

Instructions for Conducting Nightjar Surveys

Thank you for agreeing to participate in the Northeast Nightjar Survey, a project of the Northeast Coordinated Bird Monitoring Partnership in cooperation with New Hampshire Audubon and other state partners. All three species of nightjars in the Northeast: Whip-poor-wills (*Caprimulgus vociferus*), Chuck-will's-widows (*C. carolinensis*), and Common Nighthawk (*Chordeiles minor*) are believed to have declined severely in the past 50 years, so the purpose of the survey is to collect information on the abundance and distribution of these species in the Northeast (and potentially the whole range in the future). These data will be used to track population trends and to identify areas where these species may still be relatively abundant, in order to guide land protection efforts, habitat management, and future research.

The Survey relies on a network of volunteers to conduct standardized surveys along roadside census routes during specific lunar conditions. The only experience necessary is a familiarity with both species' characteristic songs (you can listen to the songs at <http://www.mbr-pwrc.usgs.gov/id/songwav.html>). It will also be helpful to be familiar with the calls and booming display of the Common Nighthawk

(<http://www.on.ec.gc.ca/wildlife/wildspace/life.cfm?ID=CONI&Page=Call&Lang=e>), which sometimes occurs in the same habitats as the other nightjars. Volunteers are asked to conduct a single nighttime survey along pre-established routes between early May and mid-July (depending on location). Please read carefully and follow closely the instructions that follow. Compliance with these instructions will ensure standardized data collection and a more successful survey.

Conducting Surveys

Seasonal and Daily Timing:

Surveying nightjars is particularly challenging because they are known to be more vocal during the period around a full moon, and relatively quiet when the moon is poorly illuminated or below the horizon. For this reason surveys are restricted as indicated below. In addition to only conducting a survey during the acceptable period, it is also important to **DELAY YOUR SURVEY (IF NEEDED) TO ALLOW THE MOON TO RISE ABOVE THE HORIZON**. This is most applicable in during the waning moon (i.e., **AFTER** the full moon), during which time the moon rises progressively later each night. Whip-poor-will calling activity also declines during the course of the season, and is also reduced during cloudy conditions, except in for brief periods immediately after sunset or before sunrise. Picking a date and time for your survey will thus depend on several factors, including your latitude (see Table 1), the lunar cycle in a given year (Table 2), and local weather conditions. Begin each survey at least 15 minutes after sunset and end no later than 15 minutes before sunrise (check your local newspaper or the U.S. Naval Observatory website at <http://aa.usno.navy.mil/> for sunset and moonrise times).

Table 1. Latitudinal variation in spring arrival dates of the Whip-poor-will in eastern North America. Based on average arrival date, a survey period is defined based on a two-week delay until breeding and a six-week nesting period.

Arrival date	Locations	Start of survey period	End of survey period
Apr 1	AR (s), AL, GA, MS, SC	Apr 15	June 1
Apr 10	AR (n), IL (s), IN (s), KY, KS, MO, NC, TN, VA, WV	Apr 25	June 10
Apr 20	DE, IA, IL (n), IN (n), MD, NJ, OH, PA, SD (se), WI (s)	May 5	June 20
May 1	CT, MA, ME (s), MI (lower peninsula), MN (south), NH, NY (s), ON (s), RI, VT (s), WI (n)	May 15	June 30
May 10	MB, ME (n), MI (upper peninsula), MN (n), NS, NY (n), ON (n), QC, VT (n)	May 25	July 10

Table 2. Acceptable survey windows based on lunar phase for 2021-2022. In this table, the full moon occurs on the last day of the waxing moon. Please compare this table with your location from Table 1 to determine the appropriate dates for conducting your survey.

	2021			2022*		
Lunar phase	1 st cycle	2 nd cycle	3 rd cycle	1 st cycle	2 nd cycle	3 rd cycle
Waxing moon	April 20-26	May 19-26	June 17-24	Apr 9-16	May 8-15	June 7-14
Waning moon	April 27-May 3	May 27-June 2	June 25-July 1	Apr 17-23	May 16-22	June 15-20

*In northern areas, surveys also possible July 6-10, 2022.

Note that the moon rises later each evening during these survey periods, and that by the end of the period a pre-dawn survey would be required. In such cases be sure to leave roughly 1.5 hours to complete the survey so that it ends before sunrise. It is **CRITICAL** that surveys are conducted during appropriate lunar conditions, irrespective of the date within the survey period.

****SURVEYS CANNOT BE CONDUCTED OUTSIDE THESE DATES****

Surveys should not be conducted in overcast conditions (e.g., the moon is mostly obscured), when precipitation stronger than an intermittent light drizzle, or if wind speed averages above 8 miles an hour see below for estimating wind speed).

Route Logistics:

The starting point is stop number 1. All other stops are spaced 1 mile apart along the route as indicated roughly on your map. If the one-mile mark places you in a location that is not conducive to the survey (no place to pull off, excessive highway noise, barking dogs, directly in front of home, otherwise unsafe location), you may continue on for UP TO 1.2 miles. Be sure to continue with one mile spacing to the next point. Note that on some routes not all points are located in a continuous line, and instead have one or more points along side roads. Please be sure to follow any instructions that accompany the map in such cases. It is advisable to scout your route during daylight to familiarize yourself with point locations and any unforeseen problems with access. Locations of points can be written on the "Route Description Form" at this time. If you have questions about the route please contact your state coordinator. Please run the stops along a route in the same order during each survey.

Completing the Survey Form:

These instructions are referenced to the headings on the Northeast Nightjar Survey Form. Please report data as accurately and completely as possible, and complete a separate form for each route on each survey date. You may want to conduct a test run on a date prior to your scheduled survey so as to become familiar with the census techniques and the form.

Route Name: This should be on the map you receive from your state coordinator

Observer: Record your name here.

Date: Indicate the date of the survey.

Time Start: Indicate the time at which you begin listening at stop 1.

Time End: Indicate the time at which you stop listening at stop 10.

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. ONLY USE THE 0-3 CODE SYSTEM OUTLINED BELOW.

Wind: Record the rough wind speed at each stop 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 stops, we recommend that you end the survey and attempt it again under better conditions.

Code	Wind Speed	Description
0	Calm (<1 mph)	smoke rises vertically
1	Light (1-7 mph)	smoke drifts, weather vane inactive, leaves rustle, can feel wind on face
2	Moderate (8-18 mph)	leaves, twigs, and thin branches move around, small flags extend, raises loose papers. Do not conduct survey.
3	Strong (19 mph or greater)	small trees begin to sway. Do not conduct survey.

Sky Condition: Record the sky condition at each stop using the codes below. Do not begin a survey if the sky is completely overcast, there is heavy fog, or there is persistent rain or drizzle. If cloud cover intensifies during the survey, and CLOUDY or MOSTLY CLOUDY conditions persist for more than three stops, we recommend that you end the survey and attempt it again under better conditions.

Code	Wind Speed	Description
0	Clear	Almost no clouds, <20% cloud cover
1	Mostly Clear	More open sky than clouds, perhaps 25-40% cloud cover
2	Moderate (8-18 mph)	At least half cloudy, with some open sky visible (20-40%)
3	Cloudy	At least 80% cloud cover. Do not conduct survey.

Noise: Assign a noise code to each stop. Noise codes are a measure of the effect of noise on your ability to hear Whip-poor-wills. 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 Whip-poor-wills. Record the number of cars that pass by during the survey in the next row.

Code	Description
0	There is no appreciable effect on your ability to hear nightjars
1	Noise slightly affects your ability to hear nightjars (e.g. distant traffic, dog barking, 1-2 car passing during survey period).
2	Noise moderately affects your ability to hear nightjars (e.g. nearby traffic, 3-6 cars passing during survey period, airplane flying overhead).
3	Noise seriously affects your ability to hear nightjars (e.g. continuous traffic nearby, construction noise, loud spring peeper chorus, more than 6 cars passing during the time spent at one point).

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

Counting Nightjars:

It is preferable to have TWO conduct a survey, although a single observer is acceptable if the route would not otherwise get covered. Each observer should count and record the birds detected INDEPENDENTLY of the other – in other words do not discuss what you are hearing during the point or alter your data form after the count in light of information received from your survey partner. One of the two observers should be the designated timekeeper, and announce the start of the survey and the break between the one-minute periods (below). If observers are using the Northern Saw-whet Owl protocol in combination with the nightjar survey, the survey CD includes beeps to indicate the time periods and an official timekeeper is not required.

At each point, each observer will spend SIX MINUTES listening for nightjars, 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 six 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 (unless you are also using the Northern Saw-whet Owl protocol). Record only birds detected during the six-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:

WPWI = Whip-poor-will

CWWI = Chuck-will’s-widow

CONI = Common Nighthawk

If NO BIRDS are detected on 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.

Sample Data Form:

Pt.	Species	1	2	3	4	5	6	Rep?	Dir.
1	WPWI	1	1	1	1	1	1		NE
1	WPWI	0	0	1	1	1	0		S
2	NONE								
3	WPWI	1	1	1	0	0	0		W
3	WPWI	0	0	0	1	1	1		W
3	CONI	0	0	0	0	1	0		SE
3	WPWI	0	0	0	0	1	1		N
4	CWWI	1	1	1	0	0	0		E
4	WPWI	0	1	1	1	1	1	No	SE
5	Etc.								

In this form a “0” indicates that a given individual was NOT detected, while a “1” indicates it was. For example, at Point 1 a Whip-poor-will was heard in the first one-minute period and every period thereafter. A second Whip-poor-will was first detected in the third period and heard in the following two periods before becoming silent. No nightjars were heard at Point 2. At Point 3 a Whip-poor-will was heard during the first three periods but not the second three. A different Whip-poor-will was first detected in Period 4 and heard again in Periods 5 and 6. 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. Also at Point 3, both a Common Nighthawk and Whip-poor-will were detected in Period 5, with the latter continuing into Period 6. The fact that this bird overlapped with the second Whip-poor-will is clear evidence that there are at least two of Whip-poor-wills at this point. At Point 4, a Chuck-will’s-widow was heard in Periods 1-3 and a Whip-poor-will in Periods 2-6. This process would continue through Points 5-10.

As of 2009:

While the basic protocol remained unchanged in 2009, we added two columns to the data sheet to both aid observers in data collection and collect additional data of interest to the Northeast Nightjar Survey. These are as follows:

- 1) Please indicate in the “Rep?” (= repeat) column if you think a given bird is the same individual you heard at a previous point. Do not ignore this bird, but be sure to indicate that it was previously detected.
- 2) In the “Dir.” (=direction) column, please write down the general direction the bird was calling from. This can be as simple as a rough cardinal direction (N, S, W, E), more specific (e.g., SW, NW), or even a compass bearing. This will help you keep track of individual birds and reduce the chance of double counting. It may also help us in the future with determining habitat relationships on a larger scale.

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

- other nocturnal species detected (owls, woodcock, marsh birds – please indicate Point Number)
- details on noise factors that might impede your ability to detect nightjars (use only if you used Noise Code 3 on a given point)
- nightjars detected between points or after the six-minute period is over
- any other information you wish to convey

Questions?

Email Ben Fletcher at bfletcher@vtcostudies.org or leave a message at 802-649-1431 ext. 210

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[illegible]

Please remember that surveys should not be conducted under cloudy or windy conditions, or when there is persistent rain. If such conditions manifest after a route is started, and persist for more than three points, it is advisable to abort the route and attempt it again under better conditions.

Wind Codes	Sky Codes	Noise Codes	Dist. Codes
0 = none	0 = clear	0 = none	VC = very close
1 = slight	1 = m clear	1 = slight	C = close
2 = moderate	2 = m cloudy	2 = medium	F = far
3 = strong	3 = cloudy	3 = excessive	VF = very far

[illegible]Official sunset ____:____ Official moonrise ____:____ Official moonset ____:____ Official sunrise ____:____[illegible]

Comments:

Nightjar Route Description Form

Route Name: _____

State: _____

Year: _____

This form has three purposes:

- 1) Record specific information on the observers assigned to a specific nightjar route
- 2) Provide a space where observers can record details about each point location during a non-survey visit to the route. **PLEASE UPDATE EXISTING INSTRUCTIONS IF NECESSARY.** These will have been provided to you if the route has been conducted and described previously.
- 3) Allow for recording of habitat information at each stop along a route (optional)

Part 1: Observer Information

	Observer #1	Observer #2
Name		
Address		
City, State, Zip		
Phone Number		
Email Address		

Parts 2 and 3: Route Information

Point	Location Description	# Houses Visible	Dominant 3 habitats (see below)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Habitat Codes:

PF = Pine/Conifer/Mixed Forest

HF = Hardwood Forest

D = Developed (urban, residential area)

O = Open (fields, lawn, gravel pits)

W = Water

M = Marsh/Wetland

Additional Comments:

Volunteer Time & Activity Report State Wildlife Grants–Vermont

Date(s)	Hours Worked (include prep time and other organizational efforts)	Your project related mileage	Activity Description (e.g., field survey, monitoring, planning meeting, training)	Volunteer Category for Activity (Project Leader please complete) FOV=Field Observation FWT=F&W Technician WSV=Wildlife Specialist WBV=Wildlife Biologist
			Survey	FOV
Totals				

Instructions: This record documents the non-federal match required for the federal State Wildlife Grant (SWG) funds used for this project. If federal funds compensate you for your time, or your time is already being used as a federal match for another program, please do NOT complete this form. NOTE: You must record hours worked for each day you worked on the project on each line. **You cannot summarize your hours weekly.** Please return the completed form to the project leader:

Name (print)_____ Address_____

Signature of Volunteer: _____ Signature of Project Leader:_____

Doug Morin

Dept: Fund: 20310 Dept ID: 6120021100 Program: 51036 Class: 70010 Project/ Grant: BIRD_____

Use Only Subrecipient Grant title (if applicable)_____ Subrecipient Grant #_____

Return to: VCE c/o Ben Fletcher at bfletcher@vtecostudies.org or P.O. Box 420, Norwich VT 05055. (p) 802-649-1431 Volunteer form version 8/2016