured (Table 2). The most common species captured were Gray Catbird (34), Field Sparrow (29), House Wren (22), Indigo Bunting (21), and American Goldfinch (20). Banding results by habitat showed the grassland having the highest bird capture rate and diversity in 2015. Eighty-eight individuals of 21 species were captured in the grassland, 80 birds of 18 species in scrub-shrub, 54 individuals of 15 species in burned woodland, and 10 birds of 8 species in the unburned oak woodland. The most common species in the scrub-shrub were Gray Catbird (15), House Wren (13), Field Sparrow (12), Common Yellowthroat (7), Field Sparrow (7), and American Goldfinch (7). Top species captured in grassland habitat included American Goldfinch (13), Gray Catbird (13), Field Sparrow (9), Indigo Bunting (9), and House Wren (8). The unburned woodland total captures were Field Sparrow (3), Eastern Bluebird (2), and six species with one. The burned oak savanna had Baltimore Oriole (13), Field Sparrow (10), Indigo Bunting (8), Gray Catbird (6), and Eastern Bluebird (5) as the most common species captured in that habitat type. Special interest species included Blue-gray Gnatcatcher, Chestnut-sided Warbler, Yellow-breasted Chat, Red-eyed Vireo, Yellow-throated Vireo, and Blue-winged Warbler captured in scrub-shrub; Lark Sparrow, Summer Tanager, Red-bellied Woodpecker, Nashville Warbler, and Chestnut-sided Warbler in grassland; Ruby-throated Hummingbird and Baltimore Oriole in burned woodland; and Great-crested Flycatcher in unburned woodland. The Nashville Warbler was the second for this study site. The Yellow-throated Vireo was a new species for the site. Neither of the two Golden-winged Warblers that were on territory in 2014 appeared in 2015. One singing male was reported for a considerable time during the breeding season on the nearby Maumee State Forest. Blue-winged Warblers continued a strong showing as in 2014 with one bird being recaptured in 2015.

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 Indigo Bunting and Field Sparrow in 2015. Confirmed and probable breeders are listed in Table 4 (a total of 40 species). Twenty-nine birds of 9 species were captured as returning banded birds in 2015 (Table 5). Significant returns included a Indigo Bunting banded in 2009, Field Sparrow in 2010, Chestnut-sided Warbler in 2011, Lark Sparrow in 2012, and a Blue-winged Warbler banded in 2014.

Point Counts

Three replicates of point counts were conducted on both the Girdham/Reed management area and at the Ostrich Lane banding station and in 2015. The Ostrich Lane site counts were conducted between 01 and 29 June and recorded 496 individuals of 41 species. The most commonly recorded species were Field Sparrow, Indigo Bunting, Eastern Towhee,

Chipping Sparrow, and Blue-gray Gnatcatcher (Table 6). Twenty-four species were recorded on all three surveys. The Girdham/Reed area was surveyed between 04 and 26 June and recorded 565 individuals of 46 species. Twenty-five species were recorded on all three surveys (Table 7). Top species recorded were Field Sparrow, Mourning Dove, Indigo Bunting, Chipping Sparrow, and Lark Sparrow.

A total of 55 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 232 birds banded represented the second largest total in the 24 years of the study, surpassed only by 2014's 250. This was largely driven by increases in sparrows, Gray Catbird, Common Yellowthroat, Baltimore Oriole, and American Goldfinch. Woodpeckers have responded favorably to the changes as has the Summer Tanager. Yellow-breasted Chat, White-eyed Vireo, 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. It is interesting that the four highest capture rates of the 24 year study have occurred the past four breeding seasons. 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.

A significant event of 2014 was the presence of at least two territorial male Golden-winged Warblers. The one male utilized the exact same area that the last territorial male used over 20 years ago. This low wet sedge dominated area may be one of the most important habitat locations in the entire Metropark. Capture data indicated that the one male most likely mated with a Blue-winged Warbler as at least one fledgling was captured that fit the Brewster's Warbler hybrid form of this complex. It would only be speculation as to why multiple males of this extirpated species appeared on territory in 2014. Continued monitoring in 2015 did not see the return of either bird to territory. However, a single male was recorded on the Maumee State Forest in similar habitat. Blue-winged Warbler did continue to show increased presence.

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.

As part of the research proposal a detailed land management plan for Golden-winged Warbler is presently being developed as requested by Metropark personnel. That will be available in the near future as it processes through peer review processes.

LITERATURE CITATION

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Table 1. Daily banding totals for Ostrich Lane, 2015.

Date	Net Hours	# Banded	Birds/NH	Returns	Recaptures	Total Birds	Total birds/NH
June 5	96	42	0.44	13	0	55	0.57
June 12	96	22	0.23	6	2	30	0.31
June 26	96	23	0.24	4	4	31	0.32
July 3	96	28	0.29	3	11	42	0.44
Jul 10-19	96	RAIN					
July 24	96	63	0.66	3	7	73	0.76
July 31	96	54	0.56	1	11	66	0.69
Totals	576	232	0.40	30	25	297	0.52

Table 2. Species banded in 2015 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland	Scrub-Shrub	Burned Woodland	Unburned Woodland
Downy Woodpecker		2		
Red-bellied Woodpecker	1			
Ruby-throat. Hummingbird	6	5	2	1
Great-crested Flycatcher				1
Eastern Phoebe	3		1	
Eastern Wood Pewee			1	
Blue Jay	1			1
Baltimore Oriole		5	13	
American Goldfinch	13	7 (1)		
Lark Sparrow	1(1)			
Chipping Sparrow	3			
Field Sparrow	9 (4)	7 (3)	10 (1)	3 (1)
Song Sparrow	1	2	1	
Eastern Towhee	1		1	1
Northern Cardinal			1	
Indigo Bunting	9 (2)	3 (4)	8 (2)	1 (1)
Summer Tanager	1			
Cedar Waxwing	3			
Red-eyed Vireo		1		
Yellow-throated Vireo	1	1		
Blue-winged Warbler	1 (1)	3		
Nashville Warbler	1			
Chestnut-sided Warbler	1	1 (1)		
Common Yellowthroat	5 (1)	9 (1)	1	
Yellow-breasted Chat		1		
Gray Catbird	13	15 (3)	6	0 (1)
House Wren	8	13	1	
Tufted Titmouse		2		
Black-capped Chickadee		2 (1)	2 (1)	
Blue-gray Gnatcatcher		1		
American Robin			1	
Eastern Bluebird	6		5	2

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

Table 3. Age ratios of selected species captured at Ostrich Lane, 2015.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=38)	0.31
House wren (N=22)	21.00
Eastern Bluebird (N=13)	3.33
American Goldfinch (N=21)	0.91
Common Yellowthroat (N=17)	0.42
Indigo Bunting (N=30)	0.15
Gray Catbird (N=37)	0.76
Ruby-th. Hummingbird (N=14)	0.27

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2015.

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	Chestnut-sided Warbler	Eastern Bluebird
Lark Sparrow		

Table 5. Returning birds previously banded at Ostrich Lane, 2015.

<u>Species</u>	<u># return</u>	<u>Species</u>	<u># return</u>
American Goldfinch	1	Chestnut-sided Warbler	1
Lark Sparrow	1	Common Yellowthroat	2
Field Sparrow	9	Gray Catbird	3
Indigo Bunting	9	Black-capped Chickadee	2
Blue-winged Warbler	1		

Table 6. Breeding bird point counts, Ostrich Lane, 2015.

Species	6/1	6/19	6/29	Species	6/1	6/19	6/29
American Woodcock	0	1	0	Blue Grosbeak	1	2	0
Mourning Dove	5	8	4	Indigo Bunting	23	20	15
Cooper's Hawk	0	1	0	Scarlet Tanager	1	1	0
Red-tailed Hawk	1	0	0	Summer Tanager	5	3	2
Hairy Woodpecker	1	0	0	Cedar Waxwing	1	3	0
Downy Woodpecker	7	1	2	Yellow-throated Vireo	5	3	4
Pileated Woodpecker	1	0	0	Blue-winged Warbler	0	1	0
Red-headed Woodpecker	1	2	3	Chestnut-sided Warbler	0	1	1
Great-crested Flycatcher	4	7	2	Common Yellowthroat	6	3	4
Eastern Wood Pewee	1	5	7	Yellow-breasted Chat	1	3	5
Blue Jay	3	7	4	American Redstart	0	2	0
American Crow	7	5	2	Gray Catbird	7	7	7
Brown-headed Cowbird	0	4	1	House Wren	8	0	4
Red-winged Blackbird	0	2	0	White-breasted Nuthatch	7	4	10
Baltimore Oriole	4	5	0	Tufted Titmouse	0	1	2
American Goldfinch	3	2	3	Black-capped Chickadee	3	2	6
Lark Sparrow	1	2	1	Blue-gray Gnatcatcher	6	7	12
Chipping Sparrow	7	6	12	Veery	0	1	0
Field Sparrow	20	19	20	American Robin	8	9	1
Eastern Towhee	16	15	11	Eastern Bluebird	1	1	2
Northern Cardinal	5	6	7				

Table 7. Breeding bird point counts, Gridham Road, 2015.

Species	6/4	6/18	6/26	Species	6/4	6/18	6/26
Mourning Dove	12	18	13	Northern Cardinal	1	2	3
Yellow-billed Cuckoo	0	3	2	Rose-breasted Grosbeak	0	1	0
Black-billed Cuckoo	0	3	0	Blue Grosbeak	0	0	1
Downy Woodpecker	0	1	0	Indigo Bunting	13	13	16
Pileated Woodpecker	1	3	1	Scarlet Tanager	0	0	2
Red-headed Woodpecker	2	4	6	Summer Tanager	5	4	5
Red-bellied Woodpecker	2	0	0	Tree Swallow	0	1	0
Yellow-shafted Flicker	5	1	2	Cedar Waxwing	1	0	0
Eastern Kingbird	2	2	4	Red-eyed Vireo	1	2	0
Great-crested Flycatcher	2	0	1	Warbling Vireo	5	7	4
Eastern Wood Pewee	1	2	1	Yellow-throated Vireo	3	3	2
Blue Jay	4	3	5	Blue-headed Vireo	1	0	1
American Crow	9	6	0	Common Yellowthroat	0	0	6
Brown-headed Cowbird	8	10	13	Gray Catbird	0	0	1
Red-winged Blackbird	1	0	0	House Wren	7	4	2
Orchard Oriole	0	1	0	White-breasted Nuthatch	1	1	7
Baltimore Oriole	14	7	5	Tufted Titmouse	7	1	1
American Goldfinch	4	4	7	Black-capped Chickadee	2	0	2
Lark Sparrow	16	8	10	Blue-gray Gnatcatcher	9	5	7
Chipping Sparrow	19	7	15	Wood Thrush	0	0	1
Field Sparrow	26	21	28	American Robin	11	2	7
Song Sparrow	1	1	0	Eastern Bluebird	5	8	7
Eastern Towhee	6	7	4	Wild Turkey	0	1	9