Winous Point Marsh Conservancy

2017 Research and Activities Report

February 2018

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On the cover: A pair of trumpeter swans rest in the Beardsley's Unit at Winous Point Marsh Conservancy, November, 2017.

Winous Point Marsh Conservancy

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Executive Summary

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This past year was at Winous Point was one of the busiest research seasons here in recent history. We hosted students from across the country beginning in March and continuing into the fall. We also hosted a record number of students and interns, with over 15 students staying here at some point over the year. We also have some sort or research being conducted nearly year-round now, as duck banding begins in February, transitioning into springtime rail research, summer duck banding and fish research, and fall avian influenza sampling. It is extremely rewarding to see the growth in this program and the support it receives.

Winous Point staff-members worked hard to disseminate the results of this research and to bring our wetlands and waterfowl conservation message to target audiences. Collectively, we presented at, attended, or hosted more than 25 different events over the course of the year. Highlights included attending professional meetings in Peoria, IL; Columbus, OH; Lansing, MI, and Traverse City, MI. We also hosted several meetings and tours here at Winous Point, including the Seas Duck Joint Venture retreat, Ohio State University's Wildlife Management Techniques class, and conservation meetings for a few local conservation groups. Lastly, we continued our education mission by assisting with youth programs and educational tours here at Winous Point. We will continue this role in 2018, already having plans to attend 2 major conferences and to host an additional 2 regional science meetings here at Winous Point in addition to our other annual events.

We are also busy analyzing and publishing the results of recently-completed research. Brendan recently published "King Rail Trapping Efficiency and Detection Techniques in southwestern Lake Erie coastal marshes" in the peer-reviewed journal *Waterbirds* and has a manuscript analyzing Ohio Canada geese harvest in review as well. Brendan is also busy analyzing the results of the mallard satellite transmitter project from the last few years. He has teamed up with post-doctoral student Matt Palumbo from University of Wisconsin Stevens-Point to work on several potential manuscripts for publication resulting from that project. John will be working this year to publish the results of our submersed aquatic vegetation project (p.23) and the historic "Summer Birds of Winous Point" survey (p.13).

Winous Point will be welcoming some new and expanded research projects this year as well. Graduate student Sarah Lauterbach will expand the avian flu monitoring program at Winous

Point and attempt to look at year-round patterns in flu strains. We are also expanding our role with the Ohio Division of Wildlife to include monitoring nests and banding hatchlings for their common tern program. Lastly, our rail research program continues to grow and we will add two more projects to that partnership and are currently seeking students to work with the king rail data collected to date.

The Winous Point Marsh Conservancy has been able to continually grow, evolve, and develop as a result of the generous support and dedication we receive from our trustees, donors, partners, and neighbors. We genuinely value the support that our partners and contributors bring Winous Point and look forward to many challenges and accomplishments next year and beyond.

Regards,

John Simpson

Influenza A virus surveillance in wild, free-ranging waterfowl at Winous Point Marsh, Port Clinton, OH: 1986-2017

Investigators: Andrew S. Bowman, Richard D. Slemons, and Jacqueline M. Nolting, Animal Influenza Ecology and Epidemiology Research Program, Department of Veterinary Preventive Medicine, The Ohio State University

Collaborators: USDA National Research Initiative, The Ohio State University, Ohio Division of Wildlife, Winous Point Marsh Conservancy, other private landowners.

Schedule: 1986 - Present

Summary: For more than twenty years the Winous Point Marsh Conservancy (WPMC), Ohio Department of Wildlife, and the Department of Veterinary Preventive Medicine at The Ohio State University have participated in a proactive, collaborative influenza A virus (IAV) surveillance program in wild ducks (Figure 1). The objective of this effort is to better define the natural history of influenza A virus in wild birds by identifying how genetic and antigenic diversity of these viruses are maintained in the duck population over time. Since highly pathogenic H5N8 and H5N2 was identified in avian species in the United States in December 2014, increased IAV surveillance has been initiated to monitor transmission and spread of these viruses of concern. This collaborative project has provided valuable insight into the relationship between host and viral ecology and the environment.

In addition to the valuable data collected at the WPMC, many students have completed honors, masters, and PhD projects through this long-standing collaboration. Beginning in 2018, masters student Sarah Lauterbach will be completing a field study entitled "Filling a gap in influenza A virus surveillance in wild migratory mallards (*Anas platyrhynchos*)" at Winous Point Marsh. Previously, IAV surveillance has occurred primarily during summer banding and hunting season, thus limiting understanding of IAV ecology. Sarah aims to conduct surveillance during winter and spring to understand transmission dynamics among mallards; a species known to play a role in IAV transmission during summer and autumn. Understanding IAV dynamics throughout the course of a calendar year in mallards will both fill information gaps for this known virus host and direct future surveillance efforts to address specific hypothesis.

Publications:

Martin, B. E., Sun, H., Carrel, M., Cunningham, F. L., Baroch, J. A., Hanson-Dorr, K. C., ... & Lutman, M. W. (2017). Feral Swine in the United States Have Been Exposed to both Avian and Swine Influenza A Viruses. *Applied and environmental microbiology*, *83*(19), e01346-17.

Xu, Y., Ramey, A. M., Bowman, A. S., DeLiberto, T. J., Killian, M. L., Krauss, S., ... & Stallknecht, D. E. (2017). Low-pathogenic influenza A viruses in North American diving ducks contribute to the emergence of a novel highly pathogenic influenza A (H7N8) virus. *Journal of Virology*, *91*(9), e02208-16.

Urig, H. E., Nolting, J. M., Mathys, D. A., Mathys, B. A., & S. Bowman, A. (2017). Influenza A Virus Surveillance in Underrepresented Avian Species in Ohio, USA, in 2015. *Journal of wildlife diseases*, *53*(2), 402-404.

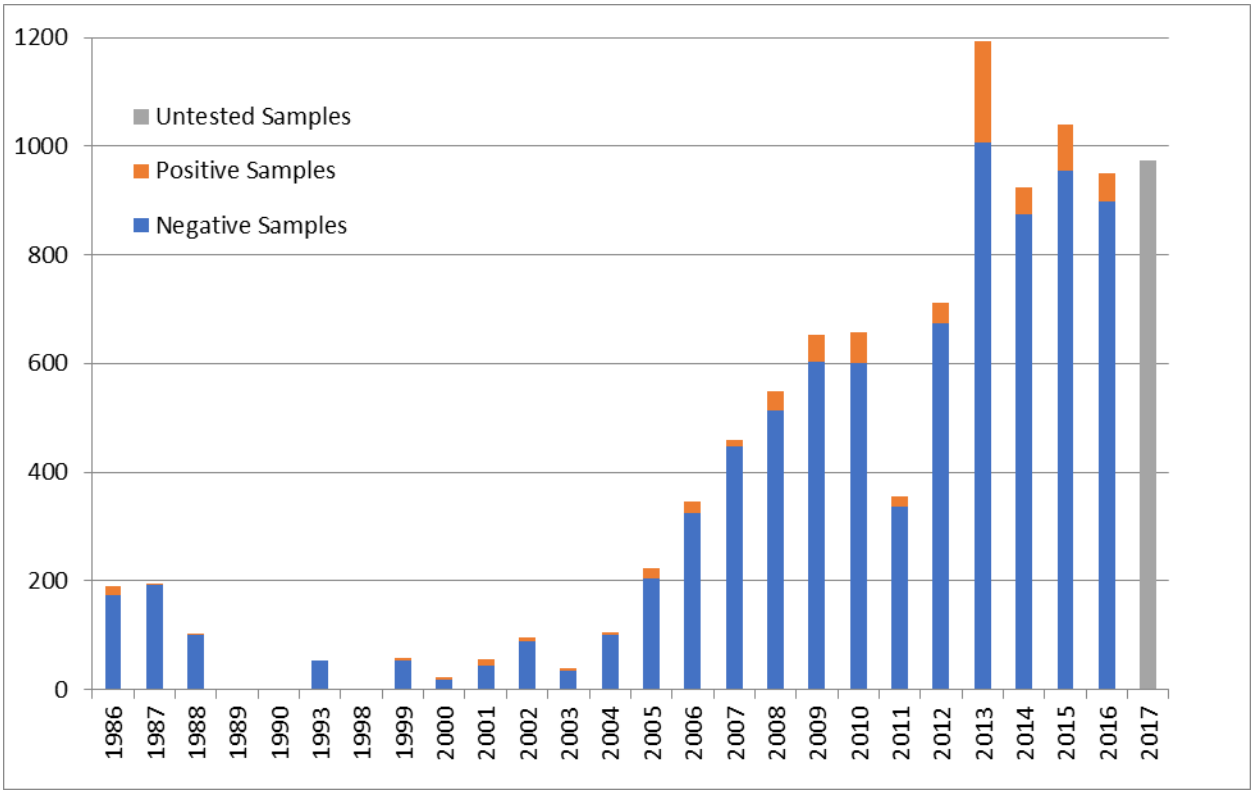

Figure 1. Total number of samples collected at WPMC by year since 1986 and number of type A influenza viruses recovered from these samples (Positive Samples).

Winous Point supports this project through shorebird and waterfowl sample collections, assistance with trapping waterfowl and shorebirds, and housing interns and staff as needed.

This work was funded Centers of Excellence for Influenza Research and Surveillance, National Institute of Allergy and Infectious Diseases, National Institutes of Health (NIH), Department of Health and Human Services contract HHSN272201400006C.

Control of Invasive Plant Species in Northwest Ohio

Investigators: John W. Simpson, Winous Point Marsh Conservancy; Jeff Finn, U.S. Fish and Wildlife Service; Matthew Kovach and Alexis Sakas, The Nature Conservancy; Oliver Cornet, Lake Erie Cooperative Weed Management; Joe Uhink, Ottawa Soil and Water Conservation District; and Mark Witt, Ohio Division of Wildlife.

Schedule: Initiated in 2009, long-term

Summary: Aquatic invasive plants threaten the ecological integrity of wetlands across North America. Invasive plants are especially prevalent and add an extra stressor to the already degraded coastal wetlands here in the Western Lake Erie basin. Invasive plants damage coastal wetland by excluding native vegetation, reducing plant species diversity, and eliminating animal food resources. In addition, invasive plants often reduce recreational opportunity and limit wetland functions related to water quality and flood storage.

The most widespread and damaging invasive plant in northwest Ohio is *Phragmites australis*, a large perennial rhizomatous grass. *Phragmites* is widespread in the United States and typically grows in wetlands usually inhabiting the marsh-upland interface. *Phragmites* is capable of vigorous vegetative reproduction and often forms dense monospecific stands.

In addition to *Phragmites*, coastal wetlands in western Lake Erie are threatened by flowering rush (*Butomus umbellatus*), a relative newcomer under close watch, and purple loosestrife (*Lythrum salicaria*), an established species invasive that can be controlled both through herbicide application and biocontrol techniques. Several other non-native invasive plant species such as narrow-leaf cattail (*Typha angustifolia*) and reed canary grass (*Phalaris arundinacea*) are prevalent but not considered as damaging.

In 2009, a partnership including the Winous Point Marsh Conservancy, U.S. Fish and Wildlife Service, Nature Conservancy, and the Ottawa Soil and Water Conservation District joined forces to create the Lake Erie Cooperative Weed Management Area (CWMA). The CWMA has been extremely successful, administering approximately $3 million in state, federal, and private grant funds to treat 10,000 acres of invasive plants, map nearly 1500 acres of invasive species on over 26,000 acres of private lands, and work with close to 300 individual landowners in northwest Ohio (Figure 1).

Figure 1. Helicopter contracted by the LECWMA aerially spraying Phragmites.

Today the CWMA functions as a landowner-led initiative to provide assistance, advice, and tools necessary for landowners to manage invasive plant on their properties. By transitioning to a landowner-led program, the CWMA will ensure private landowners have the tools and information they need to tackle invasive species management both in the short-term and long-term. A selection of equipment (e.g., sprayers, weed-wipes, ATV's) will be available to landowners free of charge through a rental program. Furthermore, the CWMA has provided a management manual detailing best practices to control invasive species.

Winous Point supports this project as a steering committee member, by acquiring and holding grant funding, by providing research locations, and by hiring and housing project staff. Current program funding is supplied through GLRI grants from the Environmental Protection Agency.

Winous Point and Ohio Division of Wildlife Cooperative Waterfowl Banding

Investigators: Brendan Shirkey and John Simpson, Winous Point Marsh Conservancy; and Doug McClain, Ohio Division of Wildlife

Collaborators: Black Duck Joint Venture, Black Swamp Bird Observatory, Sandusky County Parks District

Schedule: Long-term

Introduction: Winous Point has been heavily involved in the Ohio Division of Wildlife's (ODOW) summer banding program targeting wood ducks (*Aix sponsa*) and mallards (*Anas platyrhynchos*) as well as the winter banding program targeting black ducks (*Anas rubripes*) since 2011 . The program operates under a cooperative agreement with the ODOW with established goals of Winous Point banding 50 black ducks, 400 mallards, and 150 adult male wood ducks annually, helping the ODOW meet their banding quotas for the US Fish and Wildlife Service and Mississippi Flyway Waterfowl Administrative Council. Furthermore, we expanded the existing cooperative agreement with the ODOW in 2017 to test lesser scaup (*Aythya affinis*) trapping techniques during spring migration. With some demonstrated success, a lesser scaup banding program could be started in the Great Lakes similar to the coordinated program currently conducted along the Mississippi and Illinois Rivers.

Figure 1. Winous Point staff returning from a successful day of black duck trapping in North Lily Pond.

Summary: Banding efforts in 2017 by Winous Point staff resulted in the marking of six different duck species totalling 1,097 banded individuals. We have now eclipsed 5,000 banded individuals consisting of 11 different waterfowl species since 2010 (Table 1).

Table 1. Total number of waterfowl, by species, banded at Winous Point Marsh csonservancy from 2010 – 2017. Table includes bandings conducted in winter (Feb/Mar) and summer (Jul/Aug).

Year	Black Duck		Mallard		Wood Duck		Redhead	Gadwall	Pintail	Widgeon	Canvasback	Scaup	Ring Neck	Shoveler	TOTAL
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Winter	Winter	Winter	Winter	Winter	Winter	Winter	
2010	41	0	3	0	0	0	0	0	0	0	0	0	0	0	44
2011	42	0	0	186	0	39	0	0	0	0	0	0	0	0	267
2012	125	0	0	49	0	143	0	0	0	0	0	0	0	0	317
2013	51	0	12	225	0	140	123	0	0	0	1	10	0	9	571
2014	23	1	60	121	8	156	7	341	7	6	5	5	2	1	743
2015	6	3	86	496	0	232	126	0	0	0	35	13	32	0	1029
2016	127	0	193	486	0	307	80	10	1	0	0	0	2	0	1206
2017	81	3	99	476	0	266	148	0	0	0	13	11	0	0	1097
	496	**7**	**453**	**2039**	**8**	**1283**	**484**	**351**	**8**	**6**	**54**	**39**	**36**	**10**	**5274**

We are beginning to see a substantial number of band recoveries specific to ducks banded here at Winous Point (Table 2). The band recovery data is of general interest to those of us who study and hunt waterfowl, but the data also provides valuable information for those responsible for managing the resource. Much of the information used to investigate additive (harvest in addition to natural mortality) versus compensatory harvest (harvest that simply takes the place of natural mortality events) for different waterfowl species, and consequently the harvest potential for different species, is based on banding and band recovery data. This information is a key component in setting many state and federal harvest regulations for waterfowl and for examining the potential impacts of changing harvest regulations on populations and/or population vital rates. In addition to the scientific value, duck banding offers a fantastic opportunity to get kids (and people of all ages) excited about waterfowl, and at the very least our efforts might result in some very excited duck hunters who end up harvesting a banded duck.

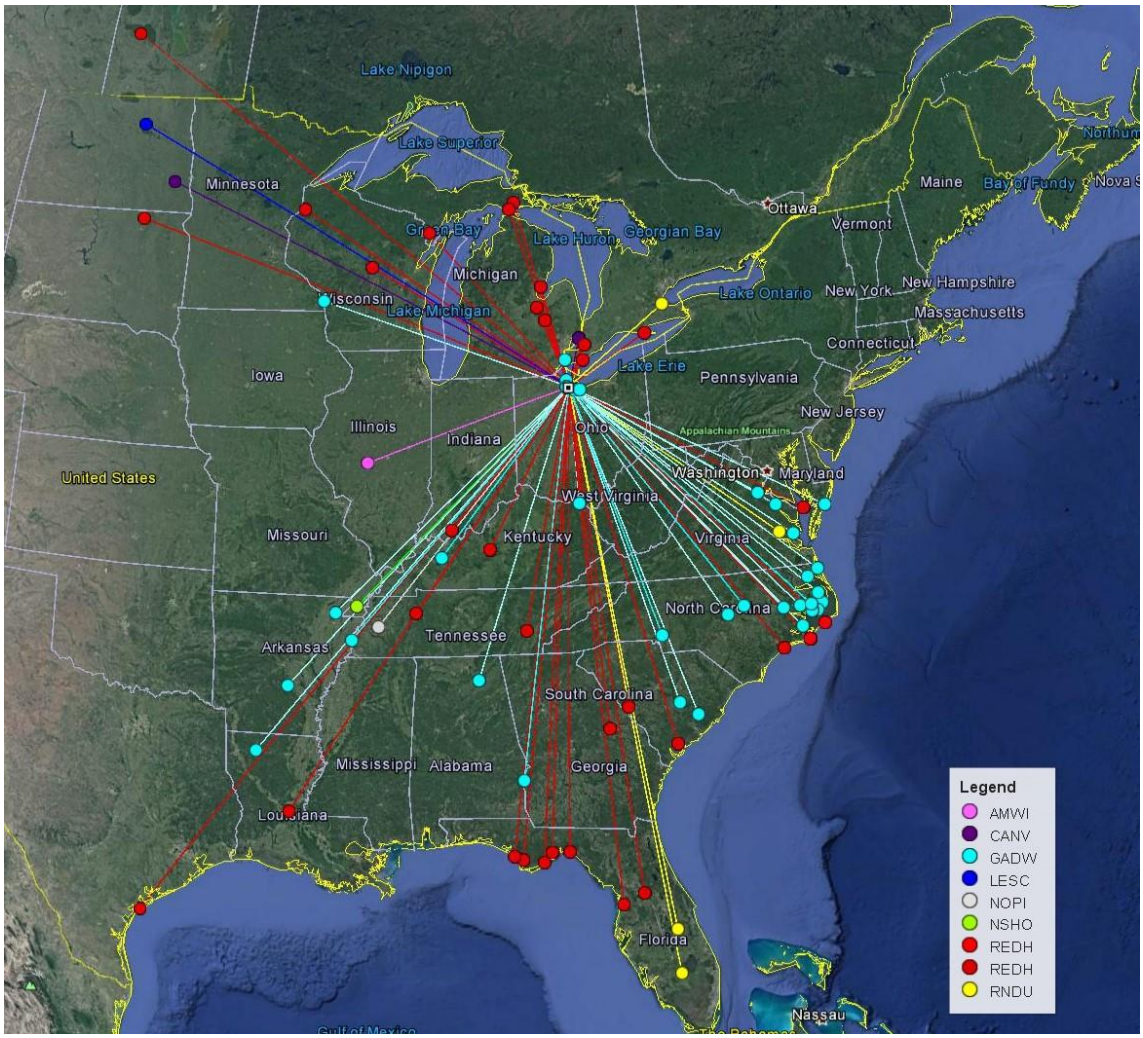

Figure 2. Band recovery locations for gadwall (GADW), redhead (REDH), ring-necked duck (RNDU), canvasback (CANV), lesser scaup (LESC), and American widgeon (AMWI) banded at Winous Point from 2013 – 2017.

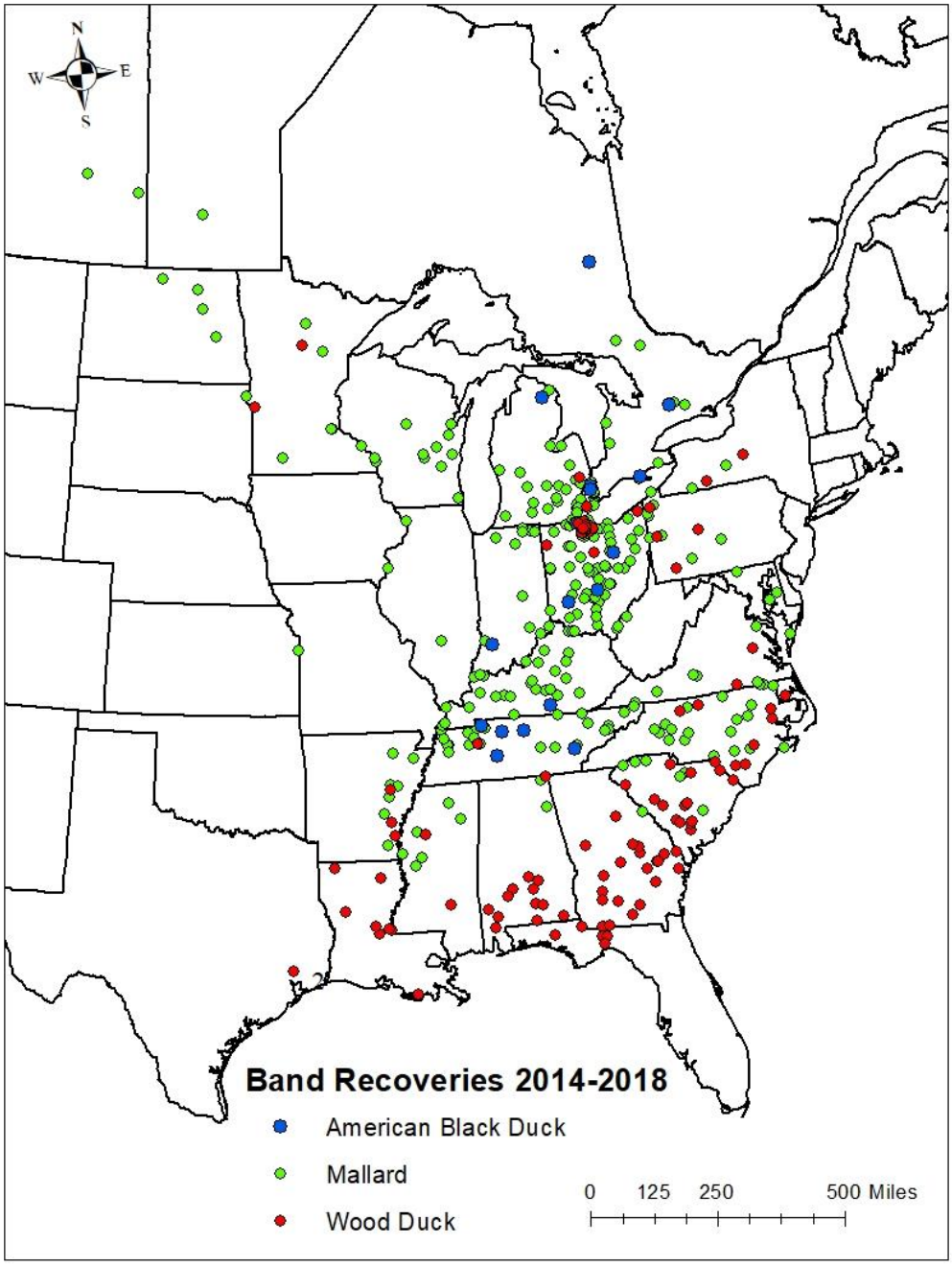

Figure 3. Band recoveries during the 2014-2018 hunting seasons for mallards, wood ducks, and black ducks banded at Winous Point since 2014.

Table 2. Band recovery totals of Winous Point banded mallards, American black ducks, and wood ducks from 2014 to 2017.

Band Recoveries by Year			
Year	**Mallards**	**American Black Ducks**	**Wood Ducks**
2014	20	1	11
2015	65	1	27
2016	97	5	46
2017	155	8	57
2018	30	3	16
	367	**18**	**157**

Winous Point supports this project through a cooperative agreement with the Ohio Division of Wildlife whereby WPMC supplies field staff, time, and materials to band waterfowl and analyze data. In addition to ODOW, project funding is also sourced from the Black Duck Joint Venture and Ohio State University. Sandusky County Park District and Black Swamp Bird Observatory provide additional banding staff and resources. A special thanks to all the volunteers over the past seven years who have helped make our duck banding program such a success.

Summer Birds of Winous Point in 1880, 1930, 1960, and 2017: Updating Historic Inventory Data at Winous Point

Investigators: John Simpson, Brendan Shirkey, and Mike Picciuto, Winous Point Marsh Conservancy

Summary: Each of us here at Winous Point experiences the place as a relative snapshot in time, yet the marshes are always evolving, and that change can be reflected in the composition of avian fauna. Recently, we had a chance to appreciate this change when our friends at the Black Swamp Bird Observatory in Oak Harbor, OH, gifted us a paper copy of a historic record of summer birds here at Winous Point. The manuscript is a unique and historically-significant record of the summer (breeding) birds at Winous Point, beginning with an observational survey in 1880 and repeated in 1930 and 1960. Though not designed with rigorous scientific sampling standards in mind, the paper provides a fascinating look at changes in bird communities at Winous Point throughout European settlement and in response to a multitude of anthropogenic changes. Moreover, the records were kept by notable people in Winous' history, including the son of early Winous Point Shooting Club member J.B. Porter (joined 1886), and past member J. B. Semple (joined 1921; Figure 1), and the first Winous Point biologist-manager, John Anderson (hired 1949; Figure 2). Anderson explains the significance and history of this survey best in his forward to the 1960 edition:

John M. Anderson

To some, any owl hooting in the woods above Norton's Ditch is a hoot owl; any yellow bird is a wild canary; seed-eating birds are good; flesh-eaters are bad.

Other men are cursed or blessed, depending upon your point of view, with an insatiable curiosity about feathered critters. To them the owl is either a great horned, a barred, screech, short-eared or barn owl, identifiable by his call, shape, size or color. A yellow bird may be one of forty different warblers, orioles, or finches. To see a duck hawk catch a teal in midair is considered a rare privilege and almost as much fun as leading the teal just right with a charge of sixes.

Members of this latter group are mixed in with those who are just hunters and undoubtedly this is a good thing. Throughout the history of the Winous Point Club there have been those who checked on the numbers and kinds of birds on the club grounds. This group have had extra enjoyment and larger experience from their membership in the Club.

Back in 1880, the son of a club member from Cincinnati named J. Bonsall Porter, with his guest Dr. Frank W. Langdon, widely known physician and consultant in nervous and mental disorders,

spent the first week of July "censusing" the birds at Winous Point. Their results were published in the Journal of the Cincinnati Society of Natural History, October, 1880.

Fifty years later, club member John B. Semple of Sewickley, Pennsylvania, assisted by Bayard H. Christy, made a similar census from July 1-3. Their results were published by the American Ornithologists Union in Vol. XLVIII, No. 3, of the Auk.

On July 2-5, 1960, through the courtesy of the Winous Point Club and with the encouragement of the Winous Point Research Committee, Mr. Laurel Van Camp, Ottawa County Game Protector, Karl Maslowski and Worth Randle, wildlife photographers, Emerson Kemsis of Cincinnati, and Jay Sheppard of Miami University, and the author, again censused the marsh. Thus, we have a fifty and an eighty-year comparison of the birds at Winous Point with 1880 census, a summary of which follows.

In the following list, comments for 1880 and 1930 were taken verbatim from Christy's paper in The Auk, 1931. The term (No comment) following an 1880 entry evidently means that Porter and Langdon saw the bird but made no comment as to its numbers. These two gentlemen were much interested in nest hunting and egg collecting, and also shot several specimens for identification and taxidermy.

In the 1960 survey, however, six observers, instead of two, took part. The author, being in residence at the Club, knew the location of most species in advance. Chances for recording stray birds, such as the yellow-headed blackbird, chestnut-sided warbler, a pair of redheads, one lone female lesser scaup, and one male ring-necked duck, were doubtless much improved by the larger group of observers.

Figure 1. Winous Point Shooting Club member John B. Semple joined in 1921 and undertook the second summer bird survey in 1930 with the assistance of Bayard H. Christy. Semple is one of many past and present WPSC members with a keen interest in natural history and conservation.

Figure 2. Winous Point Shooting Club manager John M. "Frosty" Anderson, began conducting field research at Winous Point in 1946 and was eventually hired as the first Biologist-Manager of a duck hunting club in the United States. Anderson went on to a prominent career with the Audubon Society after Winous Point.

The fascinating history associated with this century old survey effort spurred our interest in replicating and updating the summer bird species list to reflect current conditions in 2017. Although not a typical scientific sampling design, we felt it worthwhile to update the survey and specifically to take note of species that have changed in abundance, or even occurrence over the 137-year period. From July 5 to July 8, 2017 our staff technician, Mike Picciuto, and three graduate student volunteers informally surveyed the property for summer bird species noting relative abundance, breeding prevalence, and anecdotal notes about population trends. We also added anecdotal notes based on our observations of certain species in the last ten or so years, whether they were observed during the survey effort or not. For example, noting that white pelicans (*Pelecanus erythrorhynchos*) have been increasing in abundance since the first summer residents appeared in 2014 (Figure 3). Lastly, we included, as appendices, data from banding and other research projects at Winous Point that indicate abundances of certain summer birds.

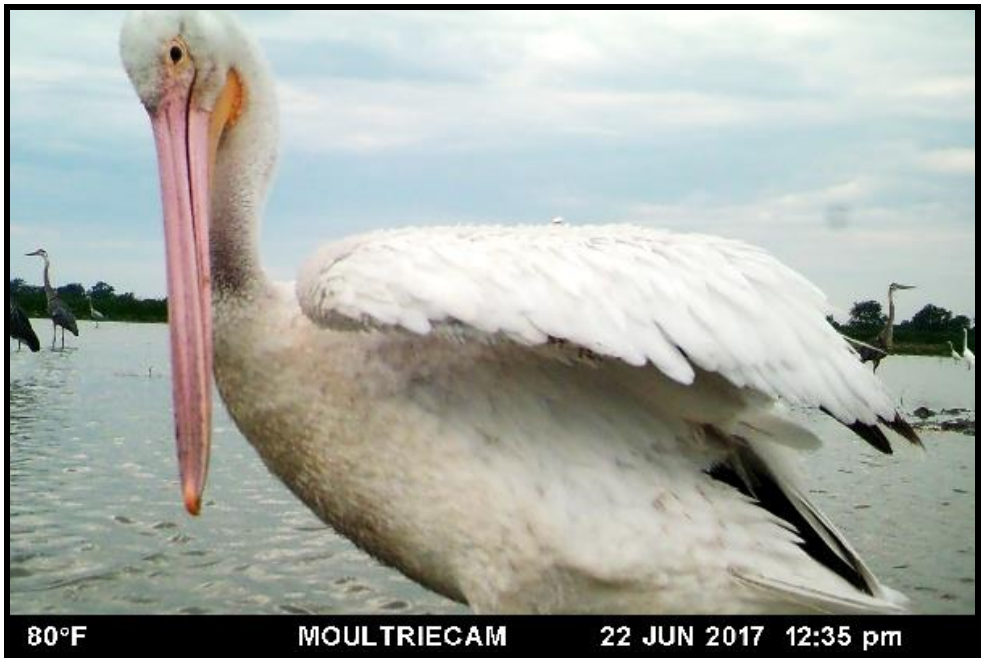

Figure 3. American white pelican caught on trail camera at Winous Point in summer, 2017.

Across all survey years 149 species of birds have been documented at Winous Point in summer. We visually observed 76 species during the survey efforts in 2017. We also made notes on another 41 species that were not observed during survey efforts but are known as summer residents for a total of 107 "current" species.

Variation in effort and methodology among the surveys confounds interpretation of the raw count data. For example, a different number of surveyors with differing amounts of skill have conducted each of the surveys, making comparisons between surveys difficult. Nonetheless, apparent species composition at Winous Point has changed over the survey period, with 31 species that were observed in one or more previous surveys no longer encountered at Winous Point. Notable examples include bobwhite quail (*Colinus virginianus*), ruffed grouse (*Bonasa umbellus*), black tern (*Chlidonias niger*), American coot (*Fulica americana*), chimney swift (*Chaetura pelagica*) and many species of waterfowl that no longer incidentally breed locally. Similarly, there were 24 species noted on our 2017 effort that were not encountered in earlier surveys. Some of these species include notables such as osprey (*Pandion haliaetus*), white pelican, sandhill crane (*Grus canadensis*), Trumpeter Swan (*Cygnus buccinator*), Mute Swan (*Cygnus olor*), and several species of gulls that were either overlooked earlier or have since colonized the once-vegetated Muddy Creek Bay.

Winous Point staff continued, and hopefully will continue, this research out of self-interest and historical significance. We appreciate the hard work of the student volunteers who assisted with observational data collection.

Responses of Colonial Wading Bird Populations within the Lake Erie Marsh Focus Area to Cormorant Control and Wetland Management

Investigators: Kristie Stein and Christopher Tonra, Ohio State University; and Laura Kearns, Ohio Division of Wildlife

Schedule: 2015 - 2016

Summary: Black-crowned Night-Herons (*Nycticorax nycticorax*), while globally common and widespread, are listed as threatened, endangered, or a species of concern in ten states, seven of which are in the Great Lakes region. Within Ohio, the species is listed as threatened. Both number of nesting pairs and active colonies of Black-crowned Night-Herons in Ohio have declined since the 1970s (Ohio Division of Wildlife, unpublished data). We are investigating what factors are limiting population growth in Ohio and linking this information to migration routes and wintering habitat to understand threats faced during the full, annual life cycle of this species. We conducted field work on two breeding colonies of Black-crowned Night-Herons in Lake Erie, West Sister Island National Wildlife Refuge in Lucas County and Turning Point Island in Erie County (Figure 1). These sites were chosen because they provide critical nesting habitat for Black-crowned Night-Herons as well as other colonial wading birds. The objectives of the study include:

1. Estimating survivorship of pre- and post-fledging juvenile night-herons and determine factors limiting population growth.
2. Determining differences in migratory pattern, timing, and wintering location between ages, sexes, and seasons.

, We deployed 48 new nanotags on juvenile night-herons and 7 satellite transmitters on adult night-herons during the 2017 season. Nanotags differ from traditional radio-transmitters in that all tags are transmitting on the same frequency. They are identified by a unique pulse and an identification number. By having many tags on one frequency, we can use automated telemetry towers (MOTUS towers) to track landscape scale movements of birds (Figure 2). Mortality and dispersal events occurred throughout the season. Data processing from the telemetry towers is ongoing as we continuously receive detections from the Motus telemetry tower array (www.motus.org). We also monitored success of 31 nests and survival of 86 nestlings at West Sister Island and Turning Point Island using trail cameras and weekly nest checks (Figure 3).

Aside from a small number of band recoveries, we have little information on migration ecology of Black-crowned Night-Herons. To identify migration routes and wintering locations of Ohio night-herons, we captured birds using a baited whoosh net technique at both local marinas and Turning Point Island. Upon capture, adults were measured and fitted with a backpack-style

satellite transmitter (Figure 4). We continue to receive locations from the 7 Argos tags deployed on adult night-herons this summer. With 4 birds departing in September and 2 departing in November, 6 are currently transmitting from their wintering location. One tagged heron is still located in the study area. Current locations of wintering birds include Florida, South Carolina, and Honduras (Figure 5). Herons used similar routes as in 2016 apart from heron 79. Heron 79 passed through central Tennessee and continued into Alabama where it stopped at an aquaculture facility for 11 days. Heron 79 then continued to the gulf coast and crossed over the Gulf of Mexico to the Yucatan Peninsula passing through Mexico and Guatemala before arriving on the northern coast of Honduras.

We are currently compiling and analyzing data from two seasons of field work. We monitored 41 nests in 2016-2017at West Sister Island and 35 at Turning Point Island. Of 76 nests monitored, 79% were successful (21% failure). Some causes of failure included structural collapse, falls from nests, and Great Egret and raccoon predation. Initial results of the growth rate analysis indicate that rates were highest for nestlings born at West Sister Island in 2016. The trend is consistent in survival rates of nestlings tracked to 25 days of age. Survival rates of nestlings at West Sister Island ranged from 63.1% (2017) to 69.4% (2016) and from 55% (2017) to 60% (2017) at Turning Point Island. We have collected over 500,000 photos from trail cameras and are working with undergraduate volunteers to collect provisioning rates at the nest site level. Additionally, we are working to develop a protocol extracting DNA from feather samples. We will use the DNA samples to determine the sex of individual herons,ultimately understanding how sex may affect growth, survival, and migratory patterns.

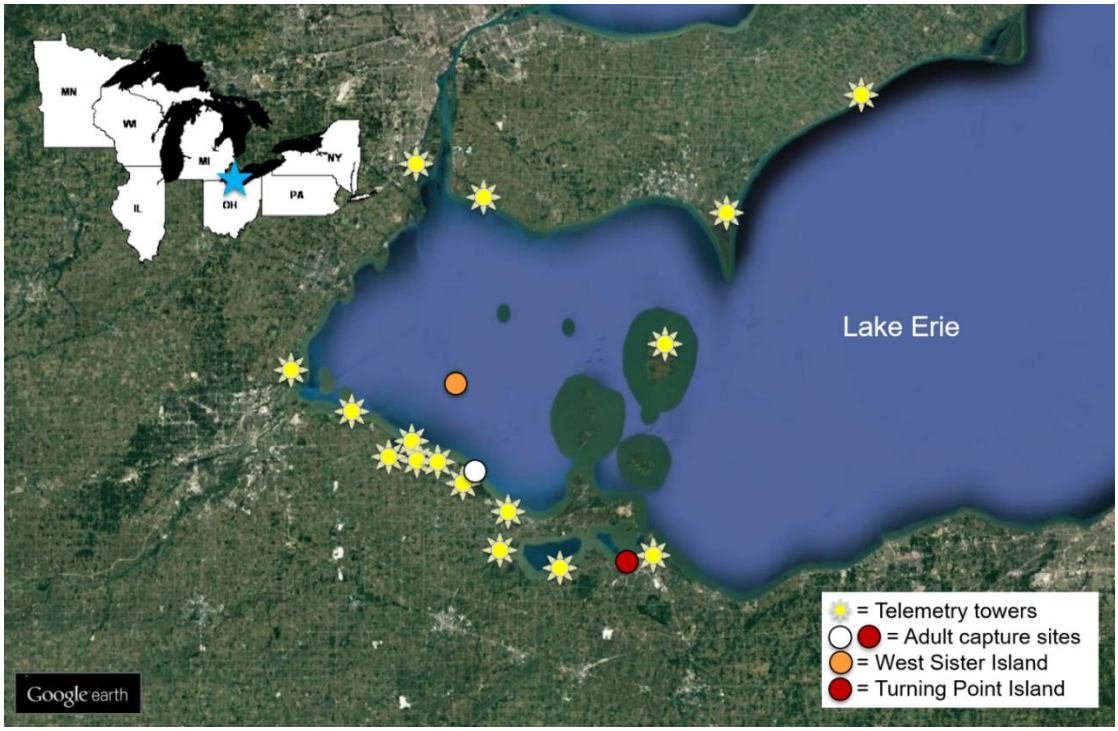

Figure 1. Map of black-crowned night-heron study site

Figure 2. Graduate student Kristie Stein prepares to track night-herons via aircraft. Telemetry tower used to detect nano-tagged Black-crowned Night-Herons.

Figure 3. Trail camera photo of an adult night-heron with two nestlings.

Figure 4. An adult black-crowned night heron marked with a federal bird band, color-coded leg band, and backpack-style satellite transmitter.

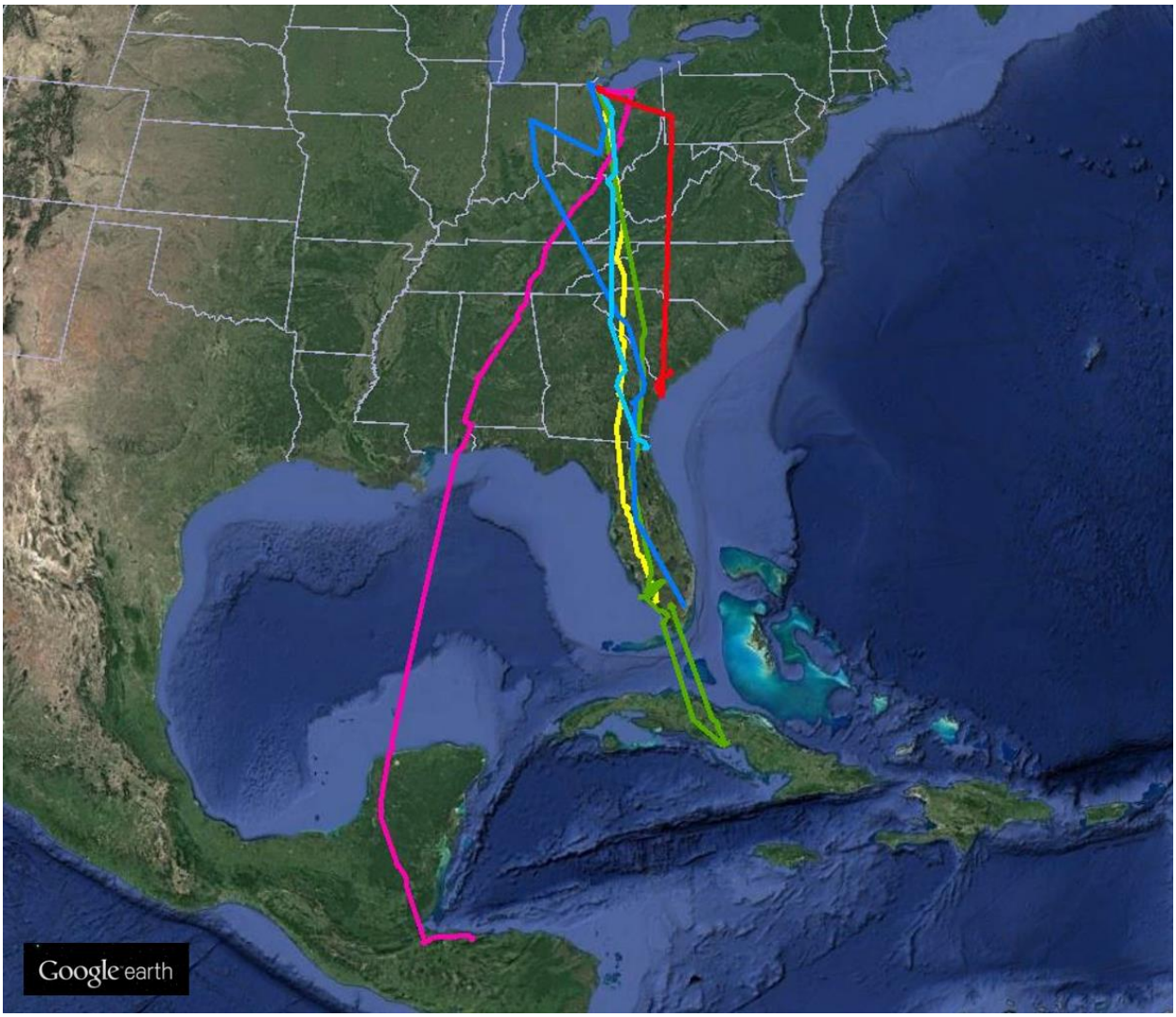

Figure 5. Fall migration movements of nine adult black-crowned night-herons in 2017.

Winous Point supports this project by supplying technician housing, tower placement, and other logistical support.

Energetic Carrying Capacity of Submerged Aquatic Vegetation in Semi-permanent Marshes for Dabbling Ducks in the Upper Mississippi River and Great Lakes Region Joint Venture

Principal Investigators: John Simpson, Brendan Shirkey, and Michael Picciuto; Winous Point Marsh Conservancy, Port Clinton, OH

Co-Investigator: Heath M. Hagy, Sarah E. McClain, and Margaret Kenna; Illinois Natural History Survey, Forbes Biological Station–Bellrose Waterfowl Research Center, Prairie Research Institute, University of Illinois at Urbana–Champaign

Schedule: 2015 – 2018

Summary: Submersed aquatic vegetation (SAV) is an abundant and widespread potential food resource for waterfowl and other waterbirds. Anthropogenic changes to the landscape have, in many cases, reduced or degraded SAV food resources across the upper Midwest. The Upper Mississippi River/Great Lakes Joint Venture (hereafter Joint Venture) uses food estimates for wetlands to generate habitat conservation goals for waterfowl and other water birds. Unfortunately, energetic values for shallow and deep-water marsh habitats are still based on very limited data, some of which is from outside the Joint Venture region and from unpublished reports (Soulliere et al. 2007). Despite these issues, shallow, semi-permanent and deep-water marsh habitats comprise >70% of maintenance and protection objectives and >20% of restoration and enhancement objectives for non-breeding waterfowl, meaning that even slight inaccuracies in associated model parameters could drastically affect conservation objectives produced by bioenergetics models. We must ensure estimates of energetic values for SAV are available and updated to improve the accuracy and validate the assumptions of energetic models used to set habitat objectives.

We will address several needs identified in the 2015 Joint Venture Research and Monitoring Needs. We will determine energetic carrying capacity of semi-permanent marsh habitats to improve accurate parameterization of energetic carrying capacity models.

Methods: In July and August 2015, 2016, and 2017, we visited and sampled SAV at 21 individual sampling sites across the Joint Venture. Sampling sites were identified as regionally-important wetland areas for waterfowl concentration by using professional opinion and historic records.

Table 1. Submerged aquatic vegetation sampling sites in 2015 (10), 2016 (10), and 2017(11).

2015	2016	2017
Winous Point, OH	Winous Point, OH	Winous Point, OH
Bay View, OH	Bay View, OH	Bay View, OH
Big Island WA, OH	Big Island WA, OH	Big Island WA, OH
Ottawa NWR, OH	Ottawa NWR, OH	Ottawa NWR, OH
Pickeral Creek WA, OH	Pickeral Creek WA, OH	Pickeral Creek WA, OH
Mosquito Creek WA, OH	Pte. Moullie SGA, MI	Goosepond WA, IN
Cedar Point/Little Darby NWR, OH	Harsens Island SGA, MI	Horicon Marsh, WI
Ottawa Shooting Club, OH	Nyanquing Point, MI	Hennepin/Hopper/Senachwine, IL
East Harbor State Park, OH	Erie Shooting Club, MI	Pool 13 Mississippi River
Magee Marsh WA	Shiawassee NWR, MI	Pool 19 Mississippi River East Harbor State Park, OH

We used National Wetland Inventory (NWI) data and ArcGIS 10.5 to definesite boundaries within each sampling location. Boundaries were defined by NWI classification categories of freshwater emergent wetland, freshwater forested/shrub wetland, riverine, and lake overlaid with landowner(s) parcel boundaries at each site. Once site boundaries were defined, we used the Generate Random Points tool in the Geospatial Modeling Environment extension for ArcGIS 10.5 to randomly generate 30 sample points within each site. We conducted a combination of interviews with landowners and site managers and field visits to determine SAV habitat suitability at each point. A point was deemed "suitable" as SAV habitat if wetland habitat was present with a water depth >1 cm and emergent vegetation was less than 75% horizontal coverage (otherwise it was too dense to sample). Points were also excluded if they fell outside of wetland habitat (i.e. on dikes, wetland margins, NWI error) or were unavailable in the current year due to management practices (i.e. moist-soil drawdowns). Once the random points were categorized as "suitable" or "unsuitable" we began sampling the suitable points in numerical order until ten SAV vegetation samples were collected at each site.

SAV Sampling: We loaded **s**ample point GPS coordinates to a GPS map 60CSx handheld GPS unit and navigated to points using kayaks, mud motor boats, or on foot We collected habitat assessment variables from within a 1x1 meter square plot prior to vegetation sampling once the point was reached. These assessment variables included a secchi disk reading and water depth reading using 10 cm graduated marks on the secchi disk string. The 1x1 meter plot was categorized as either stratified (i.e. containing a distinct layer of floating leaf aquatic vegetation or FLAV) or not stratified (i.e. FLAV absent). We assessed percent horizontal coverage by estimating the percentage cover of each species of submerged and floating leaf aquatic vegetation visually within the plot. FLAV were then brushed aside to reveal any SAV species beneath that were then assigned horizontal coverage values. After all percent horizontal

coverage values were estimated, it was necessary to disturb the plot area to assess perceived densities of the SAV collectively and individually by species. Densities were given as a range value from 1-5 and reflected how much of the water column the SAV species occupied. At each point a 1-5 range value was also assigned regarding the quality of vegetation for waterfowl food, seed density, and a 1-10 range value was assigned for the overall quality of the foraging habitat based on diversity and density. Lastly, we recorded the presence of any emergent vegetation in the plot area.

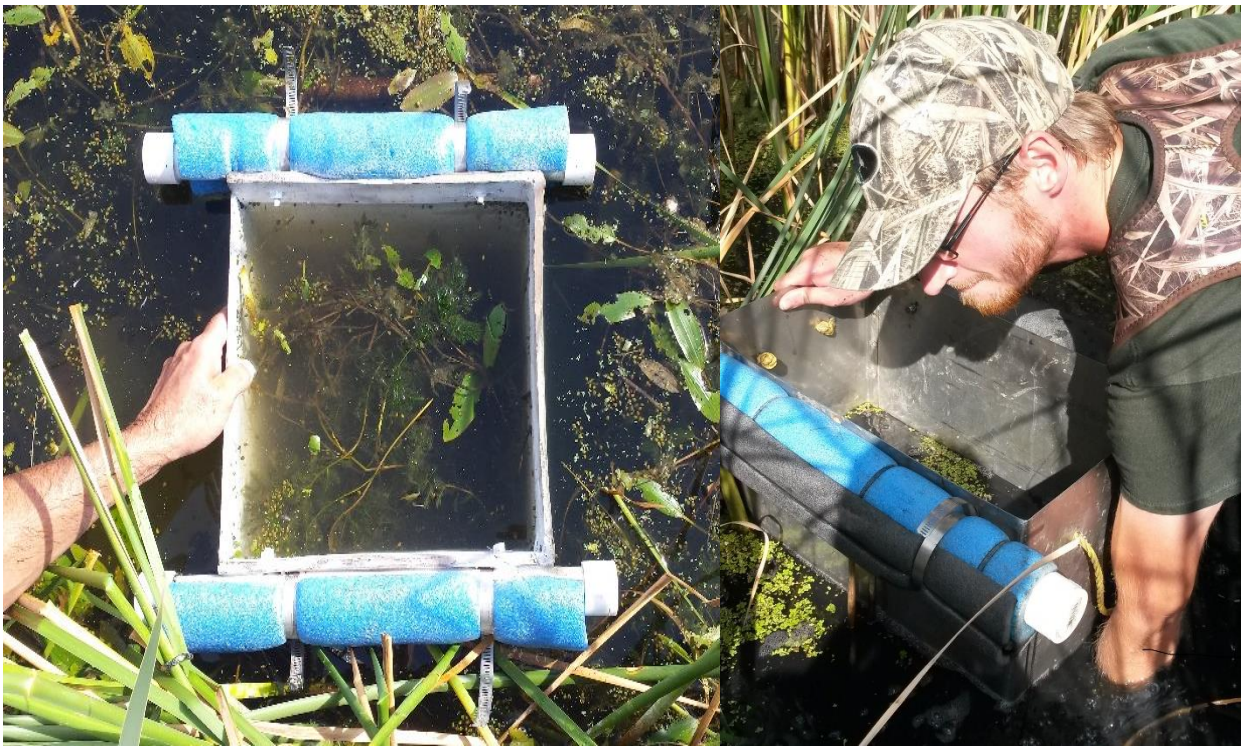

Figure 1. Sampling submerged aquatic vegetation with the modified Gerking Box Sampler.

Following collection of habitat assessment variables we collected an SAV sample using a modified Gerking box sampler (25 cm × 45 cm × 65 cm); Sychra & Adamek 2010; Figure 1). A sliding-blade guillotine lid was located 5cm up from the bottom of the box and 500-micron screens were built into the sides to allow for filtering and drainage. The sample was always taken immediately adjacent to the plot area used for the rapid assessment in area representative of the plot itself. The Gerking box blade was removed and then we lowered the box to the bottom of the wetland or to 50cm of water depth, whichever came first. The vegetation captured within the box was removed using the box door as a guillotine and by hand as needed. The Gerking box was then removed from the water and placed so any trapped water was filtered through the 500-micron screen. We removed the SAV sample from the Gerking box, placed into a 2-gallon bag, labeled, and preserved with 10% buffered formalin solution. Samples were rinsed in a lab sink using a No. 35 standard test sieve. We then sorted by species and dried for 48 hours at 70 degrees C using an LR Technologies DNK602 constant temperature oven (Figure

2). Finally, we weighed the sample again on a PR803 Mettler Toledo scientific scale to obtain a final dry mass.

Figure 2. Sorted sample ready for drying and processing.

Results: We attempted to assess 930 randomly generated points at 21 sites throughout the Joint Venture between 2015 and 2017. We were able to evaluate the SAV suitability at 884 of the 930 random points that were generated. The points that were discarded were inaccessible or unfeasible in terms of time and effort to reach. We found that 473 of 884 points (53.51%) were suitable as SAV habitat (wetland habitat with water depth >1cm and emergent vegetation <75%). From within those 473 points, we made habitat assessments and collected Gerking box samples at 300 points (10 points at 30 site*years). Of those 300 sampling points 180 points (60%) contained SAV within the Gerking box sampler.

Estimates of mean biomass generated from our study averaged 206.452 kg/ha across all sites and years and ranged from 8.430 kg/ha to 710.812 kg/ha at individual site*years (Figure 3). In three years of sampling, we identified a total of 30 different species of SAV from the study sites sampled across the Joint Venture. Coontail (*Ceratophyllum demersum*) was the most abundant of all SAV species across and among all three years of sampling, averaging 79.289 kg/Ha. Coontail was also the most commonly encountered species, occurring in 118 of 300 samples and at all but 8 of the 30 sampling sites (Figure 4).

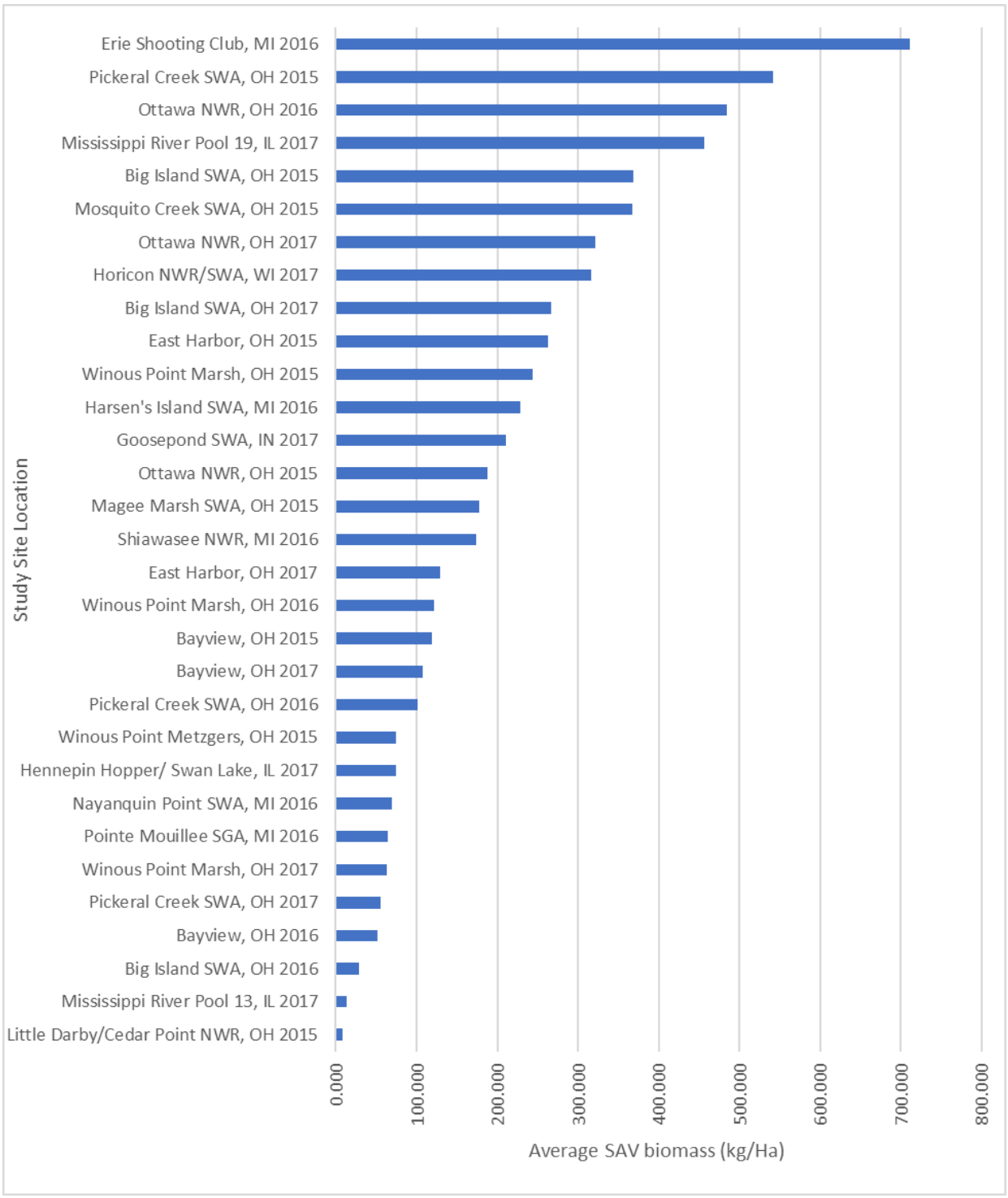

Figure 3. Mean biomass ($\bar{x}$, kg/ha) of submersed aquatic vegetation (SAV) at 31 sites sampled from 2015 – 2017 across the Upper Mississippi/Great Lakes Region Joint Venture.

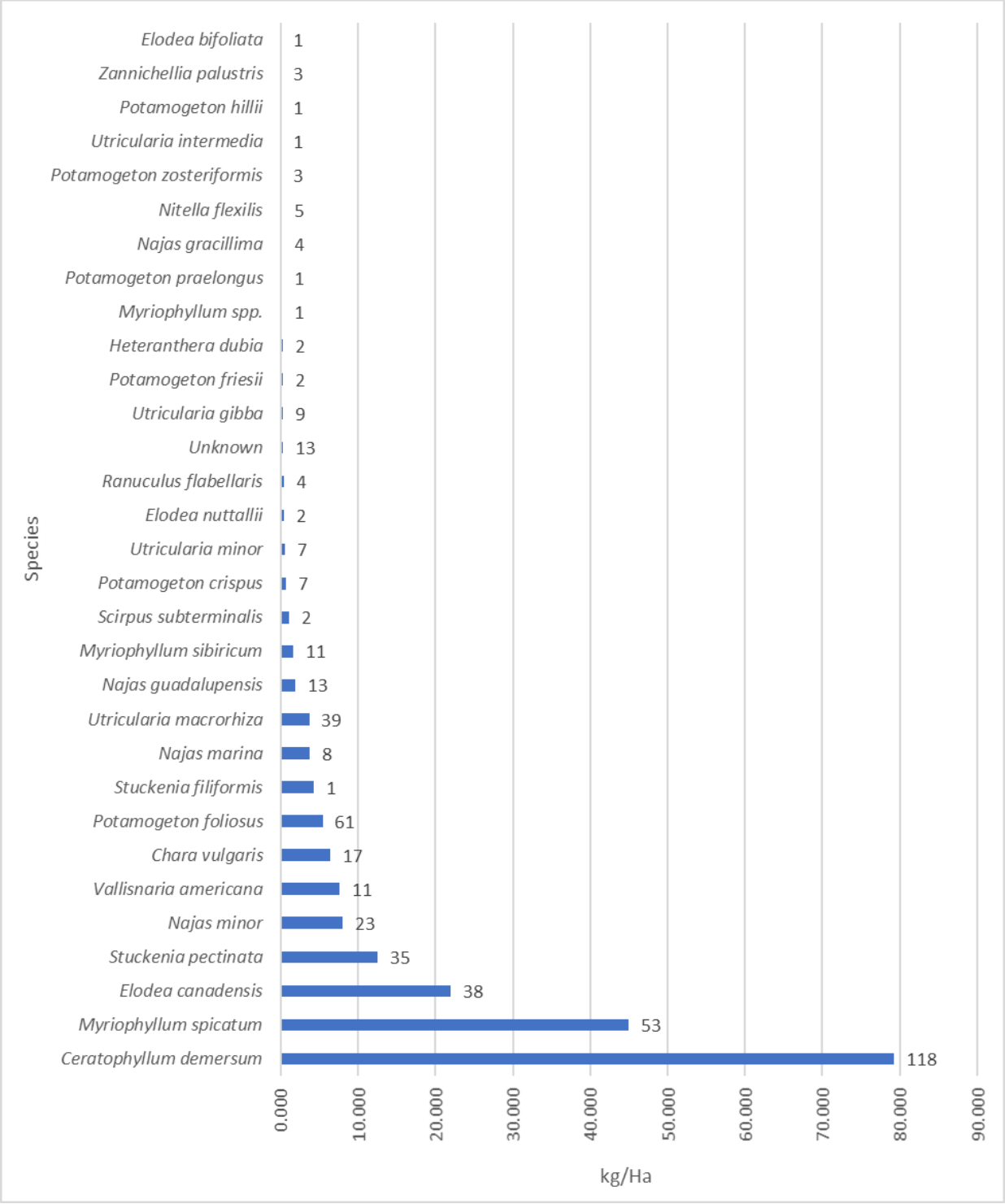

Figure 4. Mean biomass ($\bar{x}$, kg/ha) and sample size (number of occurrences) of submersed aquatic vegetation (SAV) for 30 species sampled at 300 sample points from 2015 – 2017 across the Upper Mississippi/Great Lakes Region Joint Venture.

Discussion: SAV biomass estimates from our study were similar to estimates from Emiquon Preserve in central Illinois which ranged from 1.4 kg/ha in open water habitats to 5273.6 kg/ha in aquatic bed habitats (McClain, 2017). McClain's study sampled specific habitat types within a single wetland, thus generating high and low estimates within preferred SAV habitats. Conversely, we sampled random points across a continuum within wetlands, leading to estimates that were comparable to an average of McClain's estimates. Our data will provide important estimates of SAV biomass needed by Joint Venture conservation planners to generate coarse estimates of wetland carrying capacity for conservation planning. A greater understanding of food selection by waterfowl and waterbird species is needed to fully understand the importance of different food types to providing resources for migrating waterfowl and waterbirds.

We are now working using the Habitat Assessment data and SAV biomass estimates collected at each sampling point to develop a predictive "Rapid Assessment" regression model similar to Naylor et al. 2005. This Rapid Assessment will allow users to visually assess SAV abundance or suitability from a brief habitat assessment. This model will hopefully incorporate SAV biomass estimates and habitat assessment data from both Emiquon Preserve (McClain, 2017) and our study.

Acknowledgments: We thank the Upper Mississippi River and Great Lakes Region Joint Venture, the Illinois Natural History Survey at the University of Illinois at Urbana-Champaign (UIUC), and Western Illinois University for providing funding and in-kind support. We thank the many agency management staff and landowners who assisted greatly with permitting, logistics, and sample point assessment. We thank Winous Point and Illinois Natural History technicians and interns who aided substantially with sample collection and processing.

Winous Point has undertaken this project in cooperation with the Illinois Natural History survey which is conducting a related study designed to inform habitat objectives developed by the Upper Mississippi Great Lakes Joint Venture. Funding for this project comes from the Upper Mississippi Great Lakes Joint Venture.

Population Monitoring, Ecology, and Habitat Relationships of Sora and Virginia Rails in Northwestern Ohio

Investigators: James Hansen, Nicole Hengst, Bob Gates and Chris Tonra, Ohio State University; Laura Kerns, Ohio Division of Wildlife; and Brendan Shirkey and John Simpson, Winous Point Marsh Conservancy

Schedule: 2016 - 2019

Project Overview: The amount of wetland habitat across North America has declined substantially over the last century, and this loss has likely resulted in declines of many marshbird species. The goal of this project is to provide empirical data on distribution, abundance, local population densities, and habitat selection of two harvestable marshbird species, the Virginia rail (*Rallus limicola*) and sora (*Porzana carolina*). Knowledge of population demography, life history phenology, and population-habitat relationships will help address the current population status of these species, as well as inform harvest management in Ohio. Knowledge of seasonal movements, home range, and habitat use patterns of Virginia rails and sora will also inform habitat management recommendations for these two species. Specific project objectives include:

1. Determine distribution, occupancy, and relative abundance of sora and Virginia rails using the National Marsh-bird Monitoring Protocol and an automated call-playback /trail camera system.

2. Identify local landscape, habitat, and microhabitat factors associated with occupancy rates and seasonal home range and movement patterns of radio-marked sora and Virginia rails

3. Assess and compare the efficacy of survey protocols (National Protocol and automated system) with regard to meeting fundamental assumptions of distance sampling and occupancy modeling and recommend improvements to statewide marsh-bird survey design, methodology, and analyses.

4. Estimate demographic vital rates including breeding and post-breeding season survival, nesting success, and phenology of life history events including migration arrival and departure, nesting, and post-nesting.

5. Evaluate or model viability and resilience of sora and Virginia rail populations to sustain harvest levels under the current regulatory framework using data collected by the Harvest Information Program and results from this study.

Results: Our second field season commenced with trapping on 14 April 2017. We captured 28 soras and 92 Virginia rails through 28 July 2017, with peaks in capture rates in mid-April and

mid-May (Figure 1 and Figure 2). We deployed VHF radio-transmitters on 111 rails (23 sora and 88 Virginia rails). Rails too small to carry transmitters or otherwise judged to be in poor body condition were either marked only with aluminum leg-bands or released without marking (n = 14). No rails were recaptured from banding conducted in previous years. The majority of captures for both species were adults (Table 1). We captured 10 juvenile rails (1 sora and 9 Virginia rail), and 2 Virginia rail nests were discovered, verifying that breeding of both species occurs at Winous Point. Rails equipped with radio-transmitters were tracked from date of capture to when their signal was lost. Signals were lost on 88 of the 111 radio-marked birds prior to the onset of fall migration (approximately 1 September) and were thought to have left the area. 53 rails apparently departed the study area during the standardized secretive marshbird monitoring windows used by the Ohio Division of Wildlife and assumed to be a breeding period for secretive marshbirds (Figure 3). The number of days rails spent at Winous Point from the date of capture to the date of apparent departure ranged from 1 to 161 days ($\bar{x}$ = 21.19). Ground searches and aerial searches were administered by the Ohio Division of Wildlife to locate missing radio-marked rails, and two missing Virginia rails were found at Ottawa National Wildlife Refuge.

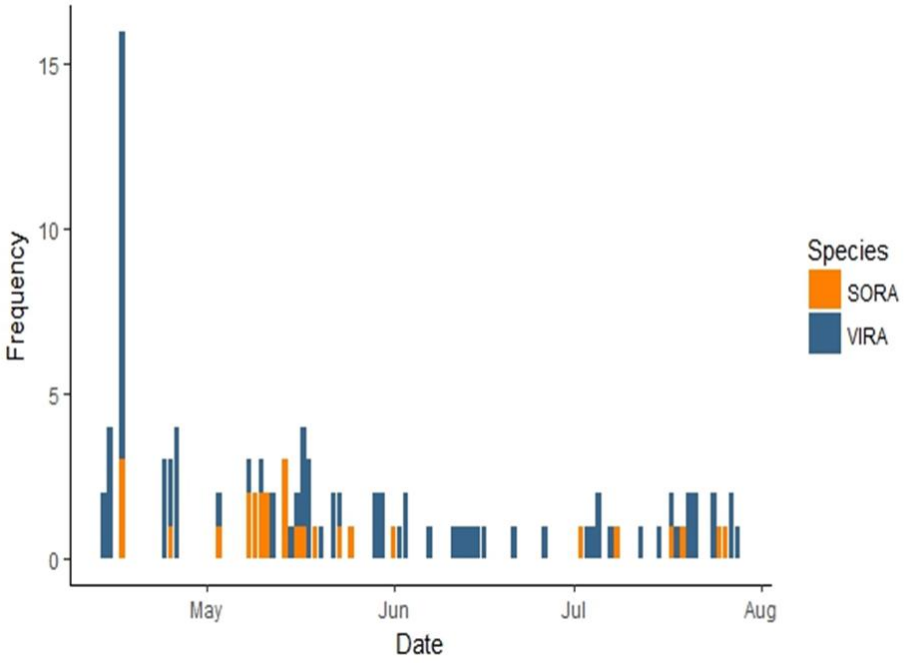

Figure 1. Number of Virginia rails (VIRA) and soras (SORA) captured during 14 April – 28 July 2018 at Winous Point Marsh Conservancy.

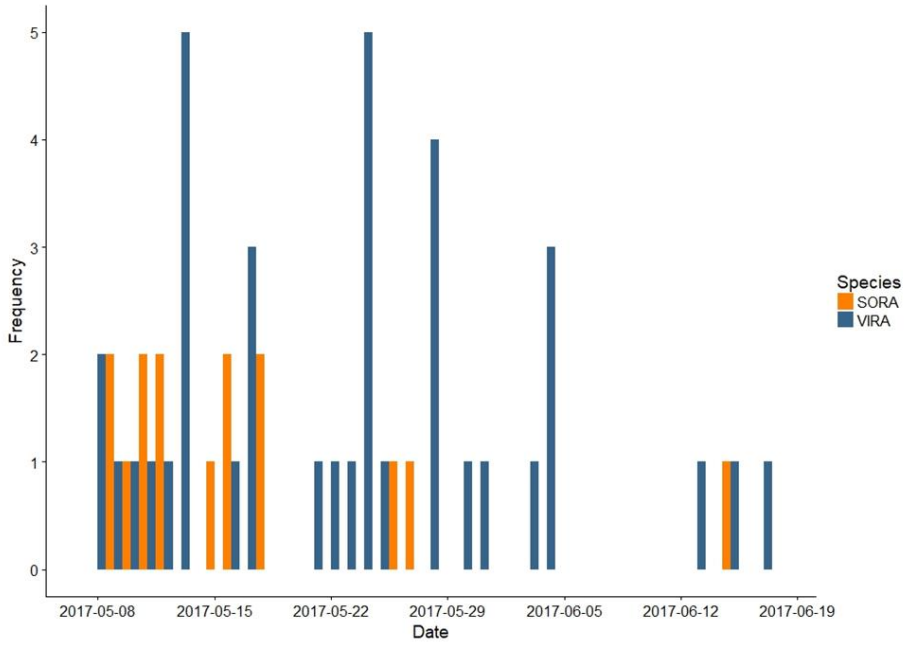

Figure 2. Number of radio-marked soras (SORA) and Virginia rails (VIRA) that departed Winous Point Marsh Conservancy during 7 May – 17 June 2017.

Radio-triangulated locations were gathered on rails to determine their home range size and distribution. Kernel density and minimum convex polygon (MCP) home ranges were estimated for 47 rails (42 Virginia rail and 5 sora). Mean home range size was 3.67 ha (0.40 – 6.67) for soras and 6.51 ha (0.08 - 59.55) for Virginia rails. There was a distinct spatial overlap in home ranges, both within and between species, indicating a possible lack of territoriality (Figure 3). Radio-marked birds were tracked until they departed for fall migration, with the last rails departing Winous point on 10 November. In addition to capturing and tracking rails, we also conducted standardized secretive marsh bird monitoring surveys at 18 paired points. We conducted surveys from two hours before sunset to 30 minutes after sunset on days with no precipitation and winds <19 mph. Surveys consisted of an 11-minute survey period which included a 5-minute passive listening period (no call playback), followed by a 6-minute call-playback sequence. Call playbacks included least bittern (*Ixobrychus exilis*), sora, Virginia rail, king rail (*Rallus elegans*), American bittern (*Botaurus lentiginosus*), and common gallinule (*Gallinula chloropus*). We visited survey points up to three times across seven 2-week survey windows during 7 April – 8 July 2017. A total of 283 detections were recorded: 15 for least bittern, 71 for sora, 108 for Virginia rail, 17 for king rail, 9 for American bittern, and 62 for common gallinule. Detections of soras and Virginia rails peaked in late-April and declined sharply after mid-May. The total number of detections was higher for all species at survey points located within the wetland interior than survey points located on dikes or at the edge of emergent vegetation. The ratio of secretive marsh bird detections between interior and dike-side survey points increased during the latter half of the survey period, which could be attributed to the

reluctance of birds to respond to distant calls from dike-side points during the nesting period, while responding more readily to calls at wetland interior points where calls played at closer distances might introduce a "shock-factor" that elicits vocalizations. Analysis of estimates of abundance and occupancy rates is ongoing.

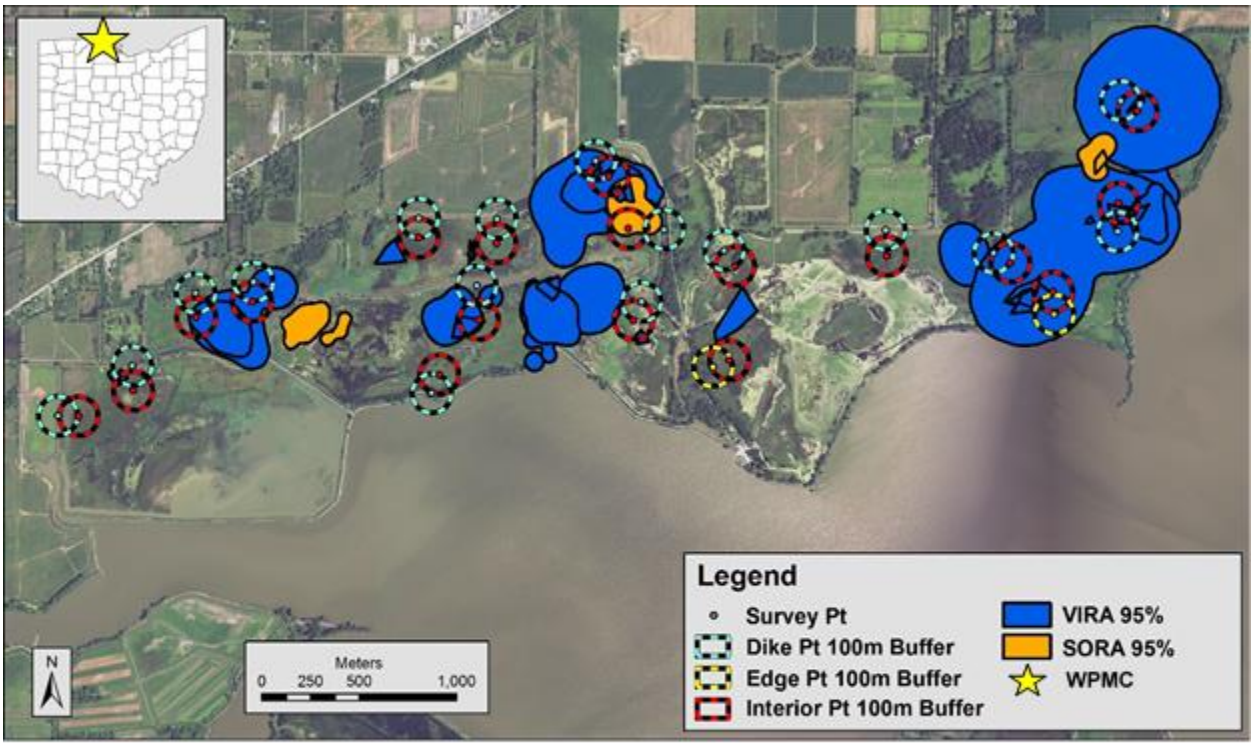

Figure 5. Kernel density and minimum convex polygon (MCP) estimates of home ranges for Virginia rails (VIRA) and soras (SORA) at Winous Point Marsh Conservancy (WPMC) in Ottawa County, OH, during 15 April – 28 August 2017. Also shown are the secretive marsh bird monitoring survey points and their respective 100 m buffers.

Winous Point is a lead investigator on the project, assisting with the proposal development and research implementation. This project is funded by the Ohio Division of Wildlife through the Terrestrial Wildlife Ecology Lab at Ohio State University.

Evaluation of King Rail Trapping Techniques in the Midwestern United States

Investigators: Brendan T. Shirkey, John Simpson, and Michael Picciuto, Winous Point Marsh Conservancy

Collaborators: Tom Kashmer, Sandusky County Park District; Mark Shieldcastle, Black Swamp Bird Observatory; Laura Kearns, Ohio Division of Wildlife; Dr. David Krementz and Auriel Van der Laar Fournier, University of Arkansas; Upper Mississippi/Great Lakes Joint Venture.

Schedule: 2016 - 2020

Introduction: Contrary to the more resident populations of king rails (*Rallus elegans*) breeding in the gulf coast region, the more northerly, migratory population of king rails that breeds in the upper midwest are believed to be quite rare. Due to their limited detectability and secretive nature little is known about these birds. The little information that has been collected suggests king rails have experienced significant population decline in the past 50 years, and consequently have been identified as endangered and species of conservation interest by multiple state and federal agencies. Assumed population declines are unsurprising given that these birds are a wetland dependent species and wetland habitat has experienced some of the most substantial loss and severe degradation of any habitat type in the country.

Local king rail populations are undoubtedly low in the midwest although some uncertainty exists about just how low they are due to the difficulty associated with detecting king rails even when present. The Ohio Division of Wildlife and Winous Point have participated in the standardized secretive marshbird survey since 2011. This survey is conducted by multiple agencies across the midwest to generate trend estimates of secretive marshbird (i.e., rails and bitterns) abundance. However, king rail detections have been rare (only one at Winous Point in seven years) during these standardized surveys.

We developed a pilot king rail research project in the spring of 2014 at Winous Point to evaluate the efficiency of two different trapping techniques, further evaluate the presence or absence of king rails on the property, and to collect habitat use and migratory data with satellite marked birds. The trapping techniques and detection probability phase of this project has been completed and was published in the March 2017 edition of the peer-reviewed journal, *Waterbirds*. However, we are continuing the satellite telemetry data collection and analysis aspect of the project.

Methods: We established between five and thirteen trapping locations annually (2014-2017) within habitat we hypothesized was suitable for king rails (e.g., dense emergent vegetation with shallow or no standing water). We placed a rail trap, predator trap, trail camera, and automated rail-call broadcaster at each site (Shirkey et al. *2017*). Rail calls were broadcast from sunset to sunrise because we hypothesized most king rail activity occurred during this period. Captured king rails were equipped with federal aluminum leg bands and a subset received 9.5 gram solar-powered satellite transmitters from Microwave Technology. We attached transmitters using a simple leg-loop harness. These transmitters store and record data via satellites and that data can then be accessed and queried by Winous Point researchers at any time.

*Figure 1. Trail camera picture of a pair of king rails at the Metzger's walk-in trap (*notice the bird outside the trap is banded, likely a bird captured the day prior).*

Results: We captured two king rails in 2014, six king rails in 2015, four in 2016, and six in 2017 including 2 at Ottawa National Wildlife Refuge. Interestingly, eight of the captures have occurred at the newly restored Metzger's property in Sandusky County. This is an excellent example of the potential benefits of wetland restoration for a state endangered species.

All eighteen king rails were banded with a federal leg band and ten of the birds were equipped with a 9.5 satellite transmitter. Of the ten satellite marked birds, we have sufficient data to investigate summer home-range and habitat preference for ten and wintering home-ranges, habitat preferences, and fall migratory pathways for five individuals. Although this sample size is small, this is the first satellite data ever collected on king rails breeding in the Midwest (Figure 2). Several interesting facts from these birds include the speedy nature of their migration (all 5 birds made it from summer residencies to their coastal wintering locations in <7 days), and the high degree of variability in fall departure dates (ranging from Aug. 20 to Oct. 20).

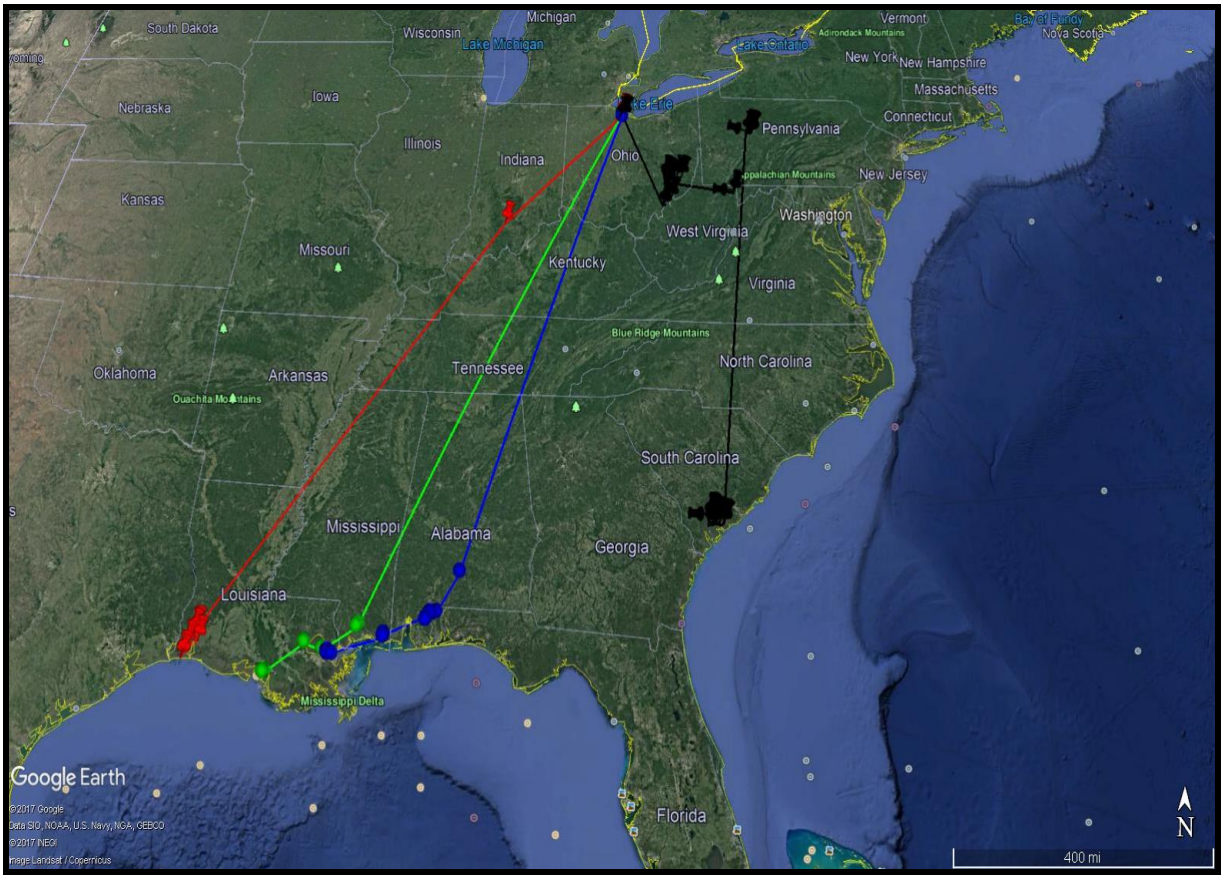

Figure 1. Fall migratory routes of four king rails marked with sateillite transmitters at Winous Point, OH between 2015 and 2017.

Winous Point is a lead investigator on this project, seeking grant funding from a variety of sources, including the Webless Migratory Bird Fund, Ohio Division of Wildlife, and the Upper Mississippi/Great Lakes Joint Venture.

Migration Ecology of a Declining Songbird, the Rusty Blackbird (*Euphagus carolinus*)

Investigators: Jay Wright and Dr. Christopher Tonra, The Ohio State University

Schedule: Fall 2015 – Spring 2017

Summary: One of the most rapidly declining songbirds in North America is the Rusty Blackbird (*Euphagus carolinus*), which has experienced population declines of more than 85% over the last 50 years. Some possible causes of this decline have been identified on the breeding and wintering grounds, but little is known about their behavior and habitat requirements during migration. We attempted to fill this knowledge gap by studying the species during spring and fall migration at a high-traffic stopover site in northern Ohio, on the southwest shore of Lake Erie.

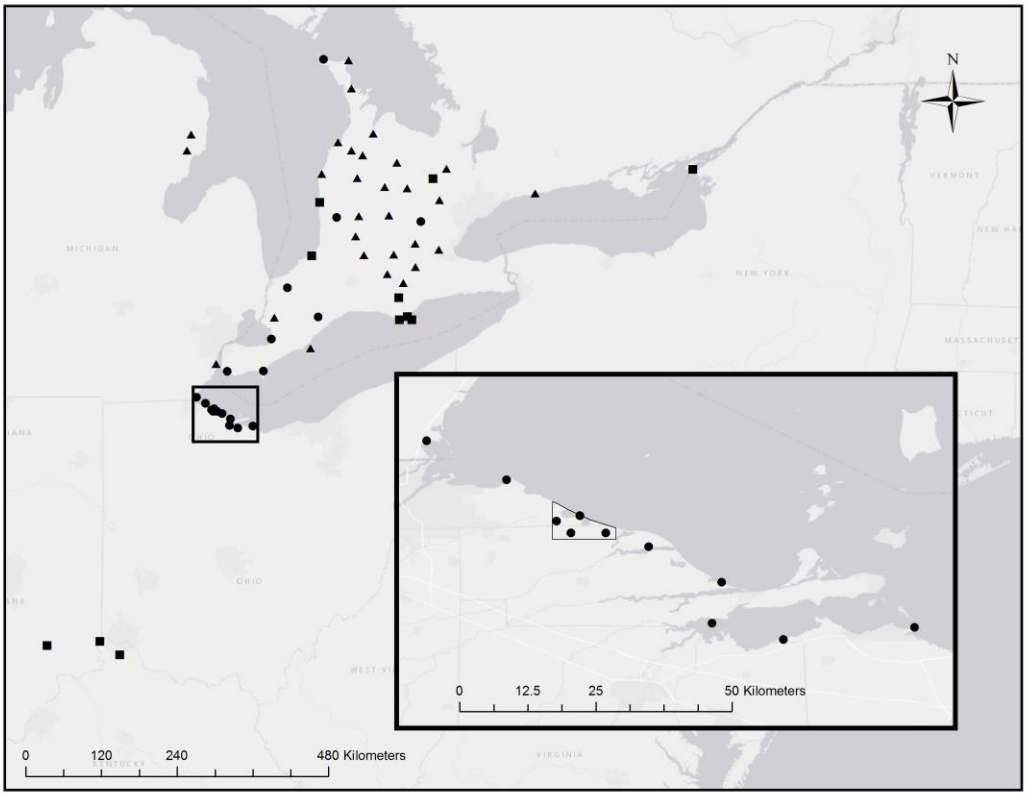

Figure 1. Map of study region and location of automated telemetry towers. Towers with Spring detections of tagged Rusty Blackbirds are triangles; Fall detections are squares; both Spring and Fall detections are circles.

We utilized an automated telemetry tower array (Motus) in the western Lake Erie basin and across Ontario (Figure 1) to track landscape-scale movements of radio-tagged individuals during

and after stopover events. Specifically, we wanted to know how long individuals spent at the study site, since stopover duration is one way to determine how reliant a population is on particular location.

We found that stopover duration of Rusty Blackbirds at our site was unusually long for a songbird, averaging ~25 days during both fall and spring. During the spring, nearly all captured birds (98%) were molting body feathers, which may partly explain the long stopover. Furthermore, many individuals made landscape-scale (10-35km) movements during their stopover event. Taken together, these behaviors describe a migration strategy that closely resembles shorebird migration strategies, where birds congregate to forage for several weeks at a few key staging areas. This indicates that high-quality stopover habitat may be critically important to Rusty Blackbird populations.

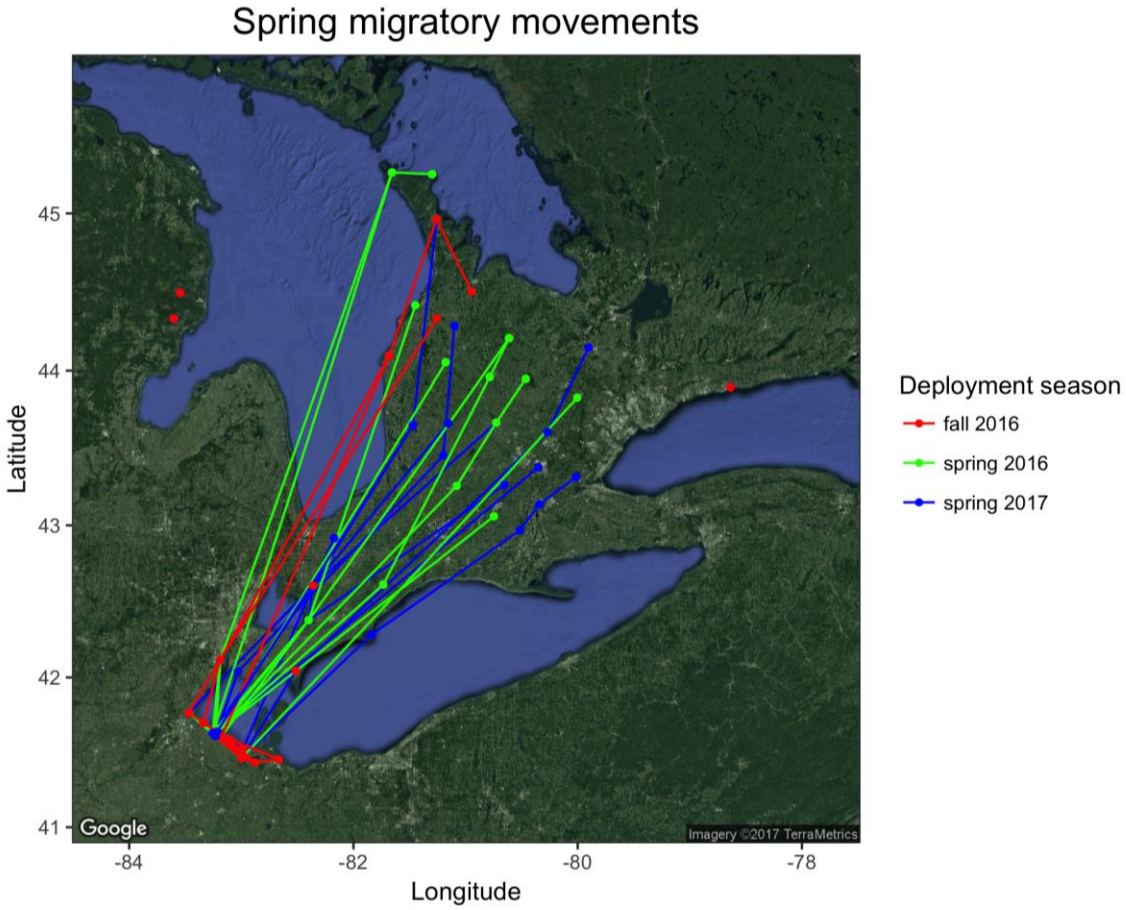

Figure 2. All spring migratory movements of tagged Rusty Blackbirds after departure from study region, detected by Motus array telemetry towers.

We also found that departure decisions were largely determined by favorable tailwind conditions, and birds made nocturnal migratory flights that exceeded 400km (relatively long flights for a passerine; Figure 2). This is the first time nocturnal migration has been described in this species, which could present a future risk to the population if offshore wind turbines are established in Lake Erie.

In addition to our study of movement behavior, we investigated Rusty Blackbird fine-scale habitat preferences at stopover sites. We tracked radio-tagged individuals by hand to locate foraging flocks, and we compared habitat characteristics at foraging locations to random locations. Rusty Blackbirds selected microhabitat with shallow water and leaf litter, often avoiding grass, forbs, and herbaceous shrub cover. Outside of forest patches, they preferred areas closer to habitat edges and with some canopy cover, as well as areas with a mixture of different habitat types. Our description of Rusty Blackbird stopover habitat use and behavior will help inform conservation and management practices across the species' migratory range.

Figure 3. Graduate student Jay Wright holds a Rusty Blackbird after banding and attaching nanotag for tracking.

Winous Point contributed to this project by providing housing for students and field technicians, logistical support, and tower placement. The telemetry tower at Winous Point provided valuable data in detecting Rusty Blackbirds that had left the primary study site and relocated to the Winous Point marsh area, as well as numerous detections of nocturnally migrating individuals.

Developing a Correction Factor for Sora and Virginia Rail Response rates to Call-Playback Surveys

Investigators: Brendan Shirkey Research Coordinator Winous Point Marsh Conservancy, Mike Picciuto Research Technician Winous Point Marsh Conservancy, and John Simpson Executive Director Winous Point Marsh Conservancy

Collaborators: Upper Mississippi River Great Lakes Joint Venture, Ohio State University, and Ohio Division of Wildlife

Introduction: The Winous Point Marsh Conservancy (WPMC) has participated in the Ohio Division of Wildlife's standardized secretive marshbird monitoring surveys since 2011. These standardized surveys were originally designed to provide state and regional managers population trend information for a suite of marshbirds that we know very little about due to their secretive nature and preference for dense emergent vegetation. In Ohio, these surveys target American bittern (*Botaurus lentiginosus*), least bittern (*Ixobrychus exilils*), sora (*Porzana carolina*, Virginia rail (*Ralllus limicola*), and king rail (*Rallus elegans*). Surveys consist of approximately 10 survey points per survey route (3 routes at WPMC) with 5 minutes of passive listening at each point followed by 5 minutes of broadcasted marshbird calls designed to illicit vocal responses from target species in the area.

The scientific theory outlined in the standardized secretive marshbird monitoring protocol (Conway 2011) is that auditory detections and distances to these observations could be used to generate distance sampling-based estimates (Buckland 2001) of marshbird abundance. However, since these observations are auditory rather than visual there is much uncertainty surrounding the first and most fundamental assumption of distance sampling, that detection immediately adjacent to the survey point is 1.0. For example, if a king rail standing 1 m away from the observer never calls during the survey window it is highly unlikely the observer will detect that bird. Consequently, we began a pilot project in 2017 funded by the Upper Mississippi River/Great Lakes Region Joint Venture to test response rates of sora and Virginia rails to broadcast-call surveys.

Methods: We developed a protocol using radio marked rails (courtesy of Ohio State graduate students Jim Hansen and Nicole Hengst, see page 31) and the standardized secretive marshbird survey to test the response rate of sora and Virginia rail at distances where the detection probability of the observer hearing the rail's call is assumed to be 1.0 (we are still experimenting to determine an estimate for this distance although some preliminary data exploration suggests <30 m). We tracked individuals using handheld radio receivers and then approached that individual to the closest distance possible without alarming the rail. Then, we began a standardized secretive marshbird survey while periodically checking the radio signal to ensure

the marked birded was still in approximately the same location. We recorded whether the marked individual responded along with the response of any other non-marked secretive marshbirds. Upon completing the survey, we then circled the radio marked individual taking a second bearing on the radio signal at approximately a 90-degree angle to confirm the bird's location and estimate the distance from where the survey was conducted to the bird using a laser range finder. A variety of variables were also recorded (e.g., wind speed, temperature, date, precipitation, cloud cover) that we plan to test for their potential influence on rail response rates.

Figure 1. Pair of Virginia rails captured at Winous Point during spring banding.

Results: We conducted 61 experimental correction factor surveys (*n = 27 individuals*) from April 20, 2017 to June 15, 2017. Due to the availability of radio marked birds, the majority of surveys were conducted on Virginia rails (*n* = 55) and for the purposes of this report the results are based on Virginia rail trials only. The average distance we were able to approach radio-marked birds to was 16.3 m and we found rails responded 51.9% of the time within the standardized secretive marshbird survey window. We also found that rail response rates did not change significantly during the survey period (mid-April to mid-June, Figure 2). Of the birds that did respond 25 of 28 individuals (89.3%) responded only during the call-playback portion of the survey and not during the passive listening period.

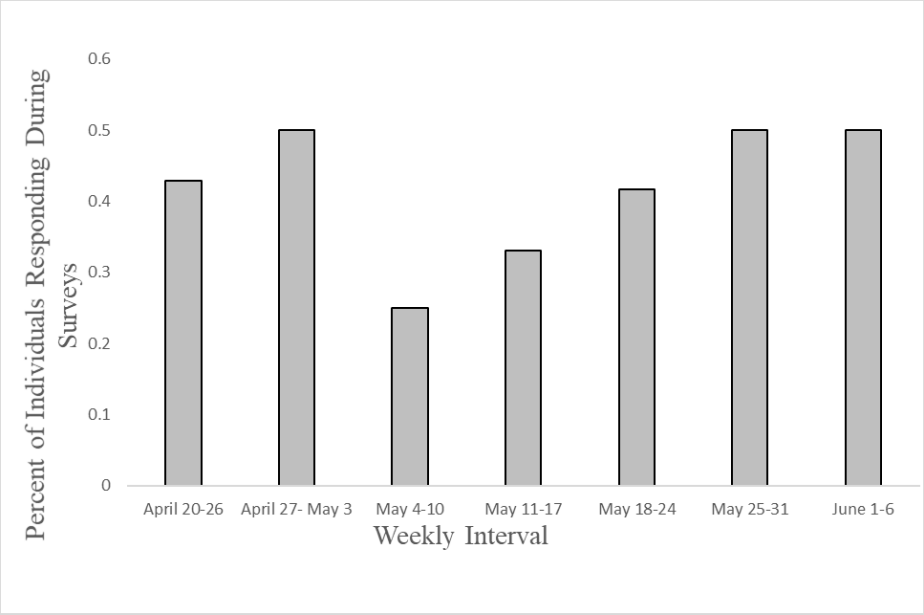

Figure 2. Percent of radio-marked Virginia rails responding to a standardized secretive marshbird survey conducted at <30m by weekly intervals.

Discussion: The scope of the 2017 correction factor surveys was limited as we were focused on testing the efficacy of our field work techniques. As one can imagine, approaching a rail in the field quietly and to extremely close ranges can present many challenges, as can estimating distances using auditory cues and radio telemetry equipment. We do believe we have established an effective field methodology, and moving forward in 2018, we plan to increase sample size substantially, obtain enough data to explore sora response rates, and test the potential impacts of additional variables (e.g. wind speed or percent cloud cover) on rail response rates. Preliminary findings could already have significant implications for those considering using standardized secretive marshbird survey data to generate abundance estimates as it appears rail response rates are only ~50% (thus estimates would be biased low) even when rails are at extremely close distances to the observer. Furthermore, rail response rates do not appear to vary significantly through time as some researchers have hypothesized that declines in rail detections during later periods of the standardized secretive marshbird survey windows might be because rails are less vocal that time of year. Our findings are obviously limited to one year's worth of data and are only applicable here at Winous, but we hope to lay the foundation for additional research that could be used to improve marshbird monitoring throughout the region.

Winous Point initiated this research project and has collaborated with the Upper Mississippi River Great Lakes Joint Venture, Ohio State University, and Ohio Division of Wildlife on this project.

Additional Research and Education Programs Supported by WPMC in 2017

In addition to the projects detailed above, Winous Point annually supports a variety of projects with partners who initiate the project and utilize Winous Point as a study area or for logistical support. While these projects are not directly initiated by WPMC, they are nonetheless important to conservation in northwest Ohio and help WPMC attain program objectives.

- In 2017 the WPMC assisted and international collaboration in conducting surveys for invasive grass carp in Muddy Creek Bay and Sandusky River. Agencies involved included the Canadian Department of Fisheries and Oceans, U.S. Geological Survey, U.S. Fish and Wildlife Service, Michigan Department of Natural Resources. This survey effort was designed to sample for larval grass carp to quantify successful reproduction of this invasive species within the river.

- For the seventh consecutive year USDA Ohio Wildlife Services conducted trapping efforts as part of an integrated approach to managing meso-predator populations, mainly raccoons (*Procyon lotor*), in northwest Ohio. The focus of the project is on increasing the nesting success and enhancing the survival rate of the state-listed threatened Blanding's turtles (*Emydoidea blandingii*) and spotted turtles (*Clemmys guttata*). WPMC acts as a study area and logistic hub for housing and storage for this Great Lakes Restoration Initiative funded project.

- Winous Point and the Black Swamp Bird Observatory work together each year to support their respective research and conservation programs. BSBO is directly or indirectly involved with many of the bird banding and education projects conducted annually at Winous Point. Winous Point supplies housing for BSBO seasonal banding staff and conducts three private lands birding tours each year in support of BSBO programs.

- Winous Point partnered this year with the Green Creek Wildlife society to upgrade out Purple Martins nesting colonies. We received a grant from the Ohio Division of Wildlife to purchase 5 new purple martin nesting houses to replace 4 old structures. We also received funds to assign with hosting several landowner workshops aimed at training other interested landowners and to aid with a monitoring program for our colony. Winous Point has had an active purple martin nesting program since at least the 1950's.

- We also participated in a number of educational programs this past year. For the sixth year in a row we hosted "A Day on the Wild Side" which is a youth outdoor education program targeted at middle-school age students. Activities include shooting and fishing, wetlands education, and bird research. We also participated in the "Land Stewardship Workshop" this past summer. This program is targeted at high-school seniors interested

in conservation careers. The theme was forestry this summer and students spent a full day at Winous in the classroom and within our wetland woodlots. Both programs are organized by the Ottawa Soil and Water Conservation District. Lastly, our staff assisted with instructing at the "Waterfowlers of Tomorrow" event held at Ottawa National Wildlife Refuge each fall. This event focuses on waterfowl hunting and includes a mentored hunt after the day-long sessions.

2017 WPMC Activities and Presentations

January	Upper Mississippi Great Lakes Joint Venture science meetings, Peoria, IL
January	Presented at Ohio Fish and Wildlife Management Association Conference, Columbus, OH
February	Great Lakes Phragmites Conference, Ann Arbor, MI
February	Presented at Ohio Invasive Plant Council Annual Meeting, Columbus, OH
March	Supported the Ottawa County Pheasants Forever Banquet
March	Presented at Ottawa Soil and Water Conservation District "Ag Breakfast"
March	Judged Ohio Junior Duck Stamp Competition, Strongsville, OH
April	Presented at Bataan Elementary Science Classes, Port Clinton, OH
April	Hosted and presented Lake Erie Marsh Owners Annual Winter Meeting
April	Hosted Ohio Decoy Collectors annual meeting
May	Hosted WPMC Annual Meeting
May	Black Swamp Bird Observatory birdwatching tours (3)
May	Attended "Nature Based Shorelines", Huron, OH
June	Assisted with Land Stewardship Workshop, Oak Harbor, OH
June	Hosted Ohio Division of Wildlife Banding training session
July	Hosted the Sea Duck Joint Venture Great Lakes Information workshop
July	Hosted "Day on the Wild Side" youth outdoor education event
July/August	Sandusky County Park District shorebird tours (4)
August	Attended American Ornithological Association Conference, Lansing, MI
August	Presented to Ohio Bird Banding Association, Oak Harbor, OH
August	Attended Mississippi Flyway Technical Council meetings, Traverse City, MI
September	Hosted Ohio State University Wildlife Management Class for 25 students

September	Attended “Restoring Great Lakes Coastal Wetlands” workshop, Ann Arbor, MI
September	Hosted Ohio Young Birders Club field trip and tour
September	Presented for Garden Club of America’s Conservation Retreat, Catawba, OH
October	Attended USFWS Partners for Fish and Wildlife Anniversary, Oak Harbor, OH
October	Presented at Ottawa National Wildlife Refuge “Youth Waterfowlers of Tomorrow”; Oak Harbor, OH
November	Hosted Ottawa County Improvement Association meeting and conservation tour