Western Great Lakes Region

Owl Monitoring

For Minnesota and Wisconsin

2011

Instruction Booklet

David A. Grosshuesch
Owl Monitoring Coordinator
Hawk Ridge Bird Observatory (HRBO)
Natural Resources Research Institute (NRRI)
Duluth, MN

Western Great Lakes Region Owl Monitoring Protocol

Introduction:

There is increasing concern about the distribution, population status, and habitat loss for both diurnal and nocturnal raptors. Further understanding of the distribution, relative abundance, and density of wildlife populations would be valuable to make sound management decisions. Birds of prey occupy the top of the food chain and may be susceptible to environmental toxins and contaminants, making them important to monitor as indicators of environmental health.

Due to their nocturnal behavior and time of breeding, owls often go undetected using traditional methods to monitor bird populations (e.g. Breeding Bird Survey routes, Breeding Bird Atlases, Christmas Bird Counts, and migration monitoring). Several regions in the United States and Canada have effectively implemented volunteer-based nocturnal surveys in an attempt to monitor owl populations.

In 2005, a large scale, long-term survey to monitor owl populations was implemented in the Western Great Lakes region (Minnesota and Wisconsin). The Owl Monitoring survey will provide valuable information about owl populations in the region. Volunteers will be asked to conduct owl surveys along currently existing randomized routes in Minnesota and Wisconsin.

Goals of the Owl Monitoring Project:

The main goals of this survey are the long-term monitoring of owl populations in the western Great Lakes region, addressing the listed objectives (see below), and providing the general public with an opportunity to participate in a research project collecting valuable information about owls in the region.

Objectives of the owl survey are to:

1) Understand the distribution and abundance of owl species in the region.
2) Estimate trends in the relative abundance of owls in the region.
3) Compare trends in surrounding areas and analyze whether these trends could be scaled up or down on the landscape.
4) Determine habitat associations of owl species in the region.

Methods:

A standardized protocol will be implemented for a volunteer-based owl survey to collect data throughout Minnesota and Wisconsin. Using a standardized protocol to monitor owl populations will allow for comparisons of data collected throughout North America.

Survey routes in Minnesota:

The Minnesota Frog/Toad Calling Survey (MFTCS) routes used by the MN DNR have been identified as the base to conduct owl surveys. There are approximately 138 random MFTCS

routes placed throughout Minnesota. Additionally, in 2006 we created 31 new routes that are located in northern Minnesota.

Survey routes in Wisconsin:

The Wisconsin Breeding Bird Survey (BBS) routes will be used to conduct owl surveys. There are currently about 92 active BBS routes scattered throughout Wisconsin. You can see where the existing BBS routes are in Wisconsin by going to the http://www.pwrc.usgs.gov/bbs/results/routemaps/wisconsin.htm website. Survey routes can also be viewed at http://wiatri.net/projects/birdroutes/owls.htm on the Wisconsin Bird Monitoring website.

Route maps:

Route maps will be provided to each volunteer. Routes will be highlighted on the map, and a brief written description of the route included. In Wisconsin, maps should be viewed and printed at http://wiatri.net/projects/birdroutes/owls.htm on the Wisconsin Bird Monitoring website.

Starting point for route:

Point 1 will be the designated starting point for each route, and will be labeled on the map.

In Minnesota, we have GPS coordinates for starting points of all routes, but we are lacking coordinates for each point along the route. If volunteers have a GPS unit, please use them to obtain coordinates for each owl survey point along the route (please use the NAD 83 datum to collect GPS locations).

In Wisconsin, we currently have GPS coordinates for all points on about half of all available routes and these are available upon request. If volunteers have a GPS unit, please use them to obtain coordinates for each owl survey point along the route (please use the NAD 83 datum and decimal degrees to collect GPS locations).

Note: It may be useful to drive the owl survey route during daylight in order to become familiar with the directions and landmarks used on the map.

Route distance and listening period:

Each survey route will consist of 10 survey points spaced 1 mile (~1.6 km) apart. Please be aware that listening points should be spaced 1 mile apart based on your car odometer reading.

A **5-minute** "passive" listening period will be done at each designated survey point along the route. After a volunteer exits the vehicle, it is a good idea to walk ~20 steps in either direction to avoid detecting any vehicle noise. At a minimum, please wait 1-2 minutes before starting the 5-minute listening period. If you hear an owl in this time frame that is **NOT** heard during the 5-minute listening period, please make a note in the comments section.

Playbacks will <u>not</u> be used, given the logistical and standardization concerns with broadcast equipment.

Note: Given the number of points (10/route) and the 5-minute listening period, each route surveyed should take less than 2.0 hours to complete.

Time of year when owl surveys should be conducted:

Volunteers should survey their assigned route one time between **April 1 and April 15**.

Time of night when owl surveys should be conducted:

Volunteers will be asked to conduct owl surveys at night, starting at least 30 minutes after sunset. All routes should be completed by at least 30 minutes before sunrise. Volunteers should make sure to check local sunset times for the county in which they are conducting a survey.

Suitable weather conditions for owl surveys:

If possible, it would be good to conduct an owl survey when winds are less than 10 mph and little or no precipitation. However, if your schedule does not allow for flexibility, surveys should only be conducted on a day with minimal wind ($\leq$ 15 mph).

Note: If weather conditions deteriorate after three consecutive points, we would ask that you end the survey and attempt to conduct the survey during better weather conditions.

Data to be recorded on the data sheet:

Route # and Name: These should be on the map you receive from your state coordinator.
Observer: Record your name here.
Date: Indicate the date of the survey (Month/Day/Year; e.g. 04/07/2008).
Start time: Indicate the time at which you begin listening at point 1 (please use the 24 hr. method; e.g. 8:16 pm = 20:16).
End time: Indicate the time at which you stop listening at point 10.
Start temp: Indicate the temperature in F° at the start of the survey.
End temp: Indicate the temperature in F° at the end of the survey.
Precipitation type: Indicate the type of precipitation that reflects conditions throughout the entire survey.
Precipitation level: Indicate the level or intensity of precipitation that reflects conditions throughout the entire survey.
Snow cover: Indicate the snow cover that reflects the average conditions found along the entire route.
Snow depth: Indicate the average snow depth that reflects conditions found along the entire route.

For each point we are asking that you give a rough indication of the following environmental conditions which are known to affect bird calling or our ability to detect them. These data are important and will be used in our analysis. ONLY USE THE CODE SYSTEM OUTLINED BELOW.

Wind: Record the wind condition at each point using the codes below. Do not begin a survey if wind is considered MODERATE or STRONG. If wind intensifies during the survey, and winds

of MODERATE or STRONG persist for more than three points, we ask that you end the survey and attempt it again under better conditions.

APPENDIX III: BEAUFORT SCALE TRANSLATIONS TO WIND SPEEDS

Beaufort #	Wind Speed in km/hr (mph)	Indicators of Wind Speed
0	< 2 (< 1)	Smoke rises vertically
1	2 to 5 (1 to 3)	Wind direction shown by smoke drift
2	6 to 12 (4 to 7)	Wind felt on face, leaves rustle
3	13 to 19 (8 to 12)	Leaves, small twigs in constant motion
4	20 to 29 (13 to 18)	Raises dust/loose paper, small branches move
5	30 to 38 (19 to 24)	Small trees in leaf sway

Sky Condition: Record the sky condition (i.e. cloud cover) at each point using the codes (e.g. code 0 = 0 - 25%, 1 = 26 – 50% cloud cover, etc.) listed on the data sheet. Do not begin a survey if there is heavy fog or there is persistent snow, rain, or drizzle. If these weather conditions persist for more than three points, we ask that you end the survey and attempt it again under better conditions.

Noise: Assign a noise code to each point. Noise codes are a measure of the effect of noise on your ability to hear owls, **including the effect of wind**. Although we have provided examples of noises for each code, these are meant only as general guidelines. It is ultimately up to you to judge to what degree the noises you encounter are affecting your ability to hear owls.

APPENDIX IV: NOISE LEVEL DESCRIPTIONS

Noise Level	Description
1	Quiet
2	Some noise, but not distracting (dogs or coyotes barking/howling)
3	Significant noise that may have reduced owl detectability (ie. creek)
4	Constant noise (ie. heavy traffic, compressor station, roaring creek)

Cars: Record the number of cars that pass by during the entire count period as a rough index of traffic noise.

Counting Owls:

A single observer should conduct a survey, although a partner is recommended for safety purposes. At each point, the observer will spend FIVE MINUTES listening for owls, with each bird and one-minute period treated independently. What this means in practice is that you will have a single line on the survey form for each bird detected (see example below) and you will mark whether you detect it in each of the five one-minute periods. Birds will sometimes move during the count, and you will need to use your best judgment when deciding if a "new" detection is actually an additional bird or simply an already-counted bird that has moved its location. Listening and recording data should be done from a stationary point outside the car. **DO NOT** use whistling, playbacks, or any other method of coaxing birds. Record only birds detected during the 5-minute sample period, although you may record birds detected outside of this period in the Comments section. Record birds as you hear them, rather than waiting for the sample period to be over, so as to avoid errors of omission.

Use the following abbreviations for each species on the data form:

GHOW = Great Horned Owl	**BDOW = Barred Owl**	**NSWO = N. Saw-whet Owl**
GGOW = Great Grey Owl	**LEOW = Long-eared Owl**	**SEOW = Short-eared Owl**
BOOW = Boreal Owl	**EASO = Eastern Screech Owl**	**NHOW = N. Hawk Owl**
UNKOWL = Unknown Owl		
AMWO = American Woodcock	**RUGR = Ruffed Grouse**	**WISN = Wilson's Snipe (a.k.a Common Snipe)**

Note: If you hear an owl but are unsure of its identification, please use the code **UNKOWL** on the data sheet.

If NO OWLS are detected at a point, enter the point number as usual, followed by "NONE" instead of a species code, and leave the columns for each time period blank (or draw a line through them). Doing so will reduce the possibility of becoming confused during a survey and forgetting which point you are on. Also, if you end the survey for example because of wind or rain, mark all points not surveyed as NOT DONE on the data sheet.

Sample Owl Data Form:

Pt.	Species	1	2	3	4	5	Repeat Owl	Dist/Dir
1	GHOW	X	X	X	0	0	n	1/270
1	BDOW	0	0	0	X	X	n	4/65
2	BDOW	X	X	0	0	0	y	
3	NSWO	X	X	X	0	0	n	2/100
3	NSWO	0	0	0	X	X	n	3/NW
4	NONE							
5	UNKOWL	0	X	0	0	0	n	5/SE

In this form a "0" indicates that a given individual was NOT detected, while an "X" indicates it was. For example, at Point 1 a Great Horned Owl was heard in the first three one-minute periods but not the last two. Also at Point 1 a Barred Owl was detected only in periods 4 and 5. At Point 2 a Barred Owl was only detected in periods 1 and 2, but it was presumed to be the same Barred Owl from Point 1, given the distance and direction heard. This was noted in the Repeat Owl column with a "y" for yes. In the comments section it was also noted that the BDOW at Point 2 was likely to be the same individual detected from Point 1. At Point 3 a N. Saw-whet Owl was heard during the first three periods but not the second two. A different N. Saw-whet Owl was first detected in period 4 and period 5. Because it did not overlap with the first bird, there is a possibility that they are the same bird and that it moved between periods 3 and 4. Some cues that might suggest this are if calling ended early in period 3 and started late in period 4, but there is no hard and fast rule. Use your best judgment. No owls were heard at Point 4. At Point 5 an owl was detected in period 2, but its identification was difficult to ascertain and recorded as an unknown owl. This process would continue through Points 5-10.

While this protocol may at first appear confusing, such is only likely to be the case at points where there are several birds calling at once. In such cases it may become difficult to keep-track of individual birds during each one-minute period, but doing so is made easier by the fact that you need only record each as a "0" or "X" at during each period.

Distance (Dist): The distance from the point should be recorded for individual owls using the distance categories below.

Distance Code	Estimated Distance
1	$\leq$ = 100 meters
2	> 100 to 500 meters
3	> 500 to 1000 meters
4	> 1000 to 1500 meters
5	> 1500 meters

Direction (Dir): The direction of each owl will be recorded individually by taking either a compass bearing (Azimuth – requested if possible) or using N, NW, NE, etc.

Comments: Use this field to provide any additional information not included in the table. Example of such data include:

- an owl detected at one point is suspected to be the same individual at a subsequent point.
- details on noise factors that might impede your ability to detect owls (use only if you used Noise Code 3 on a given point)
- owls detected between points or after the 5-minute period is over
- any other information you wish to convey

Additional Species:

We would ask that volunteers record any additional species detected while conducting an owl survey. Our greatest interest is in American Woodcocks, Ruffed Grouse, and Wilson's Snipe (a.k.a. Common Snipe). However, any species not previously listed should be recorded. If you detect any species other than owls, please use the Additional Species table on the data sheet.

Sample data form:

Pt.	Species	Total
1	AMWO	2
2	None	
3	RUGR	1
3	WISN	2
4	None	

In this form, at Point 1 two different American Woodcocks were detected. At Point 2 no additional species were detected. At Point 3 one Ruffed Grouse was detected and 2 different Wilson's Snipe (or Common Snipe) were detected. At Point 4 no additional species were detected. This would continue for points 5 – 10.

Volunteer Release of Liability Form:

Each volunteer conducting a survey should sign and return the Release of Liability Form. Forms should be mailed to either Dave Grosshuesch for Minnesota volunteers or Ryan Brady for Wisconsin volunteers (see enclosed address).

Volunteer Effort Sheet:

Each volunteer should keep track of the miles traveled and hours spent conducting owl surveys on the enclosed Western Great Lakes Owl Monitoring-Volunteer Effort Sheet. If you are conducting more than one owl survey, please make sure to fill this information out after each survey. This form should be filled out and returned after all the surveys are completed.

Where to send the data sheets and other forms:

Immediately upon completion of your survey, return the data sheet, liability form, and volunteer effort form as directed below.

MINNESOTA VOLUNTEERS:
All materials should be returned to: Dave Grosshuesch, 5426 Juniata St., Duluth, MN 55804.

WISCONSIN VOLUNTEERS:
All materials should be returned to: Ryan Brady, WDNR, 2501 Golf Course Rd., Ashland, WI 54806, or ryan.brady@wisconsin.gov.

Equipment provided to Volunteers:

The Coordinating organization will provide volunteers with the following equipment:

1) Instruction Booklet
2) Data sheets
3) Route map
4) Volunteer Release of Liability Form
5) Volunteer Effort Sheet

Equipment Volunteer needs to provide:

Each volunteer will need to bring the following equipment when conducting an owl survey:

1) Warm clothes – Please make sure to bring warm clothes, because the weather can drastically change during this time of year.
2) Flashlight or headlamp
3) Thermometer – To record the temperature at the start of each route.
4) Compass – To record the direction of each detected owl.
5) GPS unit (if you have one) – GPS coordinates will be provided for the starting point of each route.
6) Stopwatch/clock – To time the 5-minute listening period.
7) Pen or pencil – If using a pen, make sure it is waterproof.
8) Clipboard

Safety considerations:

Your safety and comfort are very important to us while conducting an owl survey. Please consider the following safety tips before conducting an owl survey.

1) If at any time you feel uncomfortable or unsafe for any reason, do not hesitate to discontinue the owl survey.
2) Please do not conduct a survey if the weather conditions are unfavorable for travel.
3) Please do not travel on roads along the route that are unsafe because of snow or ice. If possible, terminate the survey and return at a different time.
4) If possible, a survey should always be done with a minimum of two people.
5) Please make sure to have a safety kit in your vehicle. Items to consider bringing are: blankets, flashlight, extra food and water, first-aid kit, shovel, jumper cables, and cell phone.

6) Please make sure to pull off the road at every station so passing vehicles can get by without any trouble.

Data considerations:

There are a few things to consider while conducting an owl survey:

1) Please make sure to only record the owls detected during the timed 5-minute listening period, noting any additional owls in the comments section.
2) Please remember that it's possible no owls will be heard while doing a survey, and that recording no owls is still valuable data.
3) If your assigned route is known to be noisy or busy with traffic, dogs etc., then you should try to conduct the survey at an "extreme" time of night or morning, not soon after sunset. If the route is still too noisy or unsafe (no shoulders, fast traffic, etc.), then please indicate this clearly on your datasheet and/or contact the survey coordinator so the route can be considered for relocation or replacement.

Thanks to all the volunteers for helping with these surveys! Although there may be nights when conducting surveys seem to be "fruitless", the data collected will be very beneficial in our understanding of owl populations in the Great Lakes Region. We appreciate your time and effort in this survey, and we will be sending all volunteers a report at the end of the owling season!

If you have any questions or concerns about the information included in the Owl Monitoring Instruction Booklet, etc. please contact:

Julie O'Connor at joconnor@hawkridge.org or call (218) 348-2291
Dave Grosshuesch at dgross@hawkridge.org or call (218) 525-7253
Ryan Brady at ryan.brady@wisconsin.gov or call (715) 685-2933

Western Great Lakes Owl Survey

Route # and Name:										
Observer:										
Date:										
Start time:					**End time:**					
Start temp(°F):					**End temp(°F):**					
Precip type:					**Precip level:**					
Snow cover:					**Snow depth**(in)**:**					
Weather Data at Points:										
Point:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Wind										
Sky										
Noise										
Cars										

Surveys should not be conducted under windy conditions or when there is persistent rain or snow. If such conditions manifest after a route is started and persist for more than three points, please abort the survey and try again under better conditions.

Precip Type	**Precip Level**	**Wind Codes**	**Sky Codes**
0 = None	0 = Low	0 = < 1 mph	0 = 0 – 25%
1 = Snow	1=Medium	1 = 1 to 3	1 = 26 – 50%
2 = Rain	2 = High	2 = 4 to 7	2 = 51 – 75%
Snow Cover		3 = 8 to 12	3 = 76 – 100%
0 = None		4 = 13 to 18	**Noise Codes (incl. wind)**
1 = Patchy		5 = 19 to 24	1 = None
			2 = Slight
2 = Continuous			3 = Medium
			4 = Excessive

Owls								
Pt.	**Species**	**1**	**2**	**3**	**4**	**5**	**Repeat Owl?**	**Dist/ Dir**

Additional Species		
Pt.	**Species**	**Total**

Dist Code	**Est. Distance**
1	≤ 100 meters
2	101 – 500 m
3	501 – 1000 m
4	1001 – 1500 m
5	> 1500 m

Comments (use back of form if necessary):

RELEASE OF LIABILITY
Western Great Lakes Owl Monitoring Program

ACTIVITY Western Great Lakes Owl Monitoring Program

NAME_____ DATE_____

ADDRESS_____ PHONE(S)_____

_____ _____

I, _____, wish to participate in the Western Great Lakes Owl Monitoring Program (WGLOMP). I am informed that WGLOMP activities are led by WGLOMP selected people who may or may not be WGLOMP employees and that they function as representatives of WGLOMP.

I recognize that the Western Great Lakes Owl Monitoring Program activity has a certain degree of risk, and I knowingly and voluntarily assume the risk of any injuries, regardless of severity, and including death, and all risk of damage or loss of property which I may incur due to negligence or accidental occurrences while I am participating in the Western Great Lakes Owl Monitoring Program.

In consideration of the opportunity to participate in the Western Great Lakes Owl Monitoring Program, I, on behalf of myself, my agents, heirs and next of kin, hereby release WGLOMP organizations and their representatives, employees, officers, and agents from any responsibility or liability for personal injury, including death, and damage to or loss of property, that I may incur due to the acts of WGLOMP, my own negligence, or due to accidental occurrences while I am traveling to or from and during an owl survey, using or operating equipment, or otherwise participating in the Western Great Lakes Owl Monitoring Program.

I verify that I have no physical disability, impairments, or chemical dependencies that might inhibit my participation in the Western Great Lakes Owl Monitoring Program, and I agree to abide by all WGLOMP regulations regarding my participation in the Western Great Lakes Owl Monitoring Program.

I, the undersigned, am at least 18 years of age, am competent to sign this release, and have read carefully and understand all its terms.

Signed_____ Date_____

Witnessed by_____ Date_____

Western Great Lakes Owl Monitoring
Volunteer Effort Sheet

Activity Description:	
Project Title: Owl Monitoring Project	State:
Route # and Name:	

In-kind Effort

Date	Name	Signature	Mileage	Hours

Certification:

To the best of my knowledge I certify that the above is correct.	
Signature:	Date:
Title:	