

# **Western Great Lakes Region**

## **Owl Monitoring**

### *Instruction Booklet*

*For Minnesota and Wisconsin*

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

Ryan S. Brady  
Bird Monitoring Coordinator  
WI Bird Conservation Initiative (WBCI)  
WI Department of Natural Resources  
(WDNR)  
Ashland, WI

# 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 two-thirds 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 not 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 survey should take less than 2.0 hours to complete.

**Time of year when owl surveys should be conducted:**

Volunteers should survey their assigned route two times. The first survey should be conducted between **April 1 and April 10**. The second survey should be conducted between **April 22 and May 1**.

**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. Become familiar with your route before surveying to determine if traffic and/or noise might warrant an early morning – instead of late evening – survey when human activity tends to be minimal.

**Suitable weather conditions for owl surveys:**

If possible, 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).

**Rep #:** Circle whether this is the first or second replicate survey of the route this year.

**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      NSWOW = 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             | ≤ 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 may be recorded. If you detect any species other than owls, please use the Additional Species table on the data sheet.

### **Sample data form:**

| <b>Pt.</b> | <b>Species</b> | <b>Total</b> |
|------------|----------------|--------------|
| 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 (formerly 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. In Minnesota, forms should be mailed to Dave Grosshuesch (see enclosed address). **In Wisconsin, volunteers must certify, prior to conducting their owl survey, they have read and agree to the liability waiver on their profile/account page of the new online data entry system accessible via the owl survey website. No paper forms need to be mailed, signed, or returned.**

### **Volunteer Effort Sheet:**

Each volunteer should keep track of the miles traveled and hours spent preparing for, conducting, and summarizing owl surveys. In Minnesota, fill out the enclosed Western Great Lakes Owl Monitoring-Volunteer Effort Sheet and return after all surveys are completed. **In Wisconsin, your total miles and hours should be entered with the rest of your owl data on the new online data entry system. If you survey more than one route, do not “double dip,” i.e. be sure to record only unique miles and hours for each route.**

## **Submitting your completed data sheets:**

### **MINNESOTA VOLUNTEERS:**

Upon completion of your survey, return the data sheet, liability form, and volunteer effort form to: **Dave Grosshuesch, 5426 Juniata St., Duluth, MN 55804.**

### **WISCONSIN VOLUNTEERS:**

In Wisconsin, all data should be entered online via the “Enter Survey Data” link of the WBCI owl survey website (<http://wiatri.net/projects/birdroutes/owls.htm>). The survey coordinator will give each volunteer a required username and password when confirming route assignments. Volunteers may then access their assigned routes to enter data accordingly. This process should take approximately 10-20 minutes per route per replicate survey and be fairly self-explanatory as the online entry was designed to mimic the field data sheets. The coordinator will be automatically notified when a volunteer’s data is entered. **Volunteers should complete data entry for each route by June 15 of the survey year.** Hard copies of field data do NOT need to be mailed in but observers should hold onto them for at least a year in case any problems or questions arise. Volunteers who for some reason are unable to complete data entry online may email, fax, or mail their data to the survey coordinator at the address below, but this is preferred to be a last resort.

**Wisconsin survey coordinator: Ryan Brady, WDNR, 2501 Golf Course Rd., Ashland, WI 54806; fax 715.685.2909; or [ryan.brady@wisconsin.gov](mailto: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 for safety purposes.
- 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:

Dave Grosshuesch at [dgross@hawkridge.org](mailto:dgross@hawkridge.org) or call (218) 525-7253

Ryan Brady at [ryan.brady@wisconsin.gov](mailto:ryan.brady@wisconsin.gov) or call (715) 685-2933



RELEASE OF LIABILITY  
Western Great Lakes Owl Monitoring Program

ACTIVITY Western Great Lakes Owl Monitoring Program  
NAME \_\_\_\_\_ DATE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ PHONE(S) \_\_\_\_\_  
\_\_\_\_\_

*\*In Wisconsin, this form should be read and acknowledged online per directions above. No mailings are necessary.*

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

*\*In Wisconsin, data from this form should be submitted online per directions above. No mailings are necessary.*

|                                       |        |
|---------------------------------------|--------|
| 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:   |       |