

# Monitoring Avian Productivity and Survivorship on Ottawa NWR, 2021

## PROGRESS REPORT-2021 BSBO-22-2

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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, Rosenberg et al. 2019). 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 designates 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.

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). Ottawa NWR staff have expressed interest in documenting avian communities associated with management operations of restoring sections of the wet forest known as the Black Swamp. With this in mind, the Black Swamp Bird Observatory initiated a project in 2017 that would not only meet national concerns but be able to address state and local questions. The study site was planted to Black Swamp native tree species in the early 1990s. This project will follow avian use into the future of this site to assess changes with woodland maturation. This study site can act as a template for expansion to other restoration sites on the refuge that are newer in their development over time.

### METHODS

The banding station was sited around the Gallagher Trail of Ottawa NWR and trail headed at the Black Swamp Bird Observatory headquarters (Figure 1). This area was planted to trees in the early 1990s and presently is dominated by an understory of gray dogwood. Planted trees range in height of 10 to 50 feet. 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 site. Field work was consisted of constant effort mist netting.

Mist-netting and banding operations were conducted following established MAPS protocols (DeSante and Burton 1994). Ten 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 1994). 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.

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 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 location. Data on four layers of vegetation (tree canopy, sub-canopy, shrubs, and ground cover) are collected every five years.

## RESULTS

### Mist Netting

In 2021, banding was conducted on seven days for a total of 371.8 net hours. Two hundred and fifty-two new birds were banded and a total of 309 birds were handled (Table 1). Total birds per 100 net hours averaged 83 for the season. A total of 27 species were banded (Table 2). The most common species captured were Gray Catbird (69), Yellow Warbler (64), American Robin (34), Indigo Bunting (13), and Northern Cardinal (11).

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 American Robin. Unusually low age ratios were recorded for Yellow Warbler, Indigo Bunting, Red-winged Blackbird, and Northern Cardinal in 2021. Future years will identify if they are realistic and examine explanations for them if so. Confirmed and probable breeders are listed in Table 4 (a total of 25 species). A total of 18 previously banded birds were captured. Yellow Warbler had the largest number of returning birds with 8 followed by Gray Catbird with 6. One Red-winged Blackbird was originally banded in 2016.

## DISCUSSION

This long-term study will begin the investigation of bird use of management areas that have as their purpose re-establishment of Black Swamp forest in the Lake Erie Marsh Region. It lays the framework to looking at multiple sites of various ages to assess avian response to woodland establishment on Ottawa NWR.

Ultimately, productively is the gauge of success in wildlife conservation management regimes. Completion of full banding seasons will allow for looking at staging and the relationship between the inland habitat patches and the beach ridge habitats known to hold considerable fledgling congregations during late summer and early fall.

## RECOMMENDATIONS

It is recommended that this project continue and discussions with Ottawa NWR staff and BSBO research staff on identifying additional sites that would assist in documenting management effects of reforestation on refuge properties.

## ACKNOWLEDGEMENTS

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## LITERATURE CITATION

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Table 1. Daily banding totals for BSBO, 2021.

Date	Net Hours	# Banded	Birds/NH	Returns	Recaptures	Total Birds	Total birds/NH
June 5	58.3	47	0.81	8	0	55	0.94
June 16	60	31	0.52	2	5	38	0.63
June 23	60	43	0.72	5	10	58	0.97
June 30	50	39	0.78	3	11	53	1.06
Jul 13	34.5	17	0.49	0	5	22	0.64
July 20	54	25	0.46	0	4	29	0.54
August 4	55	49	0.89	1	3	53	0.96
<b>Totals</b>	<b>371.8</b>	<b>252</b>	<b>0.68</b>	<b>19</b>	<b>38</b>	<b>309</b>	<b>0.83</b>

Table 2. Species newly banded in 2021 at BSBO MAPS station, sorted by net.  
(\* represents additional bird of unknown net)

Species	1	2	3	4	5	6	7	8	9	10	Total
American Woodcock								1			1
Sharp-shinned Hawk					1						1
Eastern Screech-Owl	1										1
Downy Woodpecker					2						2
Ruby-throat. Hummingbird				1			1		1		3+3*
Willow Flycatcher				1	1		2		2		6
Blue Jay		1						1			2
Red-winged Blackbird	2	3		2	2			1			10
Baltimore Oriole				2							2
Common Grackle		2		1							3
American Goldfinch								2		1	3
Field Sparrow						2					2
Song Sparrow				1	1						2
Northern Cardinal	2		1		2	1	1	1	3		11
Indigo Bunting	1				4	2	2	1	2	1	13
Cedar Waxwing				1	1		1		2		5
Red-eyed Vireo							1				1
Warbling Vireo				2							2
Yellow Warbler	6	8	3	8	6	7	13	2	8	3	64
Mourning Warbler	1										1
Common Yellowthroat		1				1	1				3
Yellow-breasted Chat					1				1		2
Gray Catbird	6	5	4	8	16	2	10	6	5	7	69
House Wren			1	1			2				4
Black-capped Chickadee			1								1
Swainson's Thrush			1								1
American Robin	2	8	4	6	5	1	3	4	1		34
<b>Totals</b>	<b>21</b>	<b>28</b>	<b>15</b>	<b>34</b>	<b>42</b>	<b>16</b>	<b>37</b>	<b>19</b>	<b>25</b>	<b>13</b>	<b>252</b>

Table 3. Age ratios of selected species captured at BSBO, 2021.

<u>Species</u>	<u>Juvenile/Adult ratio</u>
Red-winged Blackbird (N=10)	0.11
Northern Cardinal (N=13)	0.18
Yellow Warbler (N=72)	0.24
Gray Catbird (N=73)	0.43
American Robin (N=34)	10.33
Indigo Bunting (N=14)	0.08

Table 4. Confirmed and probable breeders on study site BSBO, 2021.

American Woodcock	European Starling	Common Yellowthroat
Mourning Dove	Red-winged Blackbird	Gray Catbird
Downy Woodpecker	Baltimore Oriole	Brown Thrasher
Yellow-shafted Flicker	Song Sparrow	Carolina Wren
Ruby-throated Hummingbird	Northern Cardinal	House Wren
Willow Flycatcher	Indigo Bunting	Black-capped Chickadee
Blue Jay	Warbling Vireo	American Robin
Brown-headed Cowbird	Yellow Warbler	Eastern Screech-Owl
Yellow-breasted Chat		

Table 5. Banding year of returning birds captured at BSBO MAPS study site, 2021.

<b>Species</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>Total*</b>
Red-winged Blackbird			1		1
Northern Cardinal		2			2
Indigo Bunting	1				1
Yellow Warbler	2	6			8
Gray Catbird	5	1			6
<b>Total</b>	<b>8</b>	<b>9</b>	<b>1</b>		<b>18</b>

\* An additional 1 bird was captured that was banded earlier in 2021.

Figure 1. BSBO station map for MAPS project, 2021.

