



Monitoring of Owls and Nightjars, MOON, in Illinois – 2014 Report



Photo by James Ellis - INHS

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2014 Summary

We now have seven years of MOON data in Illinois. Unlike in 2013 weather this past year was great for monitoring and many volunteers took advantage. High detections of birds from any single monitoring period came from the following routes (Table 1): Woodford2828 and Cumberland 1212 - 12 Barred Owl, Vermillion-4 Eastern Screech-Owl, Three counties - 2 Great Horned Owl, Marion6245 - 6 Chuck-will's-widow, and Pope2079 - 15 Eastern Whip-poor-will. Total numbers of owls, nightjars, and American Woodcock for the year were: 111 Barred Owl, 14 Eastern Screech-Owl, 12 Great Horned Owl, 84 Eastern Whip-poor-will, 13 Chuck-will's-widow, 8 Common Nighthawk and 14 American Woodcock. This past August we met for a workshop in Port Washington, WI to discuss nocturnal bird monitoring in the Midwest and discussed the ongoing large scale landscape analysis using owl and nightjar data collected from programs throughout the Midwest and the northeast. We also discussed how all of our data can be shared within the Midwest Avian Data Center (MWADC) (<http://data.prbo.org/partners/mwadc/>). It is our goal to have the data within the MWADC within the next couple of years. This would be data from states throughout the Midwest and possibly even data from the northeast.

Background

Bird monitoring has played a crucial role in estimating population trends, distribution, and abundance for many species, which in turn has been integrated into management and conservation decisions regarding many high profile species. These changes in management, and efforts to conserve, have restored and stabilized many of the once extirpated or nearly extirpated species. However, while current monitoring programs, such as Breeding Bird Survey (BBS), Spring Bird Count (SBC), and Christmas Bird Count (CBC) have done an excellent job of estimating population trends for most species they do not have the power to estimate population trends for nocturnal species. Because of this void, many organizations throughout Canada and the United States have implemented, or are beginning to implement monitoring programs for nocturnal species. Over the past few years The Midwest Coordinated Bird Monitoring Partnership has helped to facilitate the coordination of this Midwest nocturnal monitoring group so that we can work together to make the most beneficial bird conservation decisions (http://midwestbirdmonitoring.ning.com/group/midwest_nightbirds). Forming efficient and statistically powerful monitoring programs for nocturnal species will allow us to detect small population changes over a shorter period of time.

Owl and Nightjar Status in Illinois

In Illinois we have five confirmed breeding species of owl; Barn Owl, Barred Owl, Eastern Screech-owl, Great Horned Owl, and Short-eared Owl and three confirmed breeding species of nightjar; Chuck-will's-widow, Common Nighthawk, and Eastern Whip-poor-will. Within these two groups the Barn Owl and the Short-eared Owl are currently listed as endangered. The Eastern Screech-Owl is found in low numbers on BBS routes (BBS data), the Great Horned Owl is widespread and the Barred Owl, which historically was listed as rare, is now found throughout the state. As far as nightjars go, in 1934 Ford et al. were quoted as saying this of the Whip-poor-will in *Birds of the Chicago Region* - "A fairly common summer resident. Although not so numerous as formerly, they still occur throughout the area". Unfortunately, the same statement could not be said today. The Eastern Whip-poor-will is considered to be rare and declining by the U.S. Fish and Wildlife service. In Canada it has declined so much it is now considered Threatened. While Common Nighthawks are considered to be evenly distributed throughout the state, monitoring their population trend is difficult. The Chuck-will's-widow has been historically found in the southern portion of the state. Loss of habitat, lack of forest

management, cattle grazing, and available food are all factors that could be contributing to possible declines of some of these species.

Because much of Illinois has become agriculturally dominated habitat selection is limited for owls and nightjars. Additionally, changes in agricultural and mowing practices have caused a decrease in available food sources for owls and nightjars. Also, while Illinois has retained much of its forested landscape throughout the last hundred years many forests are not managed and succession becomes a problem, especially for nightjars, which prefer an open understory (Walk et al. 2010, Hunt 2010, and Cink 2002). In addition, worldwide there has been a rapid loss of large trees with cavities and failure to allow new ones to establish. Obstacles contributing to these declines in cavities include invasive plants, logging, lack of fire regimes, and livestock grazing (Lindenmayer et al 2012). In 2008 a study found that the high number of habitat openings created by some forest regeneration practices provided whip-poor-wills with foraging opportunities that were not present in systems not managed intensely (Wilson and Watts 2008). Furthermore a study conducted from 2008-2010 in New Hampshire found that Eastern Whip-poor-will will rapidly colonize a site that is managed (Hunt 2010). Because we cannot anecdotally say specific owls and nightjars are declining due to these changes we needed to create a powerful monitoring program to determine the population trends of these birds. Therefore, in the spring of 2008 Monitoring of Owls and Nightjars, MOON, in Illinois was initiated (<http://www.inhs.illinois.edu/research/moon/>). MOON is a volunteer based program that occurs throughout the state of Illinois. Volunteers monitor routes located along suitable habitat for owls and nightjars. The majority of routes are 9 miles long with 10 stops per route.

Protocol

Based on previous research (Northeast Coordinated Bird Monitoring Partnership, Wisconsin Bird Conservation Initiative, Bird Studies Canada, and the U.S. Nightjar Survey Network) we know that there are certain criteria that are important when monitoring for owls and nightjars (Hunt 2007, Gallo 2007, Wilson and Watts 2006). Because of these criteria, we closely followed the standard protocols of those currently undergoing Owl and Nightjar research with some minor adjustments to fit interest we have here in Illinois:

- 1) Each survey is conducted at least 30 minutes following sunset (when the moon is above the horizon) and end no later than 15 minutes prior to sunrise.
- 2) 2014 monitoring dates were May 7 – May 21 and June 6 – June 19.
- 3) If time allows, surveys should be completed when the moon is above the horizon and not obstructed by clouds.

Counting Owls and Nightjars:

If detected, each individual owl or nightjar is recorded once during each 1 minute block of a 6 minute passive listening period. Monitors with acoustic equipment play an Eastern Screech-owl playback and in some areas of the state a Barn Owl playback is incorporated as well. Playbacks are used following the 6 minute passive listening period. After each playback monitors listen for an additional 2 - 1 minute blocks. Monitors should listen with the same consistency at each stop for birds from a stationary position outside of their vehicle. Volunteers should use their best judgment when determining if a bird is moving while listening at a stop.

Data is recorded at the time birds are detected, rather than waiting for the end of the 6, 8, or 10 minute listening period, to avoid data omission errors.

Other Species – Monitors are encouraged to record any species they hear calling while monitoring. In the future we hope that these data may become applicable to understanding more about other species that call at night.

Data forms:

Data forms consisted of filling in the route name and number, observer name, date, start time, and end time, estimated temperature, playback use, as well as detection data at each stop. In conjunction with other surveys already in progress data is collected on wind speed, sky condition, and noise at each stop. When entering data Alpha codes were used for species names (BDOW=Barred Owl, EASO=Eastern Screech-Owl, BAOW=Barn Owl, GHOW=Great Horned Owl, EWPW= Eastern Whip-poor-will, CWWI=Chuck-will's-widow, CONI=Common Nighthawk, and AMWO=American Woodcock). In addition, route location data is also collected from volunteers, as well as habitat data at each stop.

Route Selection:

Each route consists of 10 stopping points where monitors stop, get out of their vehicle, and listen for nightjars and owls for a period of 6 minutes or 8/10 if using playback. Each stopping point is at least one mile apart. The starting point of a route is recorded as stop #1 and so on until stop #10 is reached. At this time a nine mile route will have been completed. Note: at times rather than shortening space between stops to avoid double counting distance was added. Also, given the topography of the state and the layout of many roads we realized that not all routes would be straight nine mile routes. While some of the MOON routes were put together by volunteers in the past, in 2010 we randomly selected new routes using GIS forest coverage layers. Because of the topology of Illinois (agriculturally dominated) using a forest coverage GIS layer appeared to be the best way to ensure that nightjar/owl habitat was being monitored. Routes created prior to 2010 continue to be monitored if monitors are available to monitor. Monitors, as always, are asked to scout their route to make sure other problematic variables, such as noise and traffic, would not be limiting.

Results and Discussion

Routes

In 2014 27 routes were monitored at least one time (Figure 1). Figure 2 is a map depicting routes that are already monitored and routes that we would like to have monitored in 2015 and beyond. Because of occasional volunteer turnover, time restraints, and weather some routes are not monitored every year. Another great challenge we will always be up against is that these are nocturnal surveys and for most volunteers this requires extra planning. Currently routes are set up along habitat that is considered suitable for nightjars and owls. However, there is an obvious difference in occupancy versus forest composition among routes monitored within the state. Forest composition and food availability are two big factors that can affect occupancy. We want to take a look at the habitat types surrounding the MOON routes and from there determine the habitat characteristics that are affecting the occupancy of owls and nightjars along the routes.

Nightjars

Monitors detected a total of 105 nightjars in 2014, with the breakdown as follows: 8 Common Nighthawk, 84 Eastern Whip-poor-will and 13 Chuck-will's-Widow (Table 2). The average number of Eastern Whip-poor-will/route was 1.79. The average number of whip-poor-will/route over the past seven years is 2.14. These numbers are similar to those being found in both Wisconsin and Michigan.

Owls

Monitors detected a total of 137 owls this year with the breakdown as follows: 111 Barred Owl, 14 Eastern Screech-Owl, and 12 Great Horned Owl (Table 2). This protocol may not be suitable for detecting Great Horned Owl at this time, however, in terms of detecting Barred Owl and Eastern Screech-owl (if using playback) the protocol is sufficient.

Future of MOON

For 2015 we will be using the same protocol. According to analysis 6 minutes is a good time frame to detect owls and nightjars if they are present. Also, as one would expect, chances of detecting owls and nightjars increases with # of visits, so we will continue with the two monitoring windows currently established in the protocol. In terms of detecting nighthawks, it has become clear that this monitoring program cannot efficiently sample for them. A more powerful monitoring plan for nighthawks has yet to be determined.

We will continue to work with the Midwest Coordinated Bird Monitoring Partnership and will work towards producing a couple of papers using results from our large scale landscape analysis. We would like to have a powerful protocol established that other states can use if they would like to begin monitoring for nightjars and possibly owls. Also, as previously mentioned, landscape configuration, created by forest regeneration practices, appears to affect the distribution of Eastern Whip-poor-wills (Wilson and Watts 2008). In this study whip-poor-wills had a positive response to forest edges, which provided them with greater foraging opportunities, that were absent in poorly managed forest systems (Wilson and Watts 2008). We also hope to work more closely with the IDNR to study how current management practices they have been using are affecting owl and nightjar occupancy.

Acknowledgements

First off we would like to thank all of the volunteers that use their personal time to help continue to make MOON a success. Without all of you MOON would not be possible. Additionally, we would like to thank our partners; Midwest Coordinated Bird Monitoring Partnership, Northeast Coordinated Bird Monitoring Partnership, Wisconsin Bird Conservation Initiative, U.S. Nightjar Survey, and Bird Studies Canada. Together we can make changes. Also, a thank-you to all the natural areas that have allowed us admittance for monitoring; Crab Orchard National Wildlife Refuge, Lost Mound Field Station, Ferne Clyffe State Park, Sam Dalton Lake Conservation Area, Stephen A. Forbes State Park, Iroquois County Conservation Area, and Chain O' Lakes State Park. Finally, we would like to thank the IDNR, USFWS, TNC, and INHS for lending your support.

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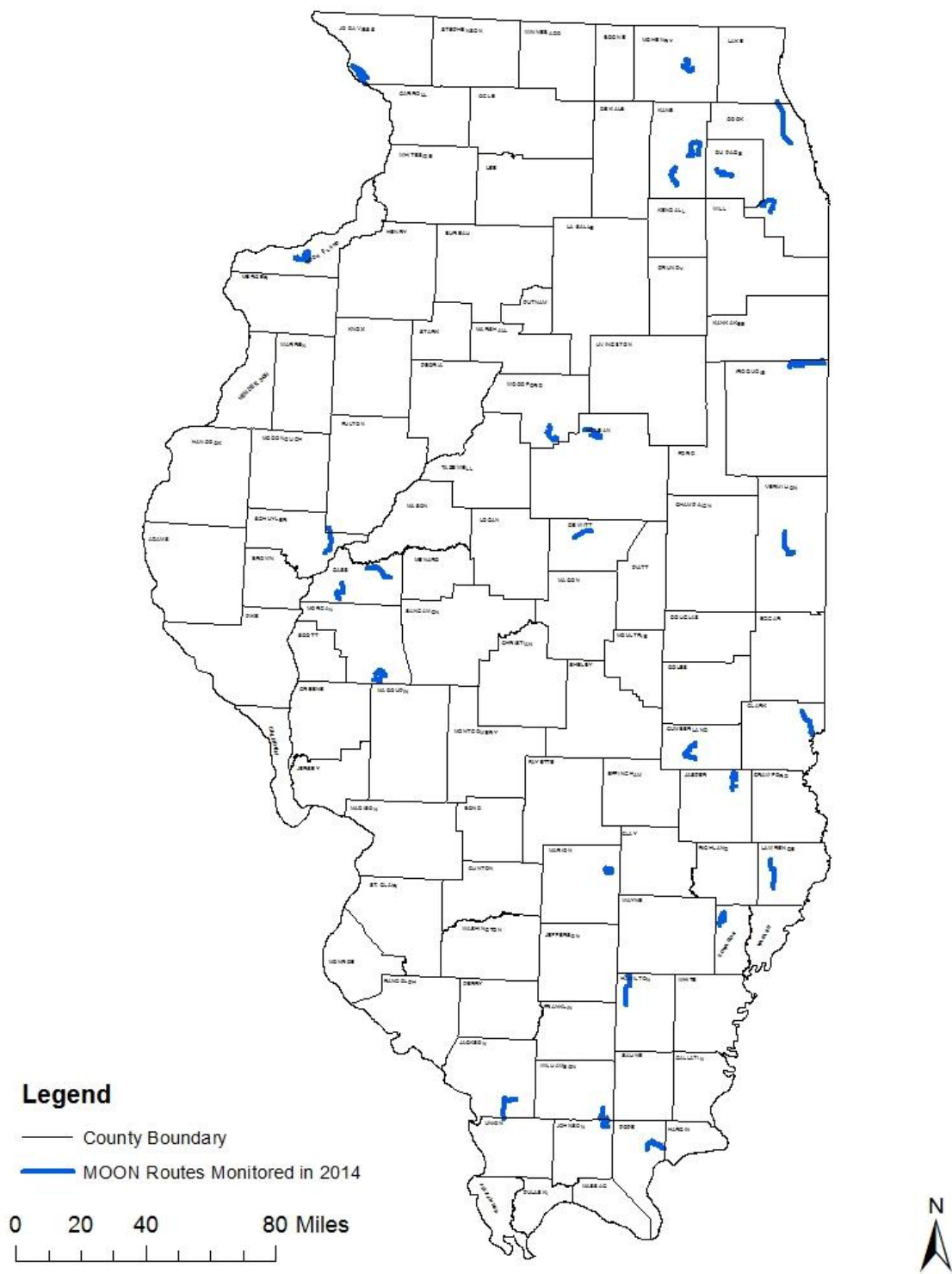


Figure 1. MOON routes monitored in 2014.

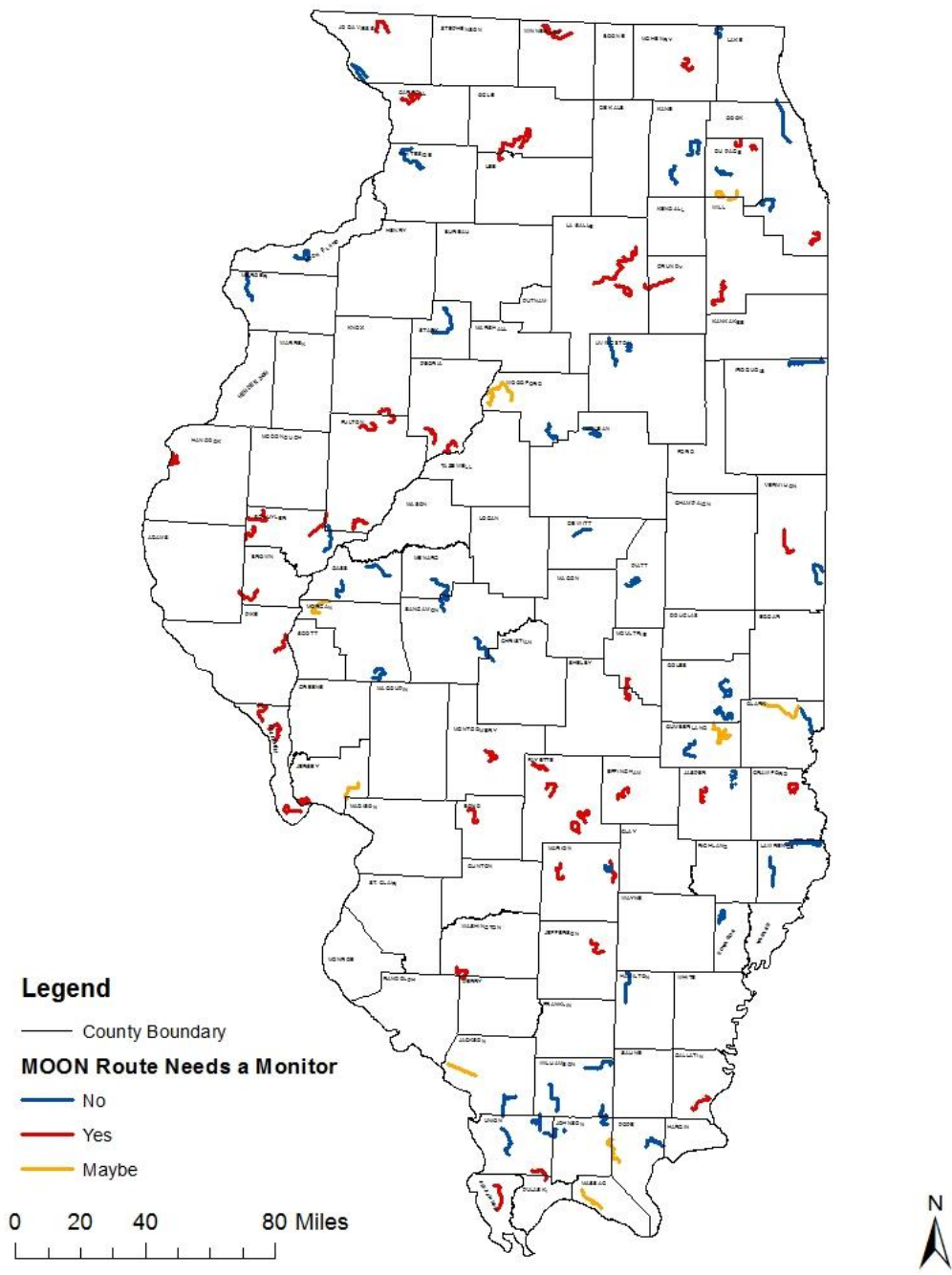


Figure 2. MOON routes available for 2015.

Table 1. 2014 species detected by route and month.

Route/Species	May	June	Grand Total
Cass1235		8	8
EASO		2	2
EWPW		6	6
Cass8761	16	17	33
AMWO	1		1
BDOW	2	3	5
EASO	1		1
EWPW	12	14	26
Clark1622	11	3	14
AMWO	2		2
BDOW	9	3	12
Cook4308	6	6	12
AMWO	3	2	5
CONI	1	4	5
GHOW	2		2
Cumberland1212	4	12	16
BDOW	3	11	14
EWPW	1		1
GHOW		1	1
Dewitt6767		2	2
BDOW		2	2
DuPage3542	4	5	9
AMWO	2	2	4
CONI	1	2	3
EASO	1	1	2
Edwards0476	4	2	6
BDOW	3	2	5
GHOW	1		1
Iroquois7824		6	6
BDOW		1	1
EWPW		5	5
Jackson5725	1		1
GHOW	1		1
Jasper2685	4	1	5
BDOW	2	1	3
EWPW	2		2
JoDavies3053		7	7
BDOW		1	1
EASO		2	2

EWPW		4	4
Kane17345	2		2
GHOW	2		2
Lawrence6143	7		7
BDOW	7		7
Marion6245	8	12	20
BDOW	5	6	11
CWWI	3	6	9
McHenry0165	2		2
AMWO	2		2
McLean7432	4	6	10
BDOW	3	3	6
EASO		1	1
GHOW	1	2	3
Morgan7212	5	6	11
BDOW	1		1
EASO	1		1
EWPW	3	5	8
GHOW		1	1
Pope2079	6	16	22
BDOW	5	1	6
EWPW	1	15	16
RockIsland2238	3	5	8
BDOW	3	5	8
Schuyler8762	13	9	22
BDOW	7	4	11
EASO	1		1
EWPW	5	5	10
Vermillion8955	4		4
EASO	4		4
Williamson5750		11	11
CWWI		4	4
EWPW		6	6
GHOW		1	1
Woodford2828	12	6	18
BDOW	12	6	18
Grand Total	116	140	256

Table 2. Avian species detected by month during seven consecutive years (AMWO – American Woodcock, BDOW – Barred Owl, CONI – Common Nighthawk, CWWI – Chuck-will’s-widow, EASO – Eastern Screech-Owl, EWPW – Eastern Whip-poor-will, GHOW – Great Horned Owl, and NSWO – Northern Saw-whet Owl).

Year/Month	AMWO	BDOW	CONI	CWWI	EASO	EWPW	GHOW	NSWO	Grand Total
2008	3	145	18		13	84	35		298
May		59	4		6	40	17		126
June	1	46	5		2	39	10		103
July	2	40	9		5	5	8		69
2009	31	193	19	26	47	135	62	2	515
April	15	63	2		13		33	1	127
May	16	95	4	13	18	54	11	1	212
June		29	9	13	14	64	17		146
July		6	4		2	17	1		30
2010	22	234	19	6	56	157	37		531
March	4	20			5		8		37
April	16	73			18	55	13		175
May	2	120	12	4	29	90	16		273
June		21	7	2	4	12			46
2011	5	114	9		17	77	22		244
April	4	36			4	17	12		73
May	1	44	6		4	30	6		91
June		32	3		1	23	4		63
July		2			8	7			17
2012		146	10	7	17	112	30		322
March		3							3
April		72			6	20	14		112
May		21		1		35	3		60
June		50	10	6	11	57	13		147
2013	7	163	2	25	10	82	33		322
April	4	79		5	3	24	16		131
May	3	73	2	20	7	58	16		179
June		11					1		12
2014	14	111	8	13	14	84	12		256
May	10	62	2	3	8	24	7		116
June	4	49	6	10	6	60	5		140
Grand Total	82	1106	85	77	174	731	231	2	2488

