DEVELOPMENT OF A CITIZEN-SCIENCE PROGRAM IN MICHIGAN TO FURTHER COORDINATED BIRD MONITORING IN THE UPPER MIDWEST

YEAR ONE PROGRESS REPORT

Submitted to:

Steve Lewis
U.S. Fish and Wildlife Service
Division of Migratory Birds
1 Federal Drive
Fort Snelling, MN 55111

Prepared by:

Michael J. Monfils
David L. Cuthrell
Michigan Natural Features Inventory
Michigan State University Extension
P.O. Box 30444
Lansing, MI 48909-7944

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MiBCI Michigan Bird Conservation Initiative

Michigan Natural Features Inventory

MICHIGAN STATE UNIVERSITY EXTENSION

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INTRODUCTION

The need to improve monitoring of species not adequately surveyed by the North American Breeding Bird Survey (BBS), such as marsh and nocturnal birds, is well recognized (Bart et al. 2004, Rich et al. 2004). We need improved survey data to better estimate and track populations over time and inform conservation planning, implementation, and assessment. The U.S. Fish and Wildlife Service (USFWS) identified the monitoring of under-represented species, including marsh and nocturnal birds, as a priority for the upper Midwest. Although survey data are often lacking, several under-surveyed species appear to be declining, including King Rail (*Rallus elegans*), Whip-poor-will (*Caprimulgus vociferus*), and Common Nighthawk (*Chordeiles minor*) (Cooper 2008, Poulin et al. 1996, Cink 2002, North American Bird Conservation Initiative 2009). Yellow Rail (*Coturnicops noveboracensis*) and King Rail are focal species of the waterbird habitat conservation strategy for the Upper Mississippi River and Great Lakes Region Joint Venture (hereafter Joint Venture; Soulliere et al. 2007). Potter et al. (2007) identified Whip-poor-will as a focal species for landbird habitat conservation in the Joint Venture and noted the BBS may not adequately assess Whip-poor-will populations. Several marsh and nocturnal bird species have been identified as species of greatest conservation need in state wildlife action plans within the region (D. J. Case and Associates 2005, Eagle et al. 2005, Illinois Department of Natural Resources [DNR] 2005, Wisconsin DNR 2005, Ohio DNR 2006).

Standardized survey protocols have been developed for marsh birds (Conway 2009), nightjars (Hunt 2007, U.S. Nightjar Survey Network 2009), and owls (Takats et al. 2001), but implementation has been sporadic due to lack of funding, personnel constraints, and differing priorities among agencies and organizations. Marsh bird monitoring has not been implemented on a national basis, but pilot studies are ongoing in several states, including Wisconsin. Nocturnal bird surveys have been underway for several years in some states and provinces, including Minnesota, Wisconsin, and Illinois, while other Midwestern states conducted or plan to conduct surveys in support of breeding bird atlas projects (Monfils 2006, Barton 2007, A. Boone, Ohio Division of Wildlife, personal communication). Long-term, coordinated surveys for priority species are needed in the upper Midwest to assist the conservation of birds at the regional scale. With support from the USFWS, the Michigan Bird Conservation Initiative (MiBCI) began volunteer-based marsh and nocturnal bird programs in 2010 that complement ongoing state and national programs in the region.

METHODS

Marsh Birds

The sample frame used for the Michigan Marsh Bird Survey was developed by USFWS staff. Primary sample units (PSUs) and survey point locations (i.e., secondary sample units [SSUs]) were selected randomly within emergent wetlands using generalized random tessellation stratification (GRTS). Survey points (SSUs) were at least 400 m apart. Johnson et al. (2009) described the sample design framework being used for the national marsh bird survey in detail.

We conducted marsh bird surveys using the methods described by Conway (2009).
A complete round of surveys consisted of three visits to each point. In southern Michigan, surveys were conducted during the following three periods (Figure 1): May 1-14, May 15-31,

and June 1-15. Northern Michigan surveys began later and occurred during May 15-31, June 1-14, and June 15-30. Marsh birds were surveyed during the morning (0.5 hr before to three hr after sunrise) or evening (two hr before to 0.5 hr after sunset). We conducted 10-min point counts consisting of a five-min passive period followed by one-min broadcast periods for primary target species. At southern Michigan sites, we broadcasted calls of American Bittern (*Botaurus lentiginosus*), Least Bittern (*Ixobrychus exilis*), King Rail (*Rallus elegans*), Virginia Rail (*Rallus limicola*), and Sora (*Porzana carolina*). Calls of American Bittern, Least Bittern, Yellow Rail (*Coturnicops noveboracensis*), Virginia Rail, and Sora were broadcasted at northern Michigan points. We recorded the minute during which individual birds were detected and estimated the distance to each marsh bird when first observed.

Figure 1. Map showing the boundary used to separate southern and northern Michigan marsh bird surveys.

Nightjars

We used a nightjar survey methodology consistent with those of similar efforts within the upper Midwest (e.g., Wisconsin, Illinois) and other regions of the U.S. (Hunt 2007, U.S. Nightjar Survey Network 2009). We conducted surveys along existing BBS routes and situated ten survey stations at one-mile intervals along each route. While other nightjar surveys require only one survey per season (Hunt 2007, R. Brady, Wisconsin DNR, personal communication, U.S. Nightjar Survey Network 2009), we asked volunteers to survey routes twice during the breeding season. Having two survey periods permits the estimation of detection probabilities, increases the likelihood of detecting target species, and accommodates potentially different breeding phenologies of the target species. Surveys were done during nights with at least 50% moon illumination above the horizon and low (≤50%) cloud cover (Hunt 2007), which are conditions during which Whip-poor-wills are known to increase activity (Wilson and Watts 2006). Volunteers conducted surveys during two periods, May 20 to June 4 and June 19 to July 4, to coincide with favorable moon phases. We visited each station for six minutes between 30 min after sunset and 15 min before sunrise. We recorded the number of nightjars observed independently during each minute of the survey to allow estimation of detection and occupancy probabilities (Mackenzie et al. 2006). Volunteers were encouraged to take notes on owls encountered during nightjar surveys in preparation for next year (2011) when volunteers will be required to collect owl data, which is consistent with the protocol being used in Wisconsin (R. Brady, Wisconsin DNR, personal communication).

RESULTS AND DISCUSSION

Progress toward Objectives

Below we provide details on our accomplishments toward our stated project objectives (in italics). We met or exceeded all of our year one objectives.

1. *Initiate a pilot marsh bird survey in Michigan that would provide data for national-level analysis of marsh bird populations.*
   a. *Coordinate with federal and regional partners working to implement continental marsh bird pilot surveys.*
   b. *Prepare training (i.e., protocols) and support (e.g., maps) materials needed for surveys and make them available on the MiBCI website.*
   c. *Recruit and train a minimum of 10 volunteers to conduct marsh bird surveys.*
   d. *Conduct surveys on a minimum of 10 primary sample units using volunteers, which includes the collection, quality assurance review, and submission of data to the national database.*

We worked closely with national, regional, and State partners to begin the Michigan Marsh Bird Survey. We coordinated with Mark Seamans (USFWS, Patuxent Wildlife Research Center) in the development of Michigan's sample frame. We communicated regularly with Ryan Brady (Wisconsin Department of Natural Resources) to ensure our survey protocols, target species, and ground truthing methods were compatible. A survey protocol, data forms, and training materials were prepared and provided on a new Michigan Marsh Bird Survey web page (http://www.mibci.org/index.php?id=233). We developed a training workshop for volunteers and offered it twice during the Michigan Ornithological Congress. More than 40 people participated in the workshops and 16 signed up to conduct surveys. We also posted the training slideshow on the web site for volunteers to access as needed.

We used several means to recruit volunteers for the survey. A flyer advertising the program and training workshop was developed and posted to the web site. We also emailed the flyer to several MiBCI member agencies and organizations, which included all personnel within the Wildlife Division of the Michigan Department of Natural Resources and Environment. We provided a brief presentation on the survey at the Greenserve Conference held at Michigan State University during Agriculture and Natural Resources Week. The theme for the conference was "Building Michigan's Future through Conservation Volunteerism." We also advertised the program in an article in Michigan Audubon's bimonthly *Jack-pine Warbler* magazine.

The identification of suitable primary and secondary sample units requires substantial in-office and on-the-ground work. Because the identification of suitable sample sites has not been fully standardized among pilot states, we developed a set of guidelines to be used when conducting in-office and on-site review of potential survey locations. We provided these guidelines to other regional and national partners and continue to work closely with them to help develop a set of ground truthing methods that could be used consistently across the country. In 2010, we focused sampling on public lands to reduce the time required to develop suitable routes. We reviewed 25 PSUs using a GIS and recent aerial photography and eliminated four PSUs based on inappropriate habitat and/or access limitations. We conducted on-site ground truthing at 21

PSUs, of which 15 were deemed suitable for surveys. We assigned volunteers to suitable PSUs and provided them maps, aerial photographs, and latitude/longitude coordinates for sample points. Eleven volunteers conducted surveys on 11 of the 15 PSUs. Two additional volunteers were each assigned a PSU, but they were unable to complete surveys. We compiled and reviewed all data and are currently adding them to the National Marsh Bird Database.

2. *Develop and implement a Michigan nightbird survey that informs large-scale conservation efforts.*
   a. *Coordinate with the Midwest Nightbird Monitoring Partnership to ensure the use of standardized protocols that further regional and national monitoring efforts.*
   b. *Prepare training (i.e., protocols) and support (e.g., maps) materials needed for surveys and make them available on the MiBCI website.*
   c. *Recruit and train a minimum of 15 volunteers to conduct nocturnal bird surveys.*
   d. *Conduct surveys on a minimum of 15 survey routes using volunteers, which includes the collection, quality assurance review, and submission of data to regional and/or national databases.*

We coordinated with the Midwest Nightbird Monitoring Partnership in developing the Michigan Nightjar Survey. We worked closely with Ryan Brady (Wisconsin Department of Natural Resources) to ensure our survey protocols were consistent. We communicated with Katie Koch (USFWS, Midwest Bird Monitoring Coordinator) and Mike Wilson (U.S. Nightjar Survey Network) in an effort to avoid duplication of effort between the Michigan and national surveys. A survey protocol, data forms, and training materials were prepared and provided on a new Michigan Nightjar Survey web page (http://www.mibci.org/index.php?id=234). We developed a training workshop for volunteers and offered it twice during the Michigan Ornithological Congress. Over 40 people participated in the workshops and 23 signed up to conduct nightjar surveys. We posted the training slideshow on the web site for volunteers to access.

We prepared a flyer advertising the program and training workshop and posted it on the web site. We emailed the flyer to several MiBCI member agencies and organizations, including the Wildlife Division of the Michigan Department of Natural Resources and Environment. We provided a brief presentation on the survey at MSU's Greenserve Conference, and advertised the program in an article in Michigan Audubon's *Jack-pine Warbler*.

We developed GoogleEarth files indicating the locations of available survey routes and posted them to our website. We provided topographic maps and aerial photos indicating route locations and stops to all volunteers. We received data from 19 volunteers who completed surveys on 27 survey routes in 2010, of which 18 were in the Lower Peninsula and 9 in the Upper Peninsula. All submitted data was reviewed and we created a spreadsheet based on the database being used by Wisconsin. We plan to make our data available on the Midwest node of the Avian Knowledge Network.

In addition to the standardized route surveys, we developed a casual observation form (see Appendix A) to document casual observations of nightjars and owls. We posted the form on our website and requested that volunteers submit information on their observations via email or

eBird. By gathering data on casual observations, we hope to augment information gathered during road surveys to better understand the distribution of nocturnal birds in Michigan.

3) *Evaluate usefulness of program materials and the potential for continued participation in future bird monitoring using a brief survey submitted to volunteers.*

We developed a brief online survey for both bird monitoring programs (see Appendix B for survey questions) to examine the usefulness of program materials (e.g., protocol documents, data forms), training workshops, and websites, identify ways to improve the surveys, evaluate the likelihood of continued volunteer participation in these programs, and gauge interest in the new owl survey beginning in 2011 and other possible future surveys. We had 12 respondents to the nightjar volunteer survey and seven respondents to the marsh bird volunteer survey. We will be examining the results of the surveys in detail as we prepare for future training workshops. Eighty percent or more of the marsh bird volunteers and at least 75% of the nightjar volunteers ranked the quality of each of our program materials as "good" or "excellent," which included the survey protocols, training materials and workshops, web sites, site maps, and data forms. Nearly all of the respondents "agreed" or "strongly agreed" that the survey coordinators provided them adequate assistance and that they received adequate training and supporting materials. Based on the results of the surveys and our review of the 2010 data forms, we will be able to tailor future training activities to meet the needs of our volunteers. For example, we will reiterate with volunteers the importance of completing all surveys (i.e., three marsh bird and two nightjar surveys). We also will stress the importance of volunteers communicating with the survey coordinators if they are unable to complete their surveys, so that other volunteers can be identified to cover their assigned route. Eighty six percent of the marsh bird and 100% of nightjar volunteers ranked the likelihood that they would continue participating in the surveys as "likely" or "definite." Seventy one percent of the marsh bird volunteers and 83% of nightjar volunteers ranked the likelihood that they would participate in future owl surveys as "likely" or "definite."

4) *Assist regional partners in the development of a regional database for bird monitoring data.*

We have been coordinating with partners within the region to ensure that we are collecting and compiling data in a manner consistent with other state, regional, and national efforts. Marsh bird data are being inputted into the National Marsh Bird Database. We compiled nightjar survey data using the same spreadsheet format used by Wisconsin, which will facilitate later merging of data sets. The Midwest Nightbird Monitoring Partnership has been discussing how to handle nocturnal bird data at the regional level. We also offered to share our nightjar data with the U.S. Nightjar Survey Network. We have had discussions with Katie Koch and other partners about making our survey data available on the new Midwest node of the Avian Knowledge Network. We will continue coordinating with others in the region to ensure our data further regional monitoring of priority bird species.

Summary of Survey Results

Marsh Birds – Volunteers completed marsh bird surveys on 11 PSUs in 2010, of which six were surveyed during all three periods, two were surveyed twice, and three were surveyed only once.

A total of 132 point counts was conducted. Five primary and six secondary species were recorded during surveys (Table 1). American Bittern and Pied-billed Grebe (*Podilymbus podiceps*) were the most abundant primary species observed, with 23 individuals recorded for each species. Virginia Rail was the next most common primary species detected, followed by Sora and Wilson's Snipe (*Gallinago delicata*). The overall proportion of points with each primary species present ranged from 0.13 for Pied-billed Grebe to 0.03 for Sora (Table 1). Swamp Sparrow (*Melospiza georgiana*) was the most common secondary species observed and the most abundant species overall. Marsh Wren (*Cistothorus palustris*) was the second most common secondary species recorded, with Sandhill Crane (*Grus canadensis*) and Sedge Wren (*Cistothorus platensis*) being the third and fourth most abundant secondary species observed, respectively. The proportion of points with each secondary species detected ranged from 0.39 for Swamp Sparrow to 0.03 for Forster's Tern (Table 1).

Table 1. Number of individuals observed and proportion of points occupied (in parentheses) by species and survey period during marsh bird surveys conducted in Michigan in 2010.

	Survey 1 (n = 40)		Survey 2 (n = 44)		Survey 3 (n = 48)		Total (n = 132)	
Primary Species								
American Bittern	0	(0.00)	12	(0.16)	11	(0.10)	23	(0.09)
Pied-billed Grebe	0	(0.00)	18	(0.27)	5	(0.10)	23	(0.13)
Sora	1	(0.03)	4	(0.07)	0	(0.00)	5	(0.03)
Virginia Rail	1	(0.03)	8	(0.14)	2	(0.02)	11	(0.06)
Wilson's Snipe	1	(0.03)	1	(0.02)	3	(0.06)	5	(0.04)
Secondary Species								
Black Tern	0	(0.00)	8	(0.07)	5	(0.06)	13	(0.05)
Forster's Tern	0	(0.00)	2	(0.05)	3	(0.04)	5	(0.03)
Marsh Wren	0	(0.00)	24	(0.11)	39	(0.15)	63	(0.09)
Sandhill Crane	22	(0.33)	16	(0.27)	9	(0.13)	47	(0.23)
Sedge Wren	16	(0.20)	13	(0.18)	12	(0.15)	41	(0.17)
Swamp Sparrow	32	(0.48)	36	(0.39)	33	(0.33)	101	(0.39)

Nightjars – A total of 19 volunteers completed nightjar surveys and submitted data forms for 27 nightjar routes in 2010. All three species of nightjars were detected during 2010 surveys (Table 2). There was only a single observation of Chuck-wills-widow from a southern Michigan route during the first survey; therefore, it was not included in the summary table. The survey detection rates for Whip-poor-will (2.76 birds/route in survey period 1 and 2.08 birds/route in survey period 2) were very similar to the rates recorded for Wisconsin during 2008 and 2009 (Brady 2009). All of the Whip-poor-will observations occurred in northern Michigan (Figures 2 and 3). These data will provide Michigan with a baseline dataset for monitoring this species into the future.

Common Nighthawk detection rates decreased between the first (1.00 birds/route) and second (0.33 birds/route) survey periods in 2010. This may be explained by picking up more birds in

the first survey period as birds were still migrating northward. Additional years of survey will help clarify migration as well as distributional questions for this species. In Michigan, as is the case in other states, flat rooftops in towns and cities provide nesting habitat for Common Nighthawks. We will continue to discuss with our partner states a strategy to survey in these areas to better document distributions and population levels for this species.

Table 2. Summary of results for the Michigan Nightjar Survey 2010.

	Whip-poor-will Survey 1	Whip-poor-will Survey 2	Common Nighthawk Survey 1	Common Nighthawk Survey 2
# of routes surveyed	25	24	25	24
# of birds detected	69	51	25	8
# of birds/route	2.76	2.08	1.00	0.33
# of routes w/ target	9	7	12	6
# of birds/route w/ target	7.67	7.29	2.08	0.75
# of routes with 0 birds	16	17	13	18
# of routes with 1-5 birds	4	2	11	6
# of routes with 6-10 birds	3	4	1	0
# of routes with > 10 birds	2	2	0	0

PLANS FOR YEAR TWO

In year two of this project, we will expand the marsh bird and nightjar surveys and begin an owl survey program.

Marsh Bird Survey

Some of the PSUs surveyed in 2010 occurred on marginal marsh bird habitat. We plan to evaluate whether surveys should be continued at these sites in 2011. If needed, we will replace marginal routes with other PSUs ground truthed in 2010. We will also add approximately 4-5 new PSUs, bringing the total number to 15. We have been and plan to continue actively pursuing other funding sources to further expand the marsh bird survey and continue the program after this project ends. As funding and time permits, we will investigate adding a subsample of PSUs on private lands.

Nightjar Survey

In 2011, we plan to survey the 27 survey routes covered in 2010, as well as an additional 5-10 routes. We will be attempting to recruit volunteers to cover routes in the eastern UP and in the southern lower peninsula along the eastern and western sides of the state where survey gaps remain. We will continue discussions and coordination with the Midwest Nightbird Monitoring Partnership about potential changes to sample design (e.g., stratify sample effort based on habitat). We will also work with the Midwest Nightbird Partnership to develop a consistent means of managing data for nocturnal birds on the Midwest node of the Avian Knowledge Network.

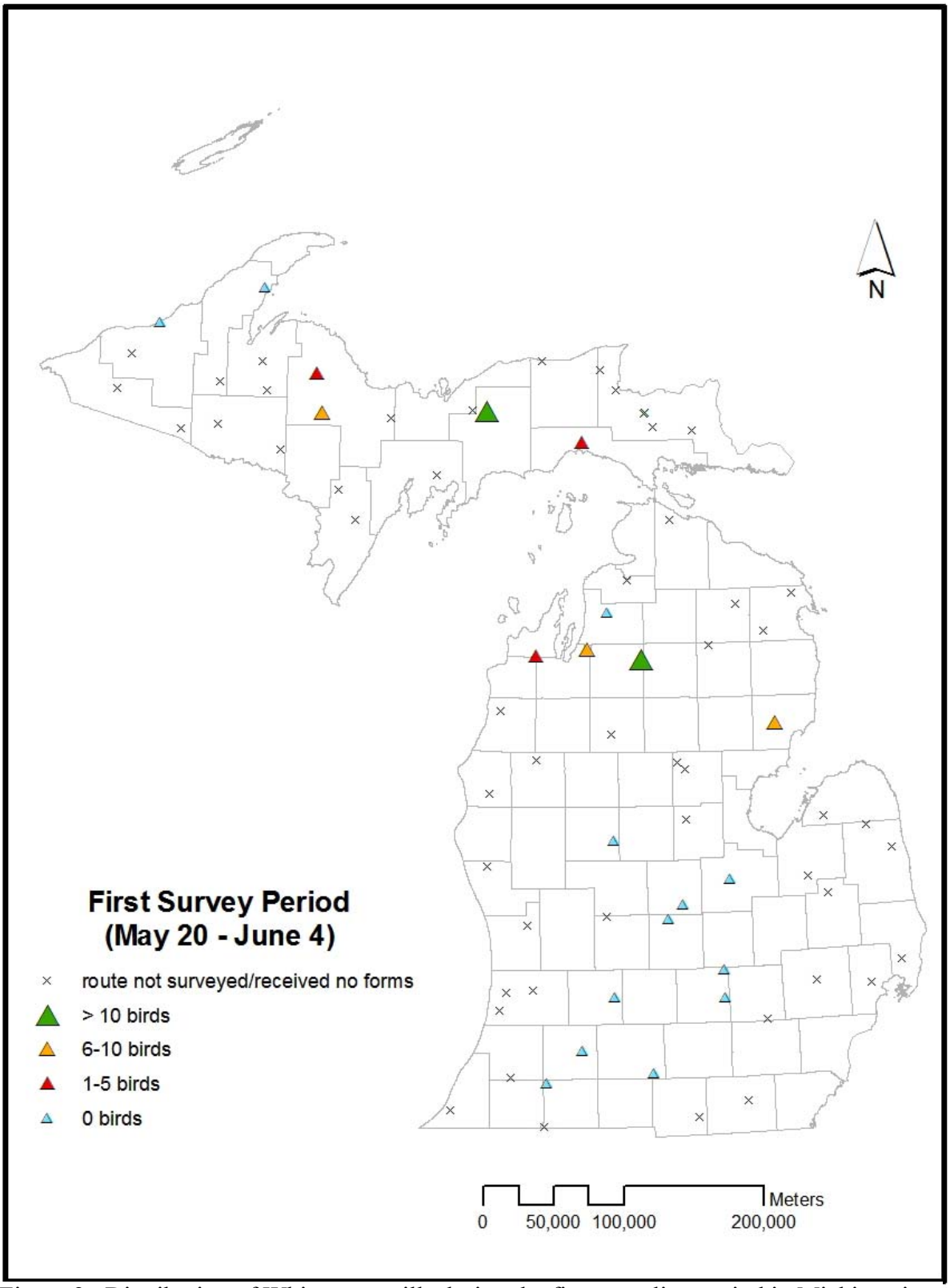

Figure 2. Distribution of Whip-poor-wills during the first sampling period in Michigan in 2010. Symbol markers correspond to route starting points.

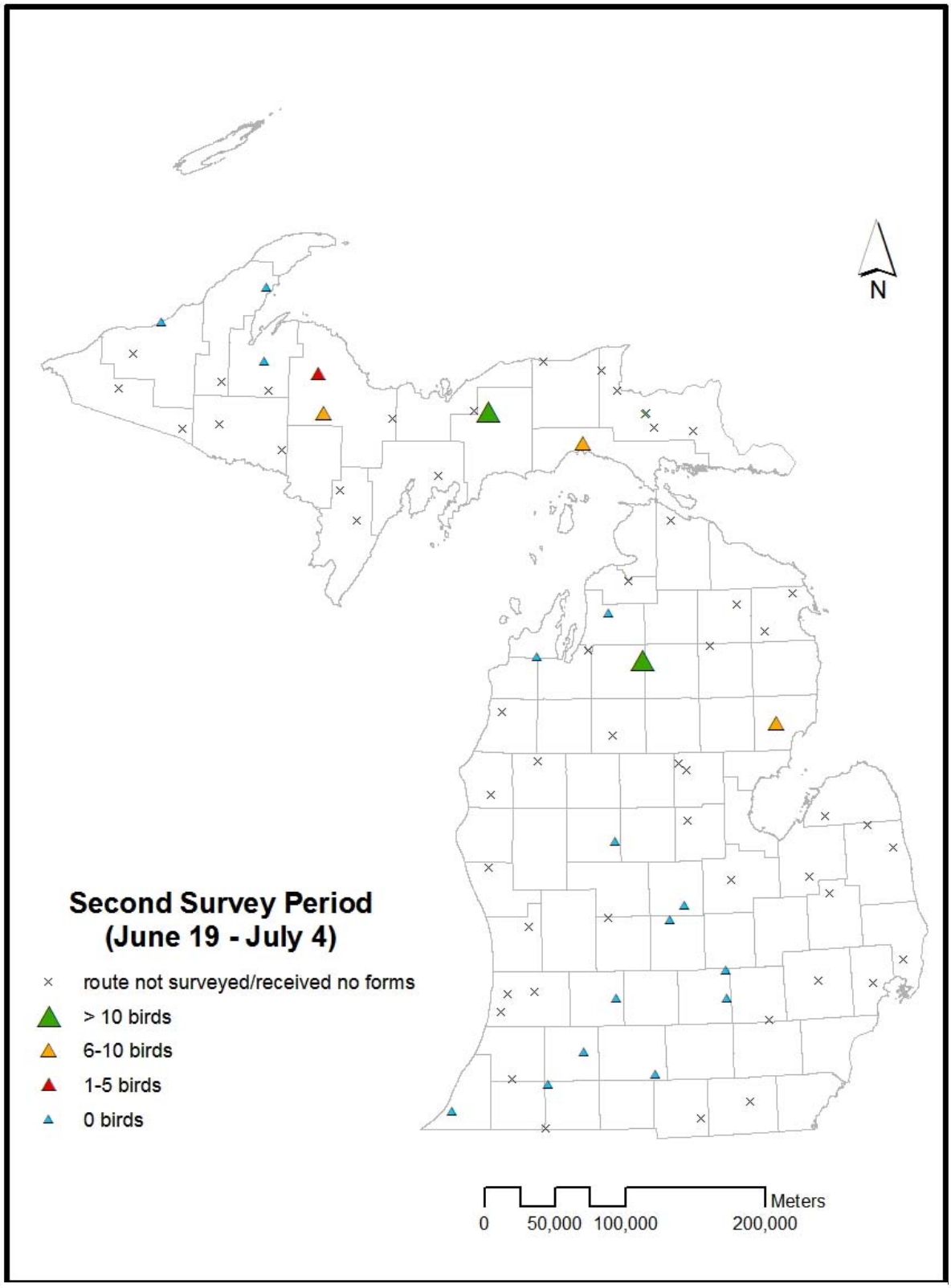

Figure 3. Distribution of Whip-poor-wills during the second sampling period in Michigan in 2010. Symbol markers correspond to route starting points.

Owl Survey
In 2011 we will initiate an owl survey that is consistent with ongoing efforts in the Midwest. We will communicate with regional partners to ensure that our sample design, survey protocol, and data management are compatible with other states. We will recruit volunteers from our existing participant pool and through MiBCI member organizations. A training workshop for owl surveyors will be offered at the 2011 MiBCI Ornithological Congress.

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APPENDIX A

CASUAL OBSERVATION FORM

Nocturnal Bird Survey Casual Observations

There is a recognized need to improve the monitoring of nocturnal bird species that are not adequately surveyed by the North American Breeding Bird Survey (BBS), so that populations can be better tracked over time to inform conservation planning and implementation. The Michigan Bird Conservation Initiative (MiBCI) is working to expand surveys for nocturnal birds in Michigan using standardized methods that are being implemented at regional and national levels. Road-based surveys along existing BBS routes will be implemented for nightjars in 2010 and owls in 2011. We encourage people interested in volunteering for these surveys to visit the MiBCI website or contact Michael Monfils (monfilsm@msu.edu) or David Cuthrell (cuthrelld@msu.edu) for more information.

In addition to the systematic surveys described above, we are asking people in Michigan to provide us information on their casual nightjar and owl observations. If you observe a nightjar or owl while enjoying Michigan's great outdoors, please select one of the following options to submit your data: 1) fill out the form and email it to research@mibci.org; 2) enter the information in eBird using an existing or new account*; or 3) fill out the form and mail to MiBCI Nocturnal Bird Survey, c/o Michigan Natural Features Inventory, P.O. Box 30444, Lansing, MI 48909-7944. Please contact Richard Wolinski (wolinskir@michigan.gov) if you have questions about this form or data submission. We thank you for your cooperation in bird conservation.

*When submitting data through eBird, your location name should contain the prefix "NBS" (e.g., NBS - your location name).

Observer		Telephone		E-mail	
Observation Date		Landowner (if known)			

Provide the location of your observation using one of the three options to the right.	Latitude/Longitude		Additional Details:
	Town/Range/Section		
	Nearest Address		

Please provide a separate form for each location. Select the species observed from the pull-down list, enter the number observed, check the boxes that apply, and enter any notable behaviors.

	Number	Calling?	Seen?	Behavior Notes
Species 1		☐	☐	
Species 2		☐	☐	
Species 3		☐	☐	
Species 4		☐	☐	
Species 5		☐	☐	

Additional Notes

APPENDIX B

VOLUNTEER SURVEYS

MARSH BIRD VOLUNTEER SURVEY

1. Please rank the quality of the following items on a scale from poor to excellent. If you did not attend the training workshop held at the Ornithological Congress, please leave that row blank.

	Poor	Fair	Average	Good	Excellent
Protocol Document					
Data Forms					
Broadcast Equipment					
Survey Web Site					
MiBCI-OC Training Workshop					
Site Maps and Aerial Photos					

Please provide any suggestions you have to improve the items above:

2. Please rank the usefulness of following items in helping you complete the surveys.

	Not useful	Somewhat useful	Useful	Very useful
Protocol Document				
Survey Web Site				
MiBCI-OC Training Workshop				
Site Maps and Aerial Photos				
Latitude-Longitude Coordinates for Survey Points				

3. Were you able to complete all three required visits to your survey route?

Yes
No

4. If you answered "Yes" to question 2, please proceed to the next page. If you answered "No" to question 2, select the reason(s) below that best characterize why you were unable to complete both surveys. You may select more than one answer.

Not enough time
Bad weather (e.g., rain, high winds)
Inadequate training on protocol
Inadequate training in bird identification
Inadequate training in use of equipment (e.g., GPS)
Survey was too demanding or required too much time
Other (e.g., illness, equipment failure)

5. Please rate your agreement with the following statements:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The assistance provided to me by the survey coordinator was adequate.					
The training workshop and materials adequately prepared me for the survey.					

6. If additional training opportunities were provided in the following areas, please rank the likelihood that you would attend.

	Definitely would not	Not likely	Uncertain	Likely	Definitely would
Protocol refresher					
In-field protocol training					
Identification of target species					
Distance estimation					
Navigation using GPS					
Habitat data collection					

7. Please rank the likelihood that you would participate in the Michigan Marsh Bird Survey again next year.

	Definitely will not	Not likely	Uncertain	Likely	Definitely will

8. Please rank the likelihood that you would participate in surveys for the following birds in the future.

	Definitely would not	Not likely	Uncertain	Likely	Definitely would
Nightjars					
Owls					
Red-shouldered Hawk					
Shorebirds					
Grassland Birds					

9. Please provide any comments you have regarding your experience participating in the Michigan Marsh Bird Survey:

NIGHTJAR VOLUNTEER SURVEY

1. Please rank the quality of the following items on a scale from poor to excellent. If you did not attend the training workshop held at the Ornithological Congress, please leave that row blank.

	Poor	Fair	Average	Good	Excellent
Protocol Document					
Data Forms					
Survey Web Site					
MiBCI-OC Training Workshop					
Site Maps and Aerial Photos					

Please provide any suggestions you have to improve the items above:

2. Please rank the usefulness of following items in helping you complete the surveys.

	Not useful	Somewhat useful	Useful	Very useful
Protocol Document				
Survey Web Site				
MiBCI-OC Training Workshop				
Site Maps and Aerial Photos				

3. Were you able to complete both required visits to your survey route?

Yes
No

4. If you answered "Yes" to question 2, please proceed to the next page. If you answered "No" to question 2, select the reason(s) below that best characterize why you were unable to complete both surveys. You may select more than one answer.

Not enough time
Bad weather (e.g., rain, high winds)
Inadequate training on protocol
Inadequate training in bird identification
Inadequate training in use of equipment (e.g., GPS)
Survey was too demanding or required too much time
Other (e.g., illness, equipment failure)

5. Please rate your agreement with the following statements:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The assistance provided to me by the survey coordinator was adequate.					
The training workshop and materials adequately prepared me for the survey.					

6. If additional training opportunities were provided in the following areas, please rank the likelihood that you would attend.

	Definitely would not	Not likely	Uncertain	Likely	Definitely would
Protocol refresher					
In-field protocol training					
Identification of target species					
Navigation using GPS					
Habitat data collection					

7. Please rank the likelihood that you would participate in the Michigan Nightjar Survey again next year.

	Definitely will not	Not likely	Uncertain	Likely	Definitely will

8. Did you participate in the U.S. Nightjar Survey concurrent with the Michigan Nightjar Survey in 2010?

Yes
No

If you participated in both surveys, feel free to provide us and comments or suggestions you have:

9. Please rank the likelihood that you would participate in surveys for the following birds in the future.

	Definitely would not	Not likely	Uncertain	Likely	Definitely would
Marsh Birds					
Owls					
Red-shouldered Hawk					
Shorebirds					
Grassland Birds					

10. Please provide any comments you have regarding your experience participating in the Michigan Nightjar Survey: