

Monitoring Avian Productivity and Survivorship on Oak Openings Preserve

PROGRESS REPORT-2014

BSBO-15-3

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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. 2014 was the 23rd 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 2014, banding was conducted on seven days for a total of 672.0 net hours. Two hundred fifty new birds were banded and a total of 319 birds were handled (Table 1). Birds per 100 net hours averaged 47.0 for the season. A total of 36 species were captured (Table 2). The most common species captured were Field Sparrow (64), Indigo Bunting (33), Gray Catbird (23), American Goldfinch (16), and Eastern Bluebird (12). Banding results by habitat showed the scrub-shrub having the highest bird capture rate and diversity in 2014. Eighty-three individuals of 20 species were captured in the grassland, 86 birds of 26 species in scrub-shrub, 60 individuals of 18 species in burned woodland, and 21 birds of 10 species in the unburned oak woodland. The most common species in the scrub-shrub were Indigo Bunting (15), Gray Catbird (15), Field Sparrow (12), Ruby-throated Hummingbird (9), Common Yellowthroat (5), and American Goldfinch (4). Top species captured in grassland habitat included Field Sparrow (20), American Goldfinch (11), Chipping Sparrow (8), Eastern Bluebird (8), and Indigo Bunting (7). The unburned woodland total captures were Field Sparrow (7), Eastern Phoebe (3), House Wren (2), Black-capped Chickadee (2), and Downy Woodpecker (2). The burned oak savanna had Field Sparrow (25), and Indigo Bunting (10), Eastern Bluebird (4), and Chipping Sparrow (3) as the most common species captured in that habitat type. Special interest species included Blue-gray Gnatcatcher, Hooded Warbler, Chestnut-sided Warbler, Clay-colored Sparrow, Yellow-breasted Chat, Blue Grosbeak, and Golden-winged Warbler captured in scrub-shrub; Lark Sparrow, Summer Tanager, and Hooded Warbler in grassland; Blue-winged Warbler, Yellow-breasted Chat, Blue Grosbeak, Red-headed Woodpecker, and Brewster's Warbler in burned woodland; and Summer Tanager, and Red-headed Woodpecker in unburned woodland. The Clay-colored Sparrow was the first for this study site. At least two Golden-winged Warblers were on territory in 2014. At least one mated with a Blue-winged Warbler as an adult was captured with a fledgling that was the hybrid "Brewster's Warbler".

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 in 2014. Confirmed and probable breeders are listed in Table 4 (a total of 38 species). Twenty-four birds of 19 species were captured as returning banded birds in 2014 (Table 5). Significant returns included a Northern Cardinal first banded in 2007, Gray Catbird in 2008, Indigo Bunting banded in 2009, and an Eastern Wood Pewee banded in 2010.

Point Counts

Three replicates of point counts were conducted on the Girdham/Reed management area and two replicates at the Ostrich Lane banding station and in 2014. The Ostrich Lane site counts were conducted between 4 and 22 June and recorded 290 individuals of 40 species. The most commonly recorded species were Field Sparrow, Indigo Bunting, Chipping Sparrow, Eastern Towhee, and Tufted Titmouse (Table 6). Twenty-nine species were recorded on both surveys. The Girdham/Reed

area was surveyed between 8 and 22 June and recorded 522 individuals of 43 species. Twenty-eight species were recorded on all three surveys (Table 7). Top species recorded were Chipping Sparrow, Field Sparrow, Indigo Bunting, Mourning Dove, Brown-headed Cowbird, and American Robin.

A total of 51 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. 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 250 birds banded represented the largest total in the 23 years of the study. This was largely driven by increases in sparrows, Gray Catbird, 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. Species showing the greatest increase all represent pioneer species of early succession habitats such as the tornado ravaged area. After an immediate reduction in sightings in the following year of the tornado, Blue Grosbeaks appear to be once again increasing in the study area. The present stage of vegetative growth of the tornado area appears to be quite favorable to the grosbeak. It is interesting that the two highest capture rates of the 23 year study have occurred the past two breeding seasons. The heavy understory appears to be very valuable to breeding birds and the rearing of young. Only additional years of study may tease out these questions.

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. Study personnel will be vigilant on identifying possible re-occurrence of breeding individuals next year.

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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Recommended Citation for this paper

Shieldcastle, M.C. 2015. Monitoring Avian Productivity and Survivorship on Oak Openings Preserve, Lucas County, Ohio. Progress Report-2014. Black Swamp Bird Observatory, BSBO-15-3.

Table 1. Daily banding totals for Ostrich Lane, 2014.

Date	Net Hours	# Banded	Birds/NH	Returns	Recaptures	Total Birds	Total birds/NH
June 7	96	41	0.43	7	0	48	0.50
June 14	96	39	0.41	3	4	48	0.50
June 21	96	34	0.35	1	11	47	0.49
July 5	96	33	0.34	4	10	48	0.50
July 12	96	21	0.22	3	6	31	0.32
July 26	96	39	0.41	0	9	50	0.52
Aug. 2	96	43	0.45	3	8	54	0.56
Totals	672	250	0.37	21	48	319	0.47

Table 2. Species banded in 2014 at Ostrich Lane MAPS station, sorted by habitat.

Species	Grassland	Scrub-Shrub	Burned Woodland	Unburned Woodland
Mourning Dove	1	0	0	0
Downy Woodpecker	2	0	1	2
Red-headed Woodpecker	0	0	2	1
Red-bellied Woodpecker	1	1	0	0
Ruby-throat. Hummingbird	2	9	0	0
Eastern Phoebe	4	0	0	3
Eastern Wood Pewee	1	0	1	0 (1)
Baltimore Oriole	0	0	2	0
American Goldfinch	11	4 (2)	0	1
Lark Sparrow	4	0	0	0
Chipping Sparrow	8	0	3	0
Clay-colored Sparrow	0	1	0	0
Field Sparrow	20 (1)	12 (2)	25 (1)	7 (1)
Song Sparrow	0	3	0	0
Eastern Towhee	0	0	0	1
Northern Cardinal	1	2 (1)	1	0 (1)
Blue Grosbeak	0	1	1	0
Indigo Bunting	7 (1)	15 (3)	10 (1)	1
Summer Tanager	1	0	0	1
Cedar Waxwing	1	3	1	0
Blue-winged Warbler	0	3	1	0
Brewster's Warbler	0	0	1	0
Golden-winged Warbler	0	1	0	0
Chestnut-sided Warbler	0	1	1	0
Ovenbird	0	0	2	0
Common Yellowthroat	2	5 (1)	0	0
Yellow-breasted Chat	0	3	1	0
Hooded Warbler	1	1	0	0
Gray Catbird	6 (1)	15 (2)	2	0
House Wren	1	4	1	2
Tufted Titmouse	0	0	1	0
Black-capped Chickadee	0	0	0	2
Blue-gray Gnatcatcher	0	1	0	0
Wood Thrush	0	1	0	0
American Robin	1	0	0	0
Eastern Bluebird	8	0 (1)	4	0

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

Table 3. Age ratios of selected species captured at Ostrich Lane, 2014.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Field sparrow (N=69)	0.68
House wren (N=8)	7.00
Eastern Bluebird (N=13)	2.25
American Goldfinch (N=18)	0.00
Chipping Sparrow (N=11)	0.83
Indigo Bunting (N=38)	0.36
Gray Catbird (N=26)	0.86
Ruby-th. Hummingbird (N=11)	0.22

Table 4. Confirmed and probable breeders on study site Ostrich Lane, 2014.

Confirmed breeders

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

Table 5. Returning birds previously banded at Ostrich Lane, 2014.

<u>Species</u>	<u># return</u>	<u>Species</u>	<u># return</u>
Eastern Wood Pewee	1	Chestnut-sided Warbler	1
American Goldfinch	2	Common Yellowthroat	1
Field Sparrow	5	Gray Catbird	3
Northern Cardinal	2	Eastern Bluebird	1
Indigo Bunting	5		

Table 6. Breeding bird point counts, Ostrich Lane, 2014.

Species	6/4	6/22		Species	6/4	6/22	
Mourning Dove	3	4		Eastern Towhee	10	7	
Barred Owl	1	0		Northern Cardinal	3	3	
Yellow-billed Cuckoo	1	0		Blue Grosbeak	2	0	
Downy Woodpecker	2	2		Indigo Bunting	12	13	
Pileated Woodpecker	0	1		Scarlet Tanager	1	2	
Red-headed Woodpecker	1	0		Cedar Waxwing	5	5	
Red-bellied Woodpecker	2	1		Red-eyed Vireo	2	4	
Yellow-shafted Flicker	1	1		Blue-winged Warbler	2	2	
Great-crested Flycatcher	4	2		Golden-winged Warbler	1	3	
Eastern Wood Pewee	5	5		Ovenbird	1	3	
Blue Jay	3	4		Common Yellowthroat	1	2	
American Crow	7	6		Yellow-breasted Chat	3	2	
Brown-headed Cowbird	1	1		Gray Catbird	9	3	
Red-winged Blackbird	2	1		House Wren	0	1	
Baltimore Oriole	0	4		White-breasted Nuthatch	6	7	
American Goldfinch	0	3		Tufted Titmouse	13	2	
Lark Sparrow	1	0		Black-capped Chickadee	3	0	
Chipping Sparrow	16	7		Blue-gray Gnatcatcher	5	7	
Field Sparrow	18	15		American Robin	9	4	
Song Sparrow	0	1		Eastern Bluebird	4	2	

Table 7. Breeding bird point counts, Gridham Road, 2014.

Species	6/8	6/19	6/22	Species	6/8	6/19	6/22
Mourning Dove	10	20	12	Rose-breasted Grosbeak	0	2	0
Red-shouldered Hawk	0	0	1	Indigo Bunting	19	12	14
Yellow-billed Cuckoo	2	1	0	Scarlet Tanager	1	7	1
Downy Woodpecker	0	1	1	Summer tanager	1	4	2
Red-headed Woodpecker	1	2	0	Cedar Waxwing	1	10	4
Red-bellied Woodpecker	3	5	3	Red-eyed Vireo	2	0	0
Yellow-shafted Flicker	0	1	0	Warbling Vireo	2	3	3
Ruby-throated Hummingbird	0	0	1	Yellow-throated Vireo	2	2	1
Eastern Kingbird	4	4	1	Blue-headed Vireo	0	1	0
Great-crested Flycatcher	2	0	0	Blue-winged Warbler	3	0	0
Eastern Wood Pewee	1	1	2	Yellow Warbler	0	1	0
Blue Jay	7	2	9	Common Yellowthroat	1	1	1
American Crow	7	8	7	Gray Catbird	1	1	1
Brown-headed Cowbird	4	18	6	House Wren	1	4	4
Orchard Oriole	2	2	1	White-breasted Nuthatch	0	7	4
Baltimore Oriole	9	3	6	Tufted Titmouse	8	1	2
American Goldfinch	8	2	1	Black-capped Chickadee	2	1	0
Lark Sparrow	8	7	5	Blue-gray Gnatcatcher	4	5	2
Chipping Sparrow	25	16	15	Wood Thrush	1	0	0
Field Sparrow	13	20	12	American Robin	8	10	10
Eastern Towhee	2	7	3	Eastern Bluebird	3	11	7
Northern Cardinal	3	3	3				