

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

YEAR TWO PROGRESS REPORT



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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 bird, nightjar, and owl 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 and Ohio. 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 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.

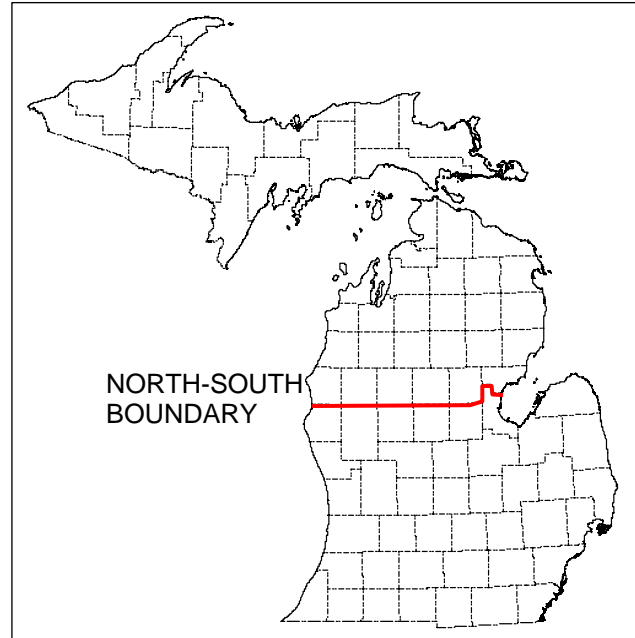


Figure 1. Map showing the boundary used to separate southern and northern Michigan marsh bird surveys and owl surveys.

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), in 2010 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 ($\leq 50\%$) cloud cover (Hunt 2007), which are conditions during which Whip-poor-wills are known to increase activity (Wilson and Watts 2006). In 2011 volunteers were required to conduct surveys during one period during June 11-20. An early season period (May 14-22) was optional. Both surveys were scheduled 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 again encouraged to take notes on owls and other night birds encountered during nightjar surveys, which is consistent with the protocol being used in Wisconsin (R. Brady, Wisconsin DNR, personal communication).

Owls

We used an owl survey methodology consistent with those of similar efforts within the upper Midwest (e.g., Minnesota, Wisconsin, and Illinois). We conducted surveys along existing BBS

routes and situated ten survey stations at one-mile intervals along each route. While other owl surveys require only one survey per season (R. Brady, Wisconsin DNR, personal communication), 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. In southern Michigan (Figure 1), surveys were conducted during the following two periods: March 15-22 and April 1-8. Northern Michigan surveys began later and occurred during March 23-31 and April 9-16. We visited each station for six minutes between 30 minutes after sunset and 30 minutes before sunrise. We recorded the number of owls 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 other bird species during owl surveys, such as nightjars and Woodcock, consistent with the protocol being used in Minnesota and 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 project 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 coordinate the Michigan Marsh Bird Survey with ongoing and new efforts within the region and nation. We had numerous conference calls and email communications in 2011 with members of the Midwest Secretive Marsh Bird Monitoring Work Group, which included Mark Seamans (USFWS, Patuxent Wildlife Research Center), Katie Koch (USFWS), Ryan Brady (Wisconsin Department of Natural Resources), and David Sherman (Ohio Division of Wildlife). Many of our discussions centered on improving the consistency of our site selection process (i.e., in-office and on-site review of potential survey sites). We also provided our protocol, data forms, and training materials to Dave Sherman to assist in their piloting of the national program. We will continue working with national and regional partners on several important issues for the Midwest, such as ground truthing, program expansion, and coordination with other surveys (e.g., Marsh Monitoring Program).

We again offered our training workshop for volunteers during the Michigan Ornithological Congress in April 2011, which attracted more than 35 attendees. The follow-up survey we

conducted with volunteers in fall of 2010 indicated interest in having additional field-based training to cover the use of GPS, estimation of distances, and collection of wetland information. In response to this interest, we offered a field workshop to volunteers during the Ornithological Congress. However, none of our volunteers or other congress attendees signed up for the workshop, so we cancelled that portion of the training. We will investigate other possible venues for both our standard training and field-based workshops in the future.

Our goal was to survey approximately 15 PSUs during year two of the project. In 2010, we conducted surveys on 11 PSUs and prepared an additional four PSUs for survey in 2011. We recruited additional volunteers in 2011 and assigned surveyors to all 15 available PSUs. We received data for 11 of the 15 PSUs; three volunteers were unable to complete surveys on their routes and one volunteer has not responded to repeated contacts. Eight of the 11 PSUs surveyed in 2011 were also surveyed in 2010, whereas three PSUs were surveyed for the first time in 2011. Although we did not meet our goal of 15 PSUs in 2011, we are working to improve communications with our volunteers and recruit additional surveyors to minimize the problem of assigned routes not being surveyed. We compiled and reviewed the 2011 data and are currently entering the information into a format compatible with the National Marsh Bird Database.

In fall of 2010, we began developing a plan to expand Michigan's program beyond the pilot phase. We applied for and recently received funding from the USFWS Webless Migratory Game Bird program to gradually expand our survey over the next three years to approximately 45 PSUs. We are working with Mark Seamans and others to develop a "high-intensity" stratum of PSUs. This stratum will contain state and federal lands, such as state wildlife areas and national wildlife refuges, likely to support greater densities of marsh birds than other sites. Most of our expanded survey effort will be focused in this new stratum. This sampling approach is being used in some pilot states (e.g., Ohio) and is the design likely to be applied as the national program becomes operational (Mark Seamans, USFWS, personal communication). We will begin reviewing potential survey sites this fall with a goal of adding an additional 5-10 PSUs to the survey in 2012.

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 Owl Survey in 2011. We worked closely with Ryan Brady (Wisconsin Department of Natural Resources), Katie Koch, and other regional partners to ensure our survey protocols were consistent. As with the nightjar survey, we developed a survey protocol, data forms, training materials, and a Michigan Owl Survey web page (<http://www.mibci.org/index.php?id=235>).

We continued to use GoogleEarth files to indicate the locations of available nightjar survey routes and posted them to our website. Similar files were developed for the owl survey and provided on the web page. We provided topographic maps and aerial photos indicating route locations and stops to all volunteers. We developed an owl survey training workshop for volunteers and offered it during the 2011 Michigan Ornithological Congress. We also provided the nightjar survey training workshop again in 2011 for both existing and new volunteers. Approximately 35 people participated in the owl survey workshop and 20 individuals attended nightjar survey training. We advertised the nightjar and owl survey programs and recruited volunteers via postings to several Michigan birding listserves. Volunteers completed surveys on 29 nightjar and 33 owl survey routes in 2011. All data submitted by volunteers were reviewed and entered in spreadsheets compatible with regional and national efforts. We will continue to work with regional partners to make our data available on the Midwest Avian Knowledge Network.

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 brief online surveys for all three 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, gauge interest in possible future surveys, and evaluate the experience level of our volunteers. We had four respondents to the marsh bird volunteer survey, 14 respondents to the nightjar volunteer survey, and 11 respondents to the owl volunteer survey. All of the marsh bird respondents found our survey and training materials and workshop “useful” or “very useful” (Table 1). The majority of the nightjar and owl survey respondents rated our survey and training materials as “useful” or “very useful,” but only about half of the respondents felt our training workshop was useful (Table 1). Because the nightbird surveys are less complicated than the marsh bird protocol, training workshops are probably of less value to nightjar and owl survey volunteers. Only about half to slightly more than half of the respondents, across all three surveys, were able to complete all required visits to their routes. The majority of the respondents cited “not enough time” and “bad weather” as reasons for not completing their surveys. We need to continue to stress the importance of completing all surveys with volunteers. We also need to emphasize the importance of volunteers communicating with the coordinators if they are unable to complete their surveys, so that other volunteers can be identified to cover their assigned route. 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. Seventy five percent of the marsh bird, 93% of nightjar, and 91% of the owl volunteer respondents ranked the likelihood that they would continue participating in the surveys as “likely” or “definite.” We observed no strong interest by the volunteers for additional training workshops to meet their needs. Our surveys indicate that many of our volunteers are or have been involved with other bird survey programs and they represent a range of experience levels. We need to ensure that our program materials and workshops are suited to both novice and well-experienced individuals.

Table 1. Survey respondents' ratings of MiBCI survey and training materials in 2011. The number of respondents is listed in parentheses.

Survey Materials	Not Useful	Somewhat Useful	Useful	Very Useful
Marsh Bird Survey				
Protocol Document	0.0% (0)	0.0% (0)	25.0% (1)	75.0% (3)
Data Forms	0.0% (0)	0.0% (0)	25.0% (1)	75.0% (3)
Survey Web Site	0.0% (0)	0.0% (0)	100.0% (3)	0.0% (0)
MiBCI-OC Training Workshop	0.0% (0)	0.0% (0)	50.0% (1)	50.0% (1)
Site Maps and Aerial Photos	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (4)
Latitude-Longitude Coordinates	0.0% (0)	0.0% (0)	0.0% (0)	100.0% (4)
Nightjar Survey				
Protocol Document	0.0% (0)	7.7% (1)	30.8% (4)	61.5% (8)
Data Forms	0.0% (0)	0.0% (0)	38.5% (5)	61.5% (8)
Survey Web Site	0.0% (0)	16.7% (2)	50.0% (6)	33.3% (4)
MiBCI-OC Training Workshop	11.1% (1)	33.3% (3)	11.1% (1)	44.4% (4)
Route Maps and Aerial Photos	0.0% (0)	7.7% (1)	46.2% (6)	46.2% (6)
Owl Survey				
Protocol Document	0.0% (0)	0.0% (0)	20.0% (2)	80.0% (8)
Data Forms	0.0% (0)	0.0% (0)	33.3% (3)	66.7% (6)
Survey Web Site	0.0% (0)	40.0% (4)	40.0% (4)	20.0% (2)
MiBCI-OC Training Workshop	33.3% (2)	16.7% (1)	16.7% (1)	33.3% (2)
Route Maps and Aerial Photos	10.0% (1)	10.0% (1)	50.0% (5)	30.0% (3)

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

We have been coordinating with partners within the region and at the national level to ensure we are collecting and compiling data in a manner consistent with other state, regional, and national efforts. Marsh bird data are being entered into a spreadsheet compatible with 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. We entered our owl survey data into a database consistent with that being used by the Western Great Lakes Owl Survey (i.e., Minnesota and Wisconsin). The Midwest Nightbird Monitoring Partnership has been discussing how to handle nocturnal bird data at the regional level. We will continue discussions with regional partners and Katie Koch to determine how best to make the nightbird data available on the Midwest Avian Knowledge Network. We will also be providing our nightbird data to the Illinois Natural History Survey for use in regional occupancy and detection probability analyses.

Summary of Survey Results

Marsh Birds – Volunteers completed marsh bird surveys on 11 PSUs in 2011, of which seven were surveyed during all three periods and four were surveyed in two periods. A total of 166 point counts was conducted compared to 132 in 2010. We observed more species and a greater number of individuals for most species in 2011 compared to 2010 (Table 2), which may be due to increased survey effort in 2011 and differences in the routes surveyed between years. Eight

primary and seven secondary species were observed in 2011, which is an increase from 2010 (Table 2). Common Moorhen (*Gallinula chloropus*), American Coot (*Fulica americana*), and Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) were recorded for the first time during the survey in 2011.

Table 2. Number of individuals observed and proportion of points with at least one detection (in parentheses) by year, survey period, and species during marsh bird surveys conducted in Michigan in 2010-2011.

	Survey 1		Survey 2		Survey 3		Total	
	n = 40		n = 44		n = 48		n = 132	
2010								
Primary Species								
Pied-billed Grebe	0	(0.00)	18	(0.27)	5	(0.10)	23	(0.13)
American Bittern	0	(0.00)	12	(0.16)	11	(0.10)	23	(0.09)
Virginia Rail	1	(0.03)	8	(0.14)	2	(0.02)	11	(0.06)
Sora	1	(0.03)	4	(0.07)	0	(0.00)	5	(0.03)
Wilson's Snipe	1	(0.03)	1	(0.02)	3	(0.06)	5	(0.04)
Secondary Species								
Sandhill Crane	22	(0.33)	16	(0.27)	9	(0.13)	47	(0.23)
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)
Sedge Wren	16	(0.20)	13	(0.18)	12	(0.15)	41	(0.17)
Marsh Wren	0	(0.00)	24	(0.11)	39	(0.15)	63	(0.09)
Swamp Sparrow	32	(0.48)	36	(0.39)	33	(0.33)	101	(0.39)
2011								
Primary Species								
Pied-billed Grebe	11	(0.15)	14	(0.13)	14	(0.18)	39	(0.15)
American Bittern	16	(0.15)	19	(0.16)	14	(0.14)	49	(0.15)
Least Bittern	0	(0.00)	1	(0.02)	1	(0.02)	2	(0.01)
Virginia Rail	8	(0.09)	5	(0.06)	5	(0.08)	18	(0.08)
Sora	2	(0.04)	1	(0.02)	1	(0.02)	4	(0.02)
Common								
Moorhen	2	(0.04)	5	(0.03)	2	(0.02)	9	(0.03)
American Coot	2	(0.02)	0	(0.00)	1	(0.02)	3	(0.01)
Wilson's Snipe	4	(0.07)	0	(0.00)	0	(0.00)	4	(0.02)
Secondary Species								
Sandhill Crane	33	(0.30)	38	(0.27)	20	(0.20)	91	(0.26)
Black Tern	0	(0.00)	1	(0.02)	2	(0.04)	3	(0.02)
Forster's Tern	1	(0.02)	2	(0.03)	0	(0.00)	3	(0.02)
Sedge Wren	8	(0.11)	12	(0.06)	13	(0.10)	33	(0.09)
Marsh Wren	7	(0.07)	21	(0.11)	27	(0.20)	55	(0.13)
Swamp Sparrow	43	(0.43)	45	(0.35)	39	(0.39)	127	(0.39)
Yellow-headed Blackbird	0	(0.00)	2	(0.02)	0	(0.00)	2	(0.01)

American Bittern and Pied-billed Grebe (*Podilymbus podiceps*) were again the most abundant primary species recorded in 2011, with 39 Pied-billed Grebes and 49 American Bitterns

documented in 2011. Virginia Rail was the next most common primary species detected, followed by Common Moorhen. The proportions of points with primary species present ranged from 0.15 for Pied-billed Grebe and American Bittern to 0.01 for Least Bittern and American Coot, which is consistent with the proportions observed in 2010 (Table 2).

Swamp Sparrow (*Melospiza georgiana*) was again the most common secondary species observed and the most abundant species overall in 2011. Sandhill Crane (*Grus canadensis*) was the second most common secondary species recorded, with Marsh Wren (*Cistothorus palustris*) and Sedge Wren (*Cistothorus platensis*) being the third and fourth most abundant secondary species observed, respectively. The proportions of points with secondary species detected in 2011 was similar to those of 2010 and ranged from 0.39 for Swamp Sparrow to 0.01 for Yellow-headed Blackbird (Table 2).

Nightjars – A total of 54 routes were assigned to volunteers in 2011 and we received completed data sheets for 29 routes (Table 3). The 2011 survey efforts were hampered by an unusually wet period during the June sampling period which is likely the main reason we received fewer data sheets than anticipated. In addition, we had fewer early period routes conducted (7 versus 25), as this was an optional sampling period this year. A total of 19 volunteers completed nightjar surveys and submitted data forms for 27 nightjar routes in 2010 (Table 3).

Table 3. Summary of results for the Michigan Nightjar Survey 2010-2011.

	Whip-poor-will Survey 1	Whip-poor-will Survey 2	Common Nighthawk Survey 1	Common Nighthawk Survey 2
2010				
# 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
2011				
# of routes surveyed	7	29	7	29
# of birds detected	27	121	9	11
# of birds/route	3.86	4.17	1.29	0.38
# of routes w/ target	4	13	3	5
# of birds/route w/ target	6.75	9.31	3.00	2.20
# of routes with 0 birds	3	16	4	24
# of routes with 1-5 birds	2	3	3	5
# of routes with 6-10 birds	1	6	0	0
# of routes with > 10 birds	1	5	0	0

There was only a single observation of Chuck-wills-widow from a southern Michigan route during the first survey in 2010 and no reports in 2011; therefore, it was not included in the summary table. The survey detection rates for Whip-poor-will (3.86 birds/route in survey period 1 and 4.17 birds/route in survey period 2) were higher than our detection rates in 2010 (Table 3). As with 2010, all of the Whip-poor-will observations occurred in northern Michigan. These data will provide Michigan with a baseline dataset for monitoring this species into the future.

Common Nighthawk detection rates decreased between the first (1.29 birds/route) and second (0.38 birds/route) survey periods in 2011. This was a similar trend as in 2010 and 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.

Owls – A total of 47 routes were assigned to volunteers during our initial 2011 season and we received completed data sheets for 33 routes. We had 23 routes that were run during both sampling periods and 10 that were run only during the second sampling period (Table 4). The most commonly encountered owl species was the Barred Owl, with a total of 39 individuals observed in 2011, followed by Great-horned Owl (13), Northern Saw-whet (10), and Eastern Screech Owl (7). As we continue to develop a larger volunteer base and more routes are run, the data gathered will provide Michigan, and the Midwest region, with a baseline dataset for monitoring these species into the future. We will continue to discuss with our partner states a strategy to survey areas to better document distributions and population levels for owls.

Table 4. Summary results for Michigan Owl Surveys 2011.

2011	First Period				Second Period			
	GHOW	BDOW	NSWO	EASO	GHOW	BDOW	NSWO	EASO
# of routes surveyed	23	23	23	23	32	32	32	32
# of birds detected	5	19	4	4	8	20	6	3
# of birds/route	0.22	0.83	0.17	0.17	0.25	0.63	0.19	0.09
# of routes w/target	4	11	4	3	7	9	4	3
# of birds/route w/ target	1.25	1.72	1.00	1.33	1.14	2.22	1.50	1.00
# of routes with 0 birds	19	12	19	20	25	23	28	29
# of routes with 1-5 birds	4	10	4	3	7	8	4	3
# of routes with 6-10 birds	0	0	0	0	0	1	0	0

PLANS FOR YEAR THREE

In year three of this project, we will continue implementation of all three bird survey programs.

Marsh Bird Survey

We have obtained additional funding to expand the marsh bird survey. During fall 2011 and winter 2011-2012, we will begin in-office review of new PSUs for the “high-intensity” stratum

in which the program will be expanded. We plan to ground truth a portion of these sites in early spring 2012 to permit surveys of an additional 5-10 PSUs. We will continue coordination with other regional and national partners as we expand the Michigan survey.

Nightjar Survey

In 2012, we plan to survey the routes covered in 2010 and 2011, 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.

Owl Survey

In 2012, we plan to survey the routes covered in 2011, as well as an additional 5-10 routes. We will be attempting to recruit volunteers to cover routes in the Saginaw Bay region and along the western edge of the state, and other areas where we have gaps in coverage. 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.

ACKNOWLEDGMENTS

We thank the many volunteers who conducted bird surveys in 2011. The USFWS provided funding for this survey through the Upper Midwest Migratory Bird Conservation Program and Upper Mississippi River and Great Lakes Region Joint Venture. Several individuals, agencies, and organizations were integral to starting and implementing this program. We thank the following individuals for their assistance: Karen Cleveland (Michigan Department of Natural Resources and Environment), Tom Funke (Michigan Audubon Society), Katie Koch (USFWS), Sarah Redding (Kalamazoo Nature Center), Mark Seamans (USFWS), and Richard Wolinski (Michigan Department of Transportation). Special thanks to Katie Koch and Christie Deloria-Sheffield (USFWS) for their assistance with ground truthing of marsh bird routes in the western Upper Peninsula. Ryan Brady (Wisconsin Department of Natural Resources) provided ample advice and allowed us to use the Wisconsin marsh bird and nightjar instructions and data forms.

LITERATURE CITED

Bart, J., K. P. Burnham, E. H. Dunn, C. M. Francis, C. J. Ralph. 2004. Goals and strategies for estimating trends in landbird abundance. *Journal of Wildlife Management* 68:611-626.

Barton, B. J. 2007. Whip-poor-will and Common Nighthawk surveys in support of the Michigan Breeding Bird Atlas II: 2007 final report. Report 2007-17, Michigan Natural Features Inventory, Lansing, USA.

Brady, R. 2009. Wisconsin Nightjar Survey, 2009 Annual Report. Unpublished document for the Wisconsin Bird Conservation Initiative.

< <http://wiatri.net/projects/birdroutes/Docs/NightjarSummary2009.pdf>>. Accessed 20 September 2010.

Cink, C. L. 2002. Whip-poor-will (*Caprimulgus vociferus*). Account 620 in A. Poole and F. Gill, editors. The birds of North America. The Birds of North America, Philadelphia, Pennsylvania, USA.

Conway, C. J. 2009. Standardized North American marsh bird monitoring protocols. U.S. Geological Survey Wildlife Research Report 2009-02, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, Arizona, USA.

Cooper, T. R. 2008. King Rail conservation plan, version 1. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota, USA.

D. J. Case and Associates. 2005. Indiana comprehensive wildlife strategy. D. J. Case and Associates, Mishawaka, Indiana, USA.

Eagle, A. C., E. M. Hay-Chmielewski, K. T. Cleveland, A. L. Derosier, M. E. Herbert, and R. A. Rustem, editors. 2005. Michigan's wildlife action plan. Michigan Department of Natural Resources, Lansing, USA. <<http://www.michigan.gov/dnrwildlifeactionplan>>. Accessed 13 February 2009.

Hunt, P. D. 2007. Northeast nightjar survey: 2007 summary. New Hampshire Audubon, Concord, USA.

Illinois Department of Natural Resources. 2005. The Illinois comprehensive wildlife conservation plan and strategy. Illinois Department of Natural Resources, Springfield, USA.

Johnson, D. H., J. P. Gibbs, M. Herzog, S. Lor, N. D. Niemuth, C. A. Ribic, M. Seamans, T. L. Shaffer, W. G. Shriver, S. V. Stehman, and W. L. Thompson. 2009. A sampling design framework for monitoring secretive marshbirds. *Waterbirds* 32:203-362.

MacKenzie, D. I., J. D. Nichols, J. A. Royle, K. H. Pollock, L. L. Bailey, J. E. Hines. 2006. Occupancy estimation and modeling: inferring patterns and dynamics of species occurrence. Academic Press, Burlington, Massachusetts, USA.

Monfils, M. J. 2006. Woodland owl surveys in support of the Michigan Breeding Bird Atlas II: year 3. Report 2006-19, Michigan Natural Features Inventory, Lansing, USA.

North American Bird Conservation Initiative, U.S. Committee. 2009. The state of the birds, United States of America, 2009. U.S. Department of Interior, Washington, DC, USA.

Ohio Department of Natural Resources. 2006. Ohio comprehensive wildlife conservation strategy. Ohio Department of Natural Resources, Division of Wildlife, Columbus, USA.

Potter, B. A., G. J. Soulliere, D. N. Ewert, M. G. Knutson, W. E. Thogmartin, J. S. Castrale, and M. J. Roell. 2007. Upper Mississippi River and Great Lakes Region Joint Venture landbird habitat conservation strategy. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota, USA.

Poulin, R. G., S. D. Grindal, and R. M. Brigham. 1996. Common Nighthawk (*Chordeiles minor*). Account 213 in A. Poole and F. Gill, editors. The birds of North America. The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C., USA.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigoelias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American land-bird conservation plan. Cornell Laboratory of Ornithology, Ithaca, New York, USA.

Soulliere, G. J., B. A. Potter, D. J. Holm, D. A. Granfors, M. J. Monfils, S. J. Lewis, and W. E. Thogmartin. 2007. Upper Mississippi River and Great Lakes Region Joint Venture Waterbird Habitat Conservation Strategy. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota, USA.

Takats, D. L., C. M. Francis, G. L. Holroyd, J. R. Duncan, K. M. Mazur, R. J. Cannings, W. Harris, and D. Holt. 2001. Guidelines for nocturnal owl monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada, Edmonton, Alberta.

U.S. Nightjar Survey Network. 2009. United States Nightjar Survey Network website. Center for Conservation Biology, The College of William and Mary, Williamsburg, Virginia, USA. <<http://www.ccb-wm.org/nightjars.htm>> Accessed April 14, 2009.

Wilson, M. D., B. D. Watts. 2006. The effect of moonlight on detection of Whip-poor-wills: implications for long-term monitoring strategies. *Journal of Field Ornithology* 77:207-211.

Wisconsin Department of Natural Resources. 2005. Wisconsin strategy for species of greatest conservation need. Wisconsin Department of Natural Resources, Madison, USA.

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 (monfilm@msu.edu) or David Cuthrell (cuthreild@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	<input type="text"/>	Telephone	<input type="text"/>	E-mail	<input type="text"/>
Observation Date	<input type="text"/>	Landowner (if known)	<input type="text"/>		

Provide the location of your observation using one of the three options to the right.	Latitude/Longitude	<input type="text"/>	Additional Details: <input type="text"/>
	Town/Range/Section	<input type="text"/>	
	Nearest Address	<input type="text"/>	

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 <input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Species 2 <input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Species 3 <input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Species 4 <input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Species 5 <input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Additional Notes	<input type="text"/>			

APPENDIX B

VOLUNTEER SURVEYS

VOLUNTEER SURVEY

1. 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				

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

Yes
No

3. 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)

4. 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.

5. 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					

6. Please rank the likelihood that you would participate in the survey again next year.

Definitely will not Not likely Uncertain Likely Definitely will

7. 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

Nightjars

Owls

Red-shouldered Hawk

Shorebirds

Grassland Birds

8. Check all the programs below for which you have recently volunteered. You do not need to list if you participated in other MiBCI surveys.

North American Breeding Bird Survey

Christmas Bird Count

Michigan Breeding Bird Atlas

Marsh Monitoring Program (Bird Studies Canada)

Michigan Frog and Toad Survey

eBird

Other (please describe)

9. How many years experience do you have conducting bird surveys and/or birding?

10 or less

11 - 20

21 - 30

31 - 40

41 - 50

over 50

10. Please provide any comments you have regarding your experience participating in this survey: