Breeding Landbird Monitoring Program

Palm Warbler
Ed Sharron photo

Volunteer Resource Manual

Breeding Landbird Monitoring
Northeast Temperate Network
NATIONAL PARK SERVICE
NATIONAL PARK SERVICE

Volunteer Resource Manual

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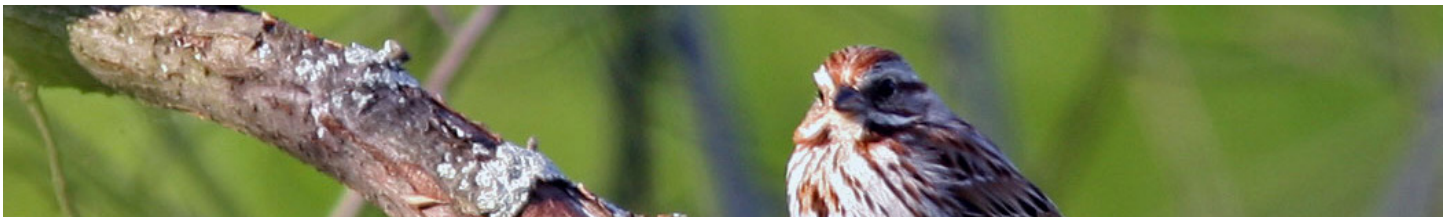
Last updated: March 2020

National Park Service Park/Program Acronyms

Acadia National Park	**ACAD**
Inventory & Monitoring Division	**IMD**
Marsh-Billings-Rockefeller National Historical Park	**MABI**
Minute Man National Historical Park	**MIMA**
Morristown National Historical Park	**MORR**
National Historical Park	**NHP**
National Historic Site	**NHS**
National Park Service	**NPS**
Northeast Temperate Network	**NETN**
Eleanor Roosevelt NHS (Roosevelt-Vanderbilt Parks)	**ELRO (ROVA)**
Home of FDR NHS (Roosevelt-Vanderbilt Parks)	**HOFR (ROVA)**
Vanderbilt Mansion NHS (Roosevelt-Vanderbilt Parks)	**VAMA (ROVA)**
Saint-Gaudens National Historical Park	**SAGA**
Saratoga National Historical Park	**SARA**
Saugus Iron Works National Historic Site	**SAIR**
Weir Farm National Historic Site	**WEFA**



NETN Breeding Landbird Monitoring

*From everyone within the **Northeast Temperate Network** (NETN) and the National Park Service - **THANK YOU** for participating in NETN's volunteer breeding landbird monitoring program! This resource manual will provide you with guidance on how to properly and safely collect bird observation data. This section begins with a study overview, and contains specific details on how to conduct bird surveys, helpful training exercises, and your data management responsibilities after fieldwork is finished. For complete details on the landbird monitoring program, see the Northeast Temperate Network Breeding Landbird Monitoring Protocol available for download on our website at: www.nps.gov/im/netn/breeding-landbirds.htm.*

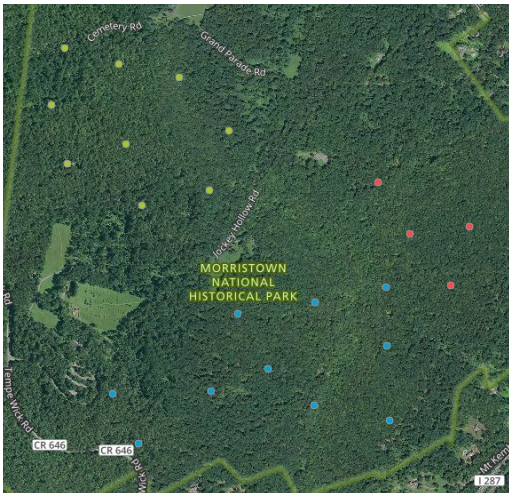
Why Monitor Birds?

NETN launched the long-term breeding "landbird" (relatively small, terrestrial birds - excluding raptors and upland game birds) monitoring program in 2006. The NPS is particularly interested in birds that utilize park forests for breeding purposes, which includes many species that migrate thousands of miles in order to do so. Birds are important members of park ecosystems, and their presence or absence make them good indicators of local and regional ecosystem change. Birds can also be indicators of the effects of habitat fragmentation.

When parks manage for different bird species with unique ecological requirements, it creates cascading benefits at a much larger landscape scale. The insights your monitoring will provide about long-term bird trends will give parks a measuring stick for assessing the ecological integrity and sustainability of northeastern temperate systems.

Bird Monitoring Goals

The overall goals of this program are to better understand the health of breeding landbird populations in network parks, to identify and assess the impacts of possible stresses to bird communities, and to guide park management decisions that affect bird populations and other natural resources. The specific objectives of this program are to 1) Determine annual changes in species composition and relative abundance of bird species during the breeding season; 2) Improve our understanding of the relationships between breeding birds and habitat; and 3) improve our understanding of the effects that management actions, such as forestry practices and mowing schedules have on bird populations by correlating changes in bird communities with changes in specific habitat characteristics.



How You Will Do the Monitoring

A series of bird monitoring points have been established at each participating park. Most parks have multiple study routes of between 5 and 10 "point-count" stations spaced about 200 to 250 meters apart. Many are located near long-term NETN forest health monitoring plots to give parks a more complete picture of ecosystem health. You will listen and look for birds at every station on your route during 10-minute countdown sessions. For each bird observed, you will record the minute (down from minute 9 to 0) and the distance it is from you (in "bands" of 0-10 m, 10-25 m, 25-50 m, and >50 m). You will get a map with detailed instructions on how to reach the study

site and locate each station. GPS coordinates are also provided for each point. All point-count stations are marked with small metal signs labeled with the route name and point-count station number, as well as flagging tape and/or reflectors.

If possible, *a pre-survey visit is strongly recommended* to become familiar with your site. Several free GPS smartphone apps exist (*e.g*. GPS Waypoints) that can help guide you to each point. You can use a hand compass (see Appendix D) as well. Walking routes between stations may change due to topographic obstacles, wetlands, or other issues. Unless noted otherwise, all bearings on the site directions sheets are magnetic, not "true" (so do not correct the declination on your compass – **but check your directions to be sure!**).

Why You Are Being Asked to Record Birds in This Very Specific Way

The data collected during point counts are analyzed by several scientific models. Each estimates the probability of detecting an individual bird in different ways. It is very important you record your detections precisely as the directions call for. When done accurately, it will not only clearly relate the number of birds that you detected, but will also allow us to estimate the numbers of birds that were **NOT** seen or heard during your point count! This gives a more complete estimate on the numbers of birds in a park than we would otherwise get using only birds actually seen or heard.

An important component of this monitoring project is that point-counts are meant to happen *early* in the morning. It was designed to capture bird activity in a window between 5 and 10 AM. As all intrepid birders know, these first sunrise hours are when the bulk of temperate breeding bird species are at their most vociferous - singing to defend territories and attract mates. It's no wonder this time of day is dubbed the "dawn chorus".

When collecting data, keep in mind the most essential details to get right are that birds are *correctly identified to species* and that each individual is o*nly recorded once*. The models further assume that all birds within 10 meters of the observer (the first distance band) are always detected, and that the distance band recorded is the correct band. Other models assume the time recorded for the individual bird is the time it was *first* heard or seen, and that observers are equally likely to hear a bird species during any given minute. For example, you are just as likely to hear or see a Brown Creeper at minute 1 as your are at minute 5.

Another reason to observe birds in this manner is that it allows for direct comparison to other bird monitoring programs such as the North American Breeding Bird Survey. All other data collected are secondary to the primary goals of getting accurate species and distance information. If for any reason you can't meet these observation requirements during your count, please provide written comments with as much detail as possible when you submit your data forms. *This will be a tremendous help to the data analysis phase of the project!*

Your Duties and Responsibilities as a Volunteer

This Volunteer Landbird Monitoring program would be impossible without you - *the volunteer*! We again thank you for all the hard work you have already done and will do to make this program a success. Our goal is to provide a safe, scientifically sound, and rewarding experience for all involved. You can expect to be supplied with all the basic needs to complete your monitoring. Don't hesitate to contact the NETN Landbird Coordinator with any concerns, issues, or needs you have. By volunteering for this program, there are also some basic but crucial expectations we have of you.

As you likely can guess, having strong bird id skills (by both sight and song) for your area is the primary skill you need to successfully be a part of this program. But just as equally important is the need for **good data management practices**. After all, if your can identify all 914 bird species in North America by just 2 notes, but can't accurately record them on your Field Mapping Card then all those observations are useless to this study and to science. The following section provides several **tips and best practices** regarding preparing for, executing, and reporting your bird observations. A helpful checklist is provided in this manual (Appendix G) that can be started in the early spring and will help you stay on top of all your important bird monitoring tasks.

Your route must be sampled at least once during the breeding window, but a follow-up survey within 2-weeks of the initial visit is highly encouraged. When possible, two volunteers are assigned to each route to better assure two monitoring visits per route/season. The NETN Landbird Coordinator will put you in touch with the other volunteer(s) of your route (if applicable) so you can avoid surveying on the same day. NETN's three smallest parks (Saint-Gaudens NHP, Saugus Iron Works NHS, and Weir Farm NHS), which only have a few point count locations need to be surveyed at least twice annually about 7-14 days apart. If you volunteer for one of these parks (in order to reduce within-or between-site bias due to time of day) make sure to survey your route in the same order each time - don't reverse the order in which point counts are surveyed.

Observer Training Tip: Study Your Bird Songs and Codes. April and early May are a good time to re-familiarize yourself with the bird songs and calls common to your area. See Appendix C for a list of the 10 most common birds per park with links to the Cornell Ornithology Lab's website which includes photographs and song audio files. At the very least, you should be intimately comfortable with these, but the more bird songs/calls you can recognize the more valuable your data will be to this study. You may also want to start familiarizing yourself with the 4-letter bid codes of of species common to your area (Appendix B).

Observer Training Tip: Learn Your Route. If you will be surveying a route you are not familiar with, you are strongly encouraged to walk the route before your first survey. This will get you familiar with the route and let you identify any faded, torn, or missing flagging/fire tacks (let the NETN landbird coordinator know if you find any). Visit the on-line NPS Data Store (https://irma.nps.gov/DataStore/Reference/Profile/2185075) to download explicit written directions and a map of your route (look for Route # and your park acronym in the Description column). The Northeast Temperate Network website (www.nps.gov/im/netn/breeding-landbirds.htm) can also be useful for getting an overview of your route.

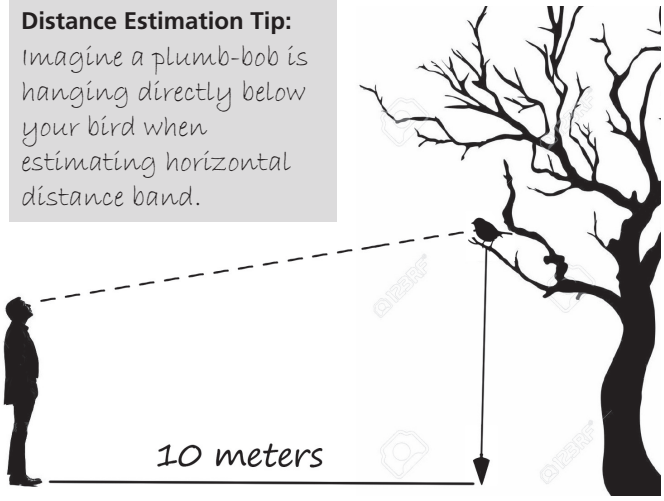
Observer Training Tip: Estimating Distances to Birds. In order that NETN can best estimate the abundance of birds within the park, it is important that you accurately judge distances to detected birds. Practice can greatly improve your ability to estimate distances. Read through the self-administered distance training exercises below and the survey procedures described in the following section, and then get outside and practice. If necessary, "recalibrate" by practicing these training exercises at the beginning of each field season.

Distance Band Estimation Training Exercises

Note: These can be accomplished more quickly with the help of an assistant.

1. In a habitat similar to the one in which you will be conducting point counts, begin by placing flagging or other markers at 10, 25, and 50 meters from a marked central point (your "point-count station"). To do this, use a long tape measure, a measured length of rope, or estimate by measuring your walking pace.
2. Remove the markers set up in step 1, and then walk around the "study site" placing flagging at four or five locations visible from the station. Return to the central point. Estimate and record the distance band (e.g., 0-10m, 10-25m, 25-50m, >50m) that each marker falls within. Then, using a measuring device or pacing, measure the distance to each marker and compare your initial estimate to the actual distance. Repeat this exercise several times until you can consistently estimate distances.
3. **Estimating distances to birds** (especially when only heard with no visual) is often the greatest source of error in bird counts. To practice doing this, head out into a nearby woodland during quality bird-singing hours (generally early mornings). Listen for a consistently singing bird from where you are standing and estimate the distance band from which you think it's singing. *The horizontal distance should be estimated, as if a plumb-bob was lowered to the ground directly below the bird's location.* Try to identify the tree branch where you think the bird is, and estimate the horizontal distance to an object that can be seen directly below it. Now, walk

Distance Estimation Tip: Imagine a plumb-bob is hanging directly below your bird when estimating horizontal distance band.



toward the bird until you can see it or more accurately estimate its location. Using a measuring device or pacing, walk back to the point count station and compare your initial estimate to the actual distance. Repeat this exercise for several birds at varying distances until you can consistently assess detection band distances.

One Month to Two Weeks Before Your Survey

■ **Begin Safety Checklist and Complete and Return All Necessary Forms.**

Your safety is of utmost importance to NETN and the NPS. As such, it is vitally important you adequately plan for a day "in the field" and that the park is fully aware of *when and where* you will be doing your monitoring. NETN has made it easy to safely plan for and keep parks informed about your bird monitoring activities. Please coordinate your survey schedule with the park resource manager (RM) **at least two weeks and up to a month** prior to your visit by email or phone. *Confirmation from your RM is important.* Carefully following the Volunteer Safety & Planning Checklist (page 17) will ensure you are in full communication with the park and NETN about your monitoring schedule. The most important items to keep on top of are:

- Complete the **Volunteer Trip Plan** and submit to the park RM prior to survey.
- Coordinate check-in procedures with park RM (either phone or text but needs to be clear to both parties).
- Communicate any changes in survey plans if weather or other issues require rescheduling.

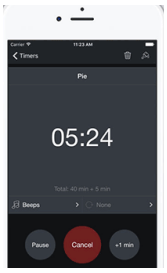
Day of Your Survey

■ **Assess Weather Conditions.** Counts should be conducted early in the morning and during proper survey conditions. Winds should be calm to light (< 7 mph; Code 2 or less on the Beaufort Scale. See Table 1). Acceptable weather conditions for counting birds include a sky condition of 5 or less (although don't do your count if you think fog will interfere with visual identification of birds. See Table 2). Clear conditions or slightly damp are ideal. **Counts should not be conducted in rain**, unless it is very light. The rule is to conduct surveys only in weather that is unlikely to reduce count numbers or affect your detection abilities. *It is advisable to listen to the forecast the night before the survey and plan accordingly (**remember to contact the park RM if your plans change**).*

■ **Navigate to Your First Point-Count Station Early in the Morning.** Use the map/written directions you downloaded/printed earlier, a GPS app or a compass to get to your first point. You may want to display the Windshield Placard (page 29) on your dashboard if parking on park property. The forest routes have been marked with blue flagging and/or signs and reflective markers every 25 to 100 m (depending on the density of the vegetation). If you found any worn out/missing flagging/fire tacks during a pre-site visit, replace it now with fresh flagging you got from the park or NETN Landbird Coordinator. See Appendix D for tips on navigating with map and compass.

REMEMBER: These are *early* morning surveys. We recommend a 5AM start time. Allowing for 10 to 15 minutes to navigate between points, you should be able to complete a 10 point-count route in the 9 o'clock hour or sooner. If you still have several stations to go after 10AM, it's best to visit them another day if possible.

■ **Prepare the Field Mapping Card.** Prior to beginning your first point count, fill in the **Park, Rte #, Rte Name, Date, and Observer**(s) information section on the right-hand side of the Field Mapping Card (FMC - Figure 1). Upon arriving at each sampling point and before starting the countdown timer, record the **Point #, Wind** speed (Table 1), **Sky** conditions (Table 2), and **Temp**erature (degrees Fahrenheit). You should keep your FMC oriented in the same direction for the duration of your count. Fill-in the box at the top of the outermost distance band with the compass direction it is facing (N,S,E,W). *Note - you can turn your body in different directions during count if helpful to hear all surrounding birds.* Immediately before beginning your count, record the **Time**.



■ **Use a Smartphone App or Countdown Timer.** Use a smartphone app or countdown timer to keep track of the time. **Do not use a stopwatch**. Set the timer for 10 minutes and verify it counts down when you start it. Although the data will be transcribed to coding sheets later, the Field Mapping Card is the *only true record of what was detected during the survey*. Even during the rush of a busy point count survey, remember to record data clearly and in a firm hand. When filling out the mapping cards make notations in a consistent manner and use the proper bird codes (Appendix B) and the standardized symbols as defined on the FMC.

In the Field: 10-Minute Count-down Monitoring Steps

■ Record All Bird and Squirrel Observations

Scarlet Tanager
Bird Code: **SCTA**

Start the countdown timer. Recording is done by mapping all observations (visual and auditory) in the appropriate 'distance band' and approximate spatial location on the FMC. Record the minute of the *first detection* of all individuals or groups of birds and squirrels (**see box below**) seen and heard during the 10-minute sampling period. This will require close attention to your count-down timer. For each bird or squirrel detected, record on the FMC its 4-letter code (Appendix B) in the correct distance band and approximate spatial location. Underneath the code, record the minute it was first encountered (9 for birds encountered during the first minute, then **counting down** to 0 for encounters during the last minute of the 10-minute survey period). If it was an audio-only detection (likely the majority of your bird observations), draw a circle around the code and minute. For groups of birds denote the bird code followed by the group number (i.e.. EUSTx4). See Figure 1 for a sample Field Mapping Card.

REMEMBER:
The crucial data are ***bird species, distance band***, and ***time*** of first detection - in that order. All other info is not absolutely required (but is still useful!)

■ Keep track of bird movements as best you can. *All birds should be counted only once.*

Mapping (marking the approximate location and noting movements) is the best way to reduce duplicate records. Recording type of detection (visual vs. auditory) will also help you track individuals. Also remember that the recorded distance should be **the horizontal distance** between the location a bird was first detected and the plot center (your location).

Table 1. Beaufort Scale Codes and descriptions for wind speeds[1]

Wind Speed Codes:

Code #	km/h	mph	Description
0	< 2	< 1	Smoke rises vertically
1	2 to 5	1 to 3	Wind direction shown by smoke drift
2	6 to 11	4 to 7	Wind felt on face; leaves rustle
3	12 to 20	8 to 12	Leaves, small twigs in constant motion; light flag extended
4	21 to 32	13 to 18	Small branches are moved
5	33 to 40	19 to 24	Small trees begin to sway

[1] These are the same codes used in the USGS Breeding Bird Survey. Acceptable conditions for counting birds include a wind speed of code 2 or less.

Table 2. Codes and descriptions for sky conditions[1]

Sky Conditions:

Code #	Description
0	Clear or a few clouds
1	Scattered clouds (partly cloudy)
2	Broken clouds or overcast
4	Fog
5	Drizzle or light rain
6	Rain
7	Snow
8	Showers

[1] These are the same codes used in the USGS Breeding Bird Survey. Acceptable conditions for counting birds include a sky condition of 5 or less (although fog should not interfere with visual identification of birds).

Red squirrels, gray squirrels, and eastern chipmunks are known to be effective nest predators. We want to monitor their populations as well as those of forest birds. Follow the same recording procedures for these vocal mammals as you would for birds using these 4-letter codes:

- **RESQ - red squirrel**
- **EGSQ – Eastern gray squirrel**
- **CHIP - Eastern chipmunk**

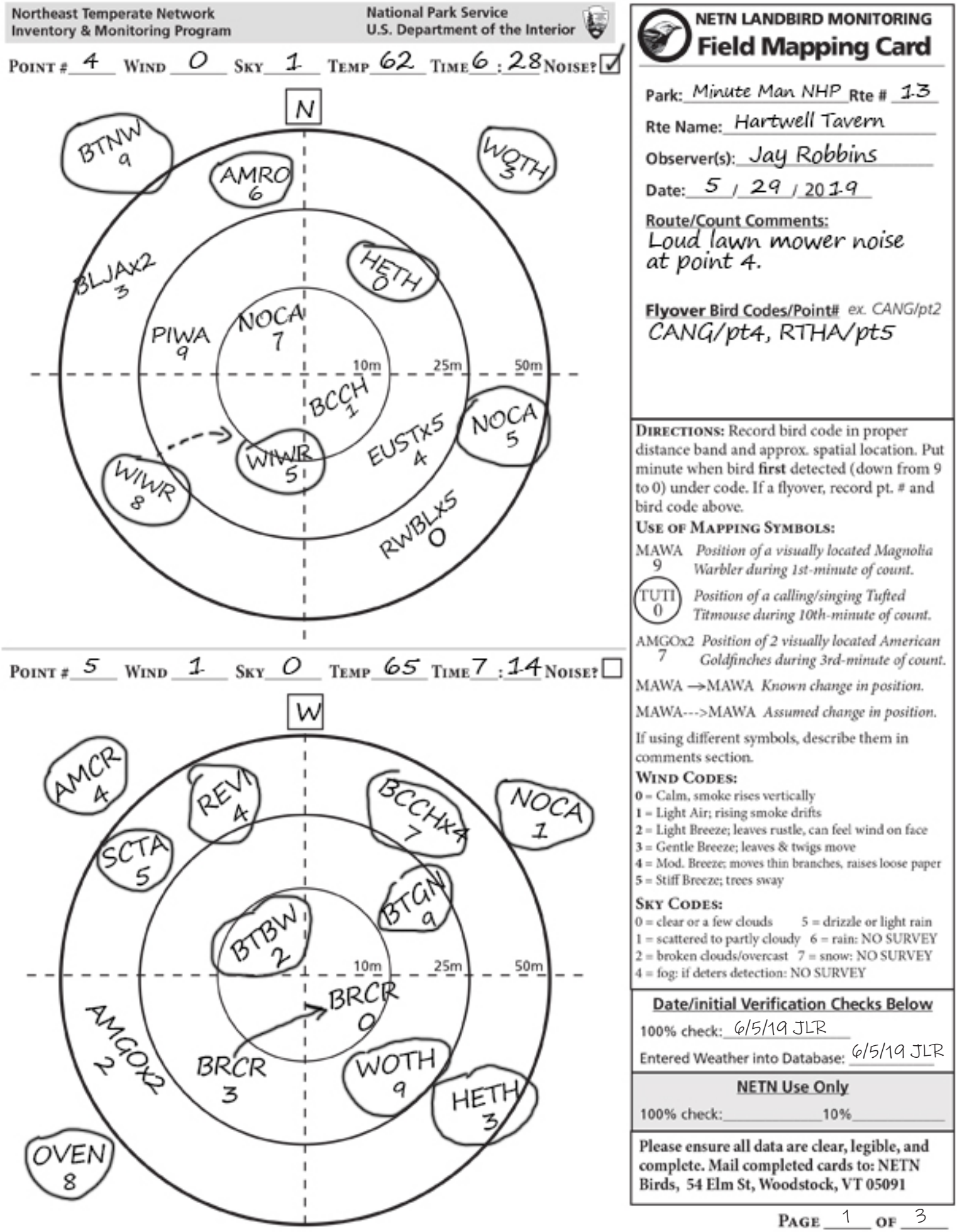


Figure 1. Field Mapping Card example.

NETN LANDBIRD MONITORING
Bird Data Coding Sheet

Northeast Temperate Network
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

Park: Minute Man NHP Route Name: Hartwell Tavern Route# 13

Observer(s): Jay Robbins Initials: JLR Date: 6 / 11 /2019

DIRECTIONS: Every bird/squirrel observation (individuals and groups) from Field Mapping Cards should be entered (first detection only) on its own line as either a visual (V) or auditory (A) detection. If a **Flyover**, record Species Code and place a checkmark in the Flyover column. When done transcribing, verify with a 100% check and sign below. Enter all data into online database (DB) and check-off each row as completed. Mail completed sheets to NETN.

Time Period: Detection minute recorded on Field Mapping Card. **Detection Codes:** Auditory = **A** Visual = **V**

Point #	Start Time	Species Code	Time Period	Distance Band / Detection Code				Flyover ✓	Entered in DB? ✓
				0-10 m	11-25 m	26-50 m	>50 m		
2	5:47	AMRO	9		2V				✓
1	5:17	BTBW	9			1A			✓
		BLJA	8		1V				✓
		CAGO	6						✓
		TUTI	6				1A		✓
		AMCR	0				6V		✓
		YBSA	1				1A		✓
		COYE	7		1A	~~1A~~ JLR			✓
2	5:58	BTNW	9			1A			✓
		BLBW	9	1A					✓
		SOSP	2		2A				✓
		NOCA	6				1A		✓
		FISP	8				2A		✓
		OVEN	9				1A		✓
		CORA	4					✓	✓
		BCCH	3	2V					✓
		SSHA	6						✓
3	6:39	BCCH	9		1A				✓
		TUTI	9			1A			✓
		PUFI	8		2A				✓
		EAKI	7				1A		✓
		RESQ	6				2A		✓
		PIWA	8				1A		✓
		YEWA	2			1A			✓
		VEER	0				1A		✓
		HETH	1				1A		✓

I 100% proofed transcription of data from Field Mapping Card(s):
Volunteer Signature Jay Robbins

NETN Use Only
Entered into AKN?_____ 100% check _____
10% check _____ AKN Sharing Level Set?_____

Page 1 of 3

Figure 2. Bird Data Coding Sheet example.

- **Write down flyovers.** Birds that fly through/over your point count area without landing do not factor into this study model. For these birds, record the species code in the **Flyover Bird Codes** section on the right-hand side box of the FMC. Though not part of this study, these observations are still valuable for documenting bird species in the area.

- **Stop recording bird observations at the end of 10 minutes.** Do not record any new birds seen or heard after the 10 minutes has passed. *Important: if* you feel that background noise (chainsaws, lawn mowers, etc.) impacted your ability to detect birds at any point during your count, check the **Noise?** box in the header of the FMC and make note of it in the comments section. If there was some noise but you don't feel it effected the survey overall (e.g. a car backfired for 1 second), leave the check-box blank. Before heading to the next point, check over card thoroughly making sure it is complete and legible. Remember, *this is the only record of what happened during the survey.* Take the time to clarify anything illegible or out of the ordinary.

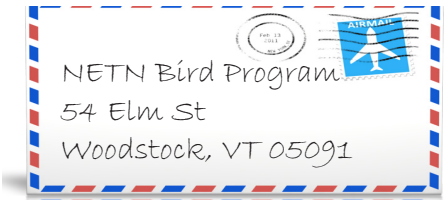
- **Head to the next point.** Once satisfied everything is legible and in order, navigate to your next point-count station and repeat the process until you've completed all your points.

At Home: One Day After Your Survey Through August 15th

Transcribing Data and Mailing Forms - Data Responsibilities

- **Data Transcription.** Field Mapping Card observations need to be transcribed to the Bird Data Coding Sheets (BDCS - Figure 2) soon after your survey. If possible, **do this within one-day** of your survey while your memory of events is still fresh. Remember, only transcribe the record of a bird or squirrel the first time you saw or heard it: *each individual you encounter should only be recorded once on the BDCS.* Distinguish between **A**udio and **V**isual detections by writing an 'A' or 'V' after the number of birds detected. For flyovers (birds that never landed in your study plot), record the species code and check the Flyover column on the BDCS. After completing each sheet, conduct a 100% check to look for transcription errors, then sign the bottom of the coding sheet. If you need to correct information on the FMC or BDCS (e.g., the wrong bird code was used), draw a single line through the incorrect data and then enter the correct data next to cross-out, along with your initials. A helpful overview of your data management responsibilities can be found in Appendix E.

- **Mail Data Sheets and Mapping Cards no later than August 15th.** After data have been transcribed and proofed, mail the original Field Mapping Cards and Bird Data Coding Sheets to:



For questions and additional information contact the NETN Landbird Coordinator.

- **You're Done!** Once you've mailed the datasheets to NETN - your officially finished with monitoring for the season! Time to sit back, relax, and muse over the valuable contribution you've made to science that will pay dividends for decades to come. The NETN Landbird Coordinator will be in touch in late summer/early fall to check-in on how the experience went for you and to get any feedback you have. You will also be contacted in the late winter to see if you'd like to do it again (hopefully!) the coming bird monitoring season. **Thank you** again and enjoy the "off season"!

Appendix A. Safety Procedures, Recommendations, and Forms

Safety First!

The Northeast Temperate Network considers the occupational health and safety of its employees, volunteers, cooperators, and contractors to be of utmost importance, and is committed to ensuring that all personnel receive adequate training on National Park Service (NPS) safety procedures, incident reporting, and emergency response prior to field work. This appendix provides a summary of safety procedures that all volunteers should be familiar with. The entire safety Standard Operating Procedure and supporting appendices are available in the Landbird Monitoring Protocol available for download on NETN's website (www.nps.gov/im/netn/breeding-landbirds.htm).

Responding to an Incident

Life-Threatening Medical Emergency

1. ***Call 9-1-1*** or park emergency number. Administer first aid to the best of your knowledge, ability and training. If appropriate, transport to emergency room. Park-specific emergency contacts and procedures will be provided to each volunteer by NETN staff.
2. As soon as it is practical to do so, inform the NETN Landbird Coordinator and the park's emergency contact (provided by the NETN Landbird Coordinator).
3. Complete Worker's Compensation paperwork (contact NETN staff for assistance).

Non-Emergency Incidents

1. Contact the NETN Landbird Coordinator immediately after incident.
2. Complete Worker's Compensation paperwork (must be done within 48 hours of incident, contact NETN staff for assistance).
3. Seek medical attention, if needed.

Field Preparation

Everyone participating in breeding landbird monitoring is responsible for maintaining a safe work environment for themselves and others.

First Aid Kits and Training

NETN strongly encourages you carry a backpacking first aid kit with them in the field. An inventory of first aid kits should be performed prior to each field season to ensure that all medical supplies are in sufficient quantity and haven't expired. Each first aid kit should have an inventory list of the supplies it should contain. Items in first aid kits that are used should be promptly replaced. If you do not have access to a first aid kit and want to carry one, let the NETN Landbird Coordinator know and NETN will purchase one that can be borrowed from the park you are volunteering at. NETN also strongly encourages all volunteers to obtain basic first aid and CPR training, particularly if they have not been certified in the past 5 years.

Teamwork

Since much of the monitoring for this protocol is off-trail in somewhat inaccessible areas, NETN recommends that people work in teams for monitoring. Working with another person makes it more likely that someone will be able to obtain help in the event of an accident, and working with someone else usually makes field work more enjoyable. If you are unable to find someone to walk your monitoring route with you and you would like to work with someone else, please notify the NETN Landbird Coordinator and he will contact the appropriate NPS staff to explore whether a field partner is possible.

Daily Communication and Planning

You are expected to carry a reliable communication device. In most NETN parks, a personal cell phone can be used. At Acadia NP, cell phones are not always reliable and NETN can loan out a Personal Locator Beacon (PLB) and SPOT GPS Messenger to volunteers if they choose. The SPOT GPS Messenger can be used for checking in at the end of the field day (as well as sending an emergency signal if needed), while the PLB is for emergency signaling only. You must fully understand how to operate all communication devices before heading into the field. All modes of communication must be fully charged and tested at the beginning of your survey day.

You must notify the NETN Landbird Coordinator and the park **Resource Manager** or other **Designated Individual** (RM/DI) with expected dates of your survey day. Please do so at least 2-weeks prior if possible, and even up to 1-month if you can. If you would like an additional person to accompany you during the survey to either assist or as an extra precaution, please contact the RM/DI at least 2-weeks prior to your survey day. The park may or may not be able to personally assist you in the field or find another person to do so, but will do their best to provide additional assistance.

Before your survey day arrives, you must notify your RM/DI of which route you will be monitoring and how you will get there. This can be done by providing them with the your Volunteer Trip Plan which includes the name(s) of anyone else you are bringing, a cell phone number, your vehicle license plate number, expected parking location(s), name of your monitoring route, and the estimated time of arrival and departure from the park. This information is needed so park staff (i.e. rangers) are informed of why and who is parking a vehicle on park property so early in the morning! You must also establish a check-in time after completion of field work with the RM/DI so they know when you will be arriving on and leaving from the site. It is critical that park staff are contacted with this information so that they can inform rangers and other staff of your whereabouts in the park. Please establish the most effective check-in procedures with your RM/DI. Once your survey is completed contact your RM/DI by the method you established so that there is no question of your safety. ***Failure to check-in with the park may result in the park contacting emergency services to look for you.***

If you are borrowing the NETN PLB and/or SPOT GPS Messenger at Acadia NP, the trip information must also be provided to NETN Landbird Coordinator. NETN must also be provided with the RM/DI name, phone number, and e-mail.

If your survey is canceled or your plan changes while in the field, notify the RM/DI as soon as possible. If at Acadia NP, the SPOT Messenger can be used to notify NETN that more time is needed in the field or that field work is completed. NETN will then relay this message to your RM/DI. If NETN staff are not contacted, they will assume that you checked in directly with the RM/DI.

You are responsible for keeping track of the time and ensuring your end-of-day check-in occurs on schedule. The RM/DI will call emergency services if you miss your end-of-day contact and cannot be located within 30 minutes of the check-in time.

Personal Gear

You are responsible for wearing field appropriate clothing and footwear such as long pants, a hat and hiking boots. Depending on the weather, rain gear or warm clothing should be taken into the field and it is recommended that an extra set of clothing be kept in the vehicle. You should take care to avoid over exposure to the sun by wearing sunscreen and/or protective clothing. You should always carry ample water (2-3 liters) and food when working in the field. Dehydration is a serious condition that can lead to more serious conditions if untreated, and should be avoided. It is important to drink liquid frequently to maintain hydration on a warm day, even if you don't feel thirsty.

Be Safe Out There - Field Safety

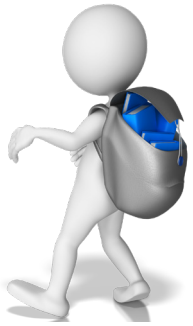
Slip, Trip, Fall Prevention

Uneven terrain, slippery rocks, dense brush, and fatigue are all hazards that could result in a *slip, trip, or fall*. The following guidelines should be obeyed to avoid injury from slips, trips, or falls:

• Always wear appropriate footwear such as sturdy hiking boots
• It may still be dark when first starting out on your route. Proper lighting equipment (head lamp or flashlight) may be necessary.
• Pay attention to where you are going, and remain alert of potential hazards
• Walk at an appropriate pace and adjust pace for changes in terrain (e.g., slow down and take smaller steps on slippery surfaces)

- When hiking long distances, take breaks to avoid fatigue
- When navigating to a location off trail, choose the safest route (this may not be the shortest route). Avoid river crossings, excessively steep terrain and sudden drop-offs. Always be careful when navigating over piles of scree, and alert others of falling rocks.

Proper use of Backpacks



You will generally be carrying a day pack (with personal gear, water, and clipboard) that could weigh 10 pounds or more. It is important for everyone to understand appropriate ways to pack, lift and carry a backpack to avoid back, neck and shoulder injuries. You should follow these guidelines, especially if carrying more than 30 pounds:

- Use a sturdy field pack with padded and adjustable hip and shoulder straps.
- Pack heavy items in the center of the pack and close to your back.
- Make sure weight is evenly distributed from side to side.
- Once equipment is packed, tighten the compression straps to minimize movement inside the pack during travel.
- When picking up a heavy pack, use your legs to do the lifting, and use slow, smooth movements. Keep your back straight, and keep the pack close to your body. Do not twist or bend at the waist, and do not swing the pack quickly over one shoulder.
- Always carry a pack with both shoulder straps and with the hip belt and chest straps secured.
- The pack should be positioned near the center of the back, and most of the weight should rest on your hips.
- Keep your pack organized, and only carry the necessary equipment, food and water to reduce weight.

Weather

Weather conditions in the eastern U.S. can be hazardous and can change quickly. Plan your day accordingly to the local weather forecast and for being aware of their surroundings and changing conditions.

Thunderstorms

Storms that produce strong winds and lightning are dangerous and should be avoided in the field. If caught in a lightning storm, seek shelter in a building or car as soon as possible. If no shelter is available, spread out and move to an open space. Squat low to the ground on the balls of your feet with your hands on your knees (do NOT lie flat on the ground). Avoid high elevations, conductive materials, and tall structures such as trees or telephone poles. If you are in the open and feel your hair stand on end (indicating lightning is about to strike), immediately make yourself the smallest target possible and minimize contact with the ground. *NOTE: A person struck by lightning can often be revived by prompt administration of CPR and oxygen.*

Excessive Heat and Sun

Over exposure to heat and sun can cause dehydration, heat exhaustion, or heat stroke. All are serious conditions that can be life threatening, and should be avoided. When working in hot weather, be sure to drink plenty of water and eat foods that can replace electrolytes. Wear loose and light colored clothing, including a hat to block the sun's rays. It may help to shift the field schedule to avoid working outside during the hottest part of the day.

WARNING: Signs of heat stroke include hot, red or spotted (usually dry) skin, and the sufferer may be mentally confused, delirious, having convulsions, or unconscious. If heat stroke is suspected, seek immediate medical attention!

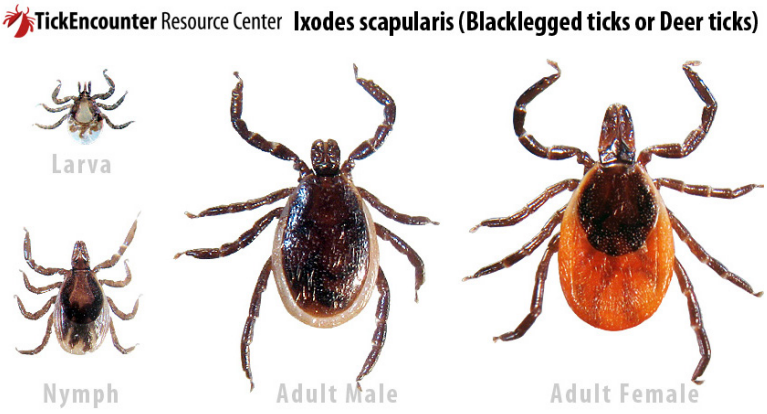
Poor Air Quality

Summer ozone and particulate matter levels occasionally exceed federal health standards. Young children, seniors, and those suffering from asthma, chronic bronchitis, and chronic obstructive pulmonary disease or heart problems are especially sensitive to poor air quality and should minimize outdoor activity when poor air quality warnings are posted. The risks of occasional exposure to ozone and fine particulate matter are minimal for healthy individuals.

When poor air quality warnings occur, it is advisable to avoid overly strenuous activity during the hottest part of the day (pollution levels tend to be lowest early in the morning), and to stick to lower elevations under a forest canopy.

To check local air quality forecasts, or learn more about health risks of air pollution, visit the AIRNow intergovernmental agency website: http://www.airnow.gov/.

Deer ticks and Lyme Disease



Several species of ticks are commonly encountered in eastern U.S. parks while working in the field includes the deer tick (*Ixodes scapularis*), which is a known vector of Lyme disease and Ehrlichiosis. Take the precautions outlined below to help minimize the chances of having an embedded tick that could lead to illness:

- Clothes treated with tick and insect repellents have been found to be fairly effective tick repellent. You are strongly encouraged to treat clothing with **permethrin** prior to conducting monitoring. Carefully follow the application instructions on the spray bottles to ensure your safety. Permethrin will remain active for several weeks and through several washings.
- Take additional precautions to protect yourself from ticks, including tucking pants in socks and tucking in shirts. Long sleeves and gaiters have been found to help.
- Check clothes and skin for ticks at the end of every field day. Ticks typically need to be embedded for at least 24 hours for disease transmission to occur; therefore, the earlier ticks are found and removed, the lower your chances are of acquiring a tick-borne illness.
- If you find a tick that is already embedded, use fine-tipped tweezers to firmly grasp the tick close to your skin. Slowly and steadily pull the tick's body away from your skin. Be careful not to crush the tick's body to minimize the chances of it regurgitating fluids into the wound. Clean the bite area once the tick is removed with soap and water.
- If you receive a deer tick bite, notify the NETN Landbird Coordinator, who will help you start a worker's compensation claim. If you start to notice symptoms of a tick borne disease, follow instructions for getting medical treatment under worker's compensation.
- Keep an eye out for any early symptoms of tick borne diseases. Symptoms may include a bull's eye rash around the tick bite (doesn't always occur), tingling or numbness in extremities, a spotted rash on extremities, bad headaches, high fever, joint aches, stiff neck, fatigue, or swollen glands. If you develop a combination of these symptoms soon after a tick bite, seek medical attention.

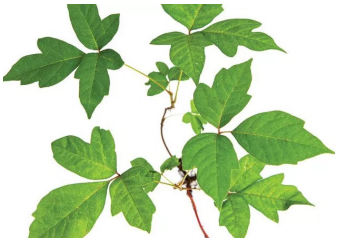
More information on Lyme Disease and Ticks:

Center for Disease Control:
http://www.cdc.gov/lyme/

American Lyme Disease Foundation:
http://www.aldf.com/

Poisonous Plants and Animals

Both for safety and protection of park resources, it is never advisable to eat wild plants while working in a National Park, regardless of their confidence in plant identification. Keep a safe distance from wildlife.



Poison Ivy

Poison ivy (*Toxicodendron spp*.) is present in most NETN parks, and can be very abundant in localized areas. When working in areas with poison ivy, it is advisable you learn to recognize this plant and take precautions to avoid skin contact with any part of it. Using a pre-exposure cream and wearing long sleeves and long pants can help reduce the amount of skin contact with the plant. If needed, use poison ivy wipes after contact. Be careful not to rub their faces when working around poison ivy. After working in an area with abundant poison ivy, Gently wash exposed skin in cool water with poison ivy soap, and should change into fresh field clothes. At the end of a field day, you should also wash potentially contaminated equipment (e.g., backpack). If a severe allergic reaction occurs, the affected individual should seek medical attention, notify the NETN Landbird Coordinator as soon as possible, and file a workers compensation claim.

Venomous Snakes

Venomous snakes are rare but may occur in some NETN parks The copperhead (*Agkistrodon contortrix*) is the only venomous snake reported in NETN parks and may be encountered in more southerly parks. The best course of action is to avoid all snakes by keeping them at a safe distance. When in poisonous snake country, pay attention to where you put your hands and feet, and be aware around rock piles and bedrock outcrops. Note that many snake bites are purely defensive, and contain no venom. Bites from immature snakes are much more likely to contain a more dangerous amount of venom than bites from adult snakes. Should you receive a snake bite from a potentially poisonous snake, follow the procedure below:

- Time is of the essence - treat all bites as if envenomation has occurred.
- If working in a team, assign one person to use a cell phone to call for assistance. Identify the call as a snakebite incident, and identify the victim's location and the closest possible point of access for responders.
- Quickly remove rings, watches, shoes etc., before swelling begins.
- Immobilize the bitten limb firmly with a splinted elastic (Ace) bandage and get the victim out of the woods and to a hospital as quickly as possible.
- Do not use thin circulation restrictive cords, pack with ice for long periods (more than five minutes) or attempt to cut open or otherwise enlarge the fang punctures.
- Reassure the victim that they will be OK and otherwise attempt to maintain the calm both for the victim and for all others involved.
- In a crew situation, begin leading the victim slowly out of the woods as soon as the bitten limb has been immobilized. Move as slow as necessary to maintain a normal heart rate for the victim. Waiting for assistance will only prolong the process of getting proper medical treatment.
- In a solitary situation, establish radio or telephone contact and relay the necessary information as you walk slowly out of the woods. Focus on remaining calm and maintaining a normal heart rate.
- It is better to spend your available time getting to proper medical treatment facilities than it is to fumble with field therapy and wait for assistance to reach you.

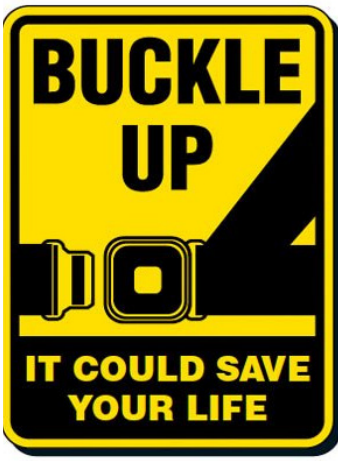
The range of the copperhead covers the following NETN parks: Morristown NHP, Roosevelt Vanderbilt NHS, Saratoga NHP, and Weir Farm NHS. The likelihood of encountering a copperhead is **low** in NETN parks. Copperhead bites are not typically considered life threatening, and in most cases antivenin is not administered. The range of the timber rattlesnake covers all NETN parks except Acadia NP. This species is listed by NatureServe as "critically imperiled" (in New Hampshire, Vermont, Massachusetts, and Connecticut) or "vulnerable" (in New York and Pennsylvania) throughout NETN, and the likelihood of encountering a timber rattlesnake in NETN parks is very low. Adult timber rattlesnakes are capable of delivering a lethal dose of venom.

Bees, Wasps, and Yellow Jackets

If you or any in your group any are allergic to bee stings, they should alert their colleagues and make sure to carry appropriate medications. If they carry an epinephrine injector and are working in a team, they should make sure their colleague knows where it is carried. Be alert to potential hive and nest locations while hiking to plots and working on plots. Look for insects traveling in and out of one location (e.g., brush, ground holes, and hollow logs). If someone is stung, Benadryl® and a cold compress may bring relief. If stinger is left behind, scrape it off of skin. Do not use tweezers as this squeezes the venom sack, worsening the injury. If the victim develops hives, asthmatic breathing, tissue swelling or a drop in blood pressure, seek medical help immediately.

Wildlife Encounters

Many species of wildlife, including black bears and coyotes, range throughout the Northeast, but encounters with them are a rare occurrence as they generally avoid people. Nevertheless, be alert for animals near dawn or dusk. Never approach any wildlife and calmly walk away from the area if you feel unsafe or threatened.



Vehicle Safety

Responsibilities of Vehicle Operators

Virtually all volunteers for the landbird protocol will be using their personal vehicles to get to and from their monitoring sites. You are responsible for inspecting your vehicle before every use to ensure it is in safe working condition. This includes visually checking tire pressure, adjusting mirrors, and making sure equipment is secure, as well as taking care of preventative maintenance in a timely manner. It is strongly recommended you obey the following rules (***these rules are mandatory in government vehicles***):

- Wear a seat belt.
- Do not use cell phones (both talking and texting) while driving.
- Adhere to all federal and state vehicle regulations, including all posted speed limits.

Procedures for reporting a motor vehicle accident

In the event of an automobile accident, volunteers and NPS staff should follow NPS accident reporting procedures. The NPS procedures are as follows:

1. Stop immediately and turn on emergency flashers.
2. Take steps to prevent another accident at the scene.
3. Call 911 or ambulance if necessary.
4. Notify police, NPS law enforcement (if at a park with law enforcement – ACAD, MIMA, MORR, and SARA) and the NETN Landbird Coordinator. The NETN Landbird Coordinator will notify NETN staff.
5. In the event of death, actual or potential serious injury, or significant property damage (damage greater than $2,500), the staff involved must convey this information as soon as is practical to NETN staff.
6. In reporting an accident, state the facts to the best of your knowledge. Conclusions as to fault or responsibility should not be stated. You should report the accident only to authorized representatives of the Government, their insurance company, and police officers investigating the accident. File any report required by law.
7. Get name and address of witness (preferably two witnesses). Ask witness to complete Standard Form (SF) 94, Statement of Witness, if the form is available.
8. State/provide your name, address, place of employment (or park where volunteering), name of your supervisor (NETN Landbird Coordinator if a volunteer), and upon request show your driver's license and vehicle registration information.
9. Complete Standard Form (SF) 91, Motor Vehicle Accident Report as soon as practical. If conditions prevent this, make notes of the following:

a. Registration information for other vehicle(s) (owner's name, owner's address, tag number, VIN, and vehicle description)
b. Information on other drivers (name, address, operator's permit, and expiration date)
c. Name and address of each person involved and extent of injury, in any.
d. Name and address of company insuring other vehicle(s) and insurance policy number
e. General information such as location, time, measurements, weather, damage, etc.

10. Encourage police to provide a Police Report and, if available, submit a copy with SF 91.
11. If you have a camera, take pictures of the accident scene and any damage to the vehicles involved. Submit along with SF 91.
12. If vehicle is unsafe to operate, arrange for towing services (if a government vehicle, pay using the vehicle gas card).
13. Submit all reports and data to the NETN Program Manager within one working day.
14. If a federal employee or volunteer is injured, the workers compensation process needs to be initiated within 48 hours of incident. NETN staff will assist with this process. If injured, it is important you receive prompt medical treatment. Make sure to see a doctor - not a nurse, nurse practitioner, or physician's assistant.

Volunteer Trip Planning and Safety Forms.

Time for some good old-fashioned government paperwork!

The following pages contain safety forms. You can also download blank versions of these and other helpful/mandatory forms and checklists (fillable either electronically or can be printed out). Go to NETN's volunteer birding web-page and scroll down to the Volunteer Materials drop-down menu for fillable PDF links to all the following forms, at: https://www.nps.gov/im/netn/breeding-landbirds-volunteers.htm

NETN Breeding Landbird Monitoring
Volunteer Safety & Planning Checklist

One month to two weeks before field work

New Volunteers Only:

- [ ] Complete the NPS Voluntary Service Agreement form and return to Landbird Coordinator
- [ ] Read the Job Safety Analysis

New and Returning Volunteers:

- [ ] Contact park Resource Manager and Landbird Coordinator with planned survey dates
- [ ] Discuss safety issues and bring up any concerns with Resource Manager and Landbird Coordinator, including:
  - Safety and emergency procedures
  - Emergency contact(s)
  - Assistance finding monitoring partner (if desired)
- [ ] Verify that you have all the gear you may need, such as:
  - Clipboard, enough data sheets for all points, countdown timer, pens/pencils, binoculars
  - Cell phone or other communication device (e.g., SPOT GPS Messenger at Acadia)
  - Suitable field clothes and personal gear (e.g., insect repellent, food, water, rain gear)
  - First aid kit (highly recommended)

One to two days before field work

- [ ] Complete **Volunteer Trip Plan** and send it to the park resource manager or other designated individual
- [ ] If using SPOT GPS Messenger and Personal Locator Beacon (Acadia only), check out the equipment and review procedures, and send trip plan to NETN staff responsible for tracking traffic from these devices
- [ ] Verify that the Trip Plan has been received
- [ ] Check weather forecast and adjust plans accordingly

Day of field work

- [ ] Notify park Resource Manager or designated individual of any changes to your plans
- [ ] Check in on arrival (if requested by park resource manager or designated individual)
- [ ] Conduct field work
- [ ] Check in after field work – ***DO NOT FORGET***!

NETN Breeding Landbird Monitoring
Volunteer Safety Acknowledgment Form

By signing below, I certify that I have read the safety section of the Volunteer Resource Manual and the Breeding Landbird Monitoring Job Safety Analysis. I have shared any safety concerns or suggestions with the NETN Landbird Coordinator and they have been addressed to my satisfaction.

☐ I have read the safety section (Appendix A) of the Volunteer Resource Manual

☐ I have read the Breeding Landbird Monitoring Job Safety Analysis.

Print Name: _____

Signature: _____

Date: _____

Please complete and email this form to the NETN Landbird Coordinator. It can also be printed, filled out, and mailed along with the completed and signed NPS Voluntary Service Agreement form, to:

NETN Bird Program
54 Elm St.
Woodstock, VT 05091

Note: These forms only need to be completed once for each volunteer, prior to any field monitoring activities. An annual review of the Volunteer Resource Manual and Job Safety Analysis is recommended for all volunteers.

Appendix B. List of bird common names and 4-letter AOU (American Ornithologists' Union) codes.* Mammal species listed in bold. Recent common name changes are italicized.

Species Code	Common Name	Species Code	Common Name
ALFL	Alder Flycatcher	CSWA	Chestnut-sided Warbler
AMCR	American Crow	CHSW	Chimney Swift
AMGO	American Goldfinch	CHSP	Chipping Sparrow
MAKE	American Kestrel	CLSW	Cliff Swallow
AMRE	American Redstart	COGR	Common Grackle
AMRO	American Robin	CONI	Common Nighthawk
BANS	Bank Swallow	COLO	Common Loon
BARS	Barn Swallow	CORA	Common Raven
BADO	Barred Owl	COYE	Common Yellowthroat
BAOR	Baltimore Oriole	COHA	Cooper's Hawk
BBWA	Bay-breasted Warbler	DEJU	Dark-eyed Junco (*Slate-colored Junco*)
BEKI	Belted Kingfisher	DOWO	Downy Woodpecker
BITH	Bicknell's Thrush	EABL	Eastern Bluebird
BAWW	Black-and-white Warbler	**CHIP**	**Eastern Chipmunk**
BBWO	Balck-backed Woodpecker	**EGSQ**	**Eastern Gray Squirrel**
BBCU	Black-billed Cuckoo	EAKI	Eastern Kingbird
BLBW	Blackburnian Warbler	EAME	Eastern Meadowlark
BCCH	Black-capped Chickadee	EAPH	Eastern Phoebe
BLPW	Blackpoll Warbler	EASO	Eastern Screech-Owl
BTBW	Black-throated Blue Warbler	EATO	Eastern Towhee
BTNW	Black-throated Green Warbler	EAWP	Eastern Wood-Pewee
BLJA	Blue Jay	EUST	European Starling
BGGN	Blue-gray Gnatcatcher	EVGR	Evening Grosbeak
BHVI	Blue-headed Vireo (*Solitary Vireo*)	FISP	Field Sparrow
BWWA	Blue-winged Warbler	FICR	Fish Crow
BOBO	Bobolink	GCKI	Golden-crowned Kinglet
BOCH	Boreal Chickadee	GWWA	Golden-winged Warbler
BWHA	Broad-winged Hawk	GRSP	Grasshopper Sparrow
BRCR	Brown Creeper	GRCA	Gray Catbird
BRTH	Brown Thrasher	GHOW	Great Horned Owl
BHCO	Brown-headed Cowbird	GCFL	Great Crested Flycatcher
CANG	Canada Goose	HAWO	Hairy Woodpecker
CAJA	Canada Jay (*Gray Jay*)	HESP	Henslow's Sparrow
CAWA	Canada Warbler	HETH	Hermit Thrush
CMWA	Cape May Warbler	HOFI	House Finch
CARW	Carolina Wren	HOSP	House Sparrow
CEDW	Cedar Waxwing	HOWR	House Wren

Species Code	Common Name	Species Code	Common Name
CERW	Cerulean Warbler	INBU	Indigo Bunting
LEFL	Least Flycatcher	RBGR	Rose-breasted Grosbeak
LISP	Lincoln's Sparrow	RCKI	Ruby-crowned Kinglet
LOWA	Louisiana Waterthrush	RTHU	Ruby-throated Hummingbird
MAWA	Magnolia Warbler	RUGR	Ruffed Grouse
MAWR	Marsh Wren	RUBL	Rusty Blackbird
MODO	Mourning Dove	SAVS	Savannah Sparrow
MOWA	Mourning Warbler	SCTA	Scarlet Tanager
NAWA	Nashville Warbler	SEWR	Sedge Wren
NOGO	Northern Goshawk	SSHA	Sharp-shinned Hawk
NOHA	Northern Harrier	SOSP	Song Sparrow
NOMO	Northern Mockingbird	SWTH	Swainson's Thrush
NOFL	Northern Flicker (*Yellow-shafted Flicker*)	SWSP	Swamp Sparrow
NOPA	Northern Parula	TRES	Tree Swallow
NRWS	Northern Rough-winged Swallow	TTWO	Three-toed Woodpecker
NSWO	Northern Saw-whet Owl	TEWA	Tennessee Warbler
NOWA	Northern Waterthrush	TUVU	Turkey Vulture
OSFL	Olive-sided Flycatcher	TUTI	Tufted Titmouse
OROR	Orchard Oriole	UNWO	unid. Woodpecker
OVEN	Ovenbird	VEER	Veery
PAWA	Palm Warbler	VESP	Vesper Sparrow
PHVI	Philadelphia Vireo	WAVI	Warbling Vireo
PIWO	Pileated Woodpecker	WPWI	Whip-poor-will
PISI	Pine Siskin	WBNU	White-breasted Nuthatch
PIWA	Pine Warbler	WTSP	White-throated Sparrow
PRAW	Prairie Warbler	WWCR	White-winged Crossbill
PROW	Prothonotary Warbler	WITU	Wild Turkey
PUMA	Purple Martin	WIFL	Willow Flycatcher
PUFI	Purple Finch	WIWA	Wilson's Warbler
RECR	Red Crossbill	WIWR	Winter Wren
RESQ	**Red Squirrel**	WOTH	Wood Thrush
RBWO	Red-bellied Woodpecker	WEWA	Worm-eating Warbler
RBNU	Red-breasted Nuthatch	YEWA	Yellow Warbler
REVI	Red-eyed Vireo	YBFL	Yellow-bellied Flycatcher
RSHA	Red-shouldered Hawk	YBSA	Yellow-bellied Sapsucker
RTHA	Red-tailed Hawk	YBCU	Yellow-billed Cuckoo
RHWO	Red-headed Woodpecker	YTVI	Yellow-throated Vireo
RWBL	Red-winged Blackbird	YRWA	Yellow-rumped Warbler (*Myrtle Warbler*)

*This is only a paritial list containing the most likely bird encounters for NETN parks. For a complete list of all North American species, see the American Birding Association's checklist: https://www.aba.org/listing.aba.org/public/checklist/ABA_Checklist-8.0.5.pdf.

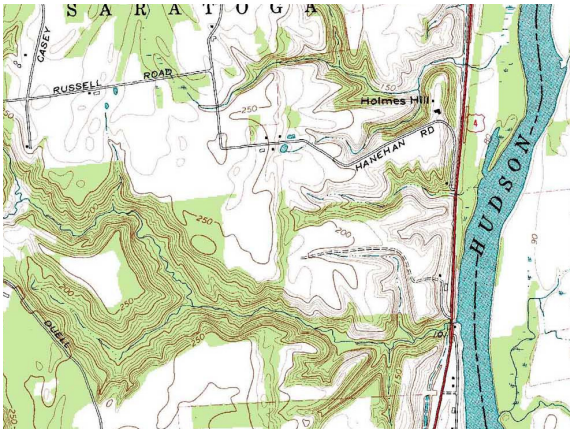
Appendix C. Table of Common Birds and Songs per Park.

The table below shows the birds most commonly detected at each NETN park. A link is provided to each bird's **Cornell Lab of Ornithology's** *website which includes photographs and audio files. At the very least you should be able to confidently identify the birds below found at your park. You can see most possible bird encounters by park by downloading a bird species list on NETN's website.*

BIRD CODE	BIRD NAME	PARKS
AMCR	American Crow	ACAD, ELRO, MIMA, SAGA, SARA, VAMA, WEFA
AMGO	American Goldfinch	SARA
AMRO	American Robin	ELRO, HOFR, MABI, MIMA, MORR, VAMA, WEFA, SAIR
BARS	Barn Swallow	SAIR
BLBU	Blackburnian Warbler	MABI
BCCH	Black-capped Chickadee	MABI, MIMA,
BTGN	Black-throated Green Warbler	ACAD, MABI, SAGA
BLJA	Blue Jay	HOFR, MABI, MIMA, MORR
BHVI	Blue-headed (Solitary) Vireo	ACAD, MABI
BOBO	Bobolink	SARA (grasslands)
CANG	Canada Goose	SAIR, SARA, VAMA
CHSW	Chimney Swift	SAIR
CHSP	Chipping Sparrow	WEFA
COGR	Common Grackle	SAIR
COYE	Common Yellowthroat	SARA
DOWO	Downy Woodpecker	MIMA, WEFA
EAME	Eastern Meadowlark	SARA (grassland)
EAWO	Eastern Wood-Pewee	ELRO, MABI, MORR, SAGA
EUST	European Starling	SAIR
FISP	Field Sparrow	SARA (grassland)
GCKI	Golden-crowned Kinglet	ACAD
GRCA	Gray Catbird	MIMA, WEFA
GCFL	Great Crested Flycatcher	VAMA
HETH	Hermit Thrush	ACAD, MABI
MALL	Mallard	SAIR
MODO	Mourning Dove	ACAD, HOFR
MYWA	Myrtle Warbler	ACAD
NOCA	Northern Cardinal	ELRO, HOFR, MIMA, VAMA, WEFA
OVEN	Ovenbird	ACAD, ELRO, MABI, MORR, SAGA
RBWO	Red-bellied Woodpecker	ELRO, HOFR, MORR, VAMA, WEFA
RBNU	Red-breasted Nuthatch	ACAD, MABI
REVI	Red-eyed Vireo	ELRO, HOFR, MABI, MORR, SAGA, VAMA, WEFA
RWBL	Red-winged Blackbird	MIMA, SAGA, SAIR, SARA
ROPI	Rock Pigeon	SAIR
SCTA	Scarlet Tanager	HOFR, MABI, MORR, SAGA
SCJU	Dark-eyed (Slate-colored) Junco	ACAD
SOSP	Song Sparrow	SARA (grassland), SAIR
TRSW	Tree Swallow	SARA (grassland)
TUTI	Tufted Titmouse	ELRO, HOFR, MIMA, MORR, VAMA, WEFA
VEER	Veery	MORR, SAGA,
WBNU	White-breasted Nuthatch	ELRO, HOFR, MIMA, VAMA, WEFA
WOTH	Wood Thrush	ELRO, HOFR, MORR, SAGA, VAMA

Appendix D. Finding Your Way with Map and Compass

USGS Fact Sheet 035-01 (March 2001)



Part of a 7.5-minute topographic map at 1:24,000 scale.

A topographic map tells you where things are and how to get to them, whether you're hiking, biking, hunting, fishing, or just interested in the world around you. These maps describe the shape of the land. They define and locate natural and manmade features like woodlands, waterways, important buildings, and bridges. They show the distance between any two places, and they also show the direction from one point to another. Distances and directions take a bit of figuring, but the topography and features of the land are easy to determine. The topography is shown by contours. These are imaginary lines that follow the ground surface at a constant elevation; they are usually printed in brown, in two thicknesses. The heavier lines are called index contours, and they are usually marked with numbers that give the height in feet or meters. The contour interval, a set difference in elevation between the brown lines, varies from map to map; its value is given in the margin of each map. Contour lines that are close together represent steep slopes.

Natural and manmade features are represented by colored areas and by a set of standard symbols on all U.S. Geological Survey (USGS) topographic maps. Woodlands, for instance, are shown in a green tint; waterways, in blue. Buildings may be shown on the map as black squares or outlines. Recent changes in an area may be shown by a purple overprint, a road may be printed in red or black solid or dashed lines, depending on its size and surface. A list of symbols is available from the Earth Science Information Center (ESIC) at http://ask.usgs.gov/sils_index.html.

From Near to Far: Distance

Maps are made to scale; that is, there is a direct relationship, a ratio, between a unit of measurement on the map and the actual distance that same unit of measurement represents on the ground. If, for instance, 1 inch on the map represents 1 mile (which converts to 63,360 inches) on the ground, the map's scale is 1:63,360. Below is a listing of the scales at which some of the more popular USGS maps are compiled.

A convenient way of representing map distance is by the use of a graphic scale bar. Most USGS topographic maps have scale bars in the map margin that represent distances on the map in miles, feet, and kilometers.

The table below shows the corresponding area of coverage for each scale and the linear distance that each scale represents in inches and centimeters.

Map Name Series	Scale	1 inch represents	1 centimeter represents	Map area (approximate square miles)
Puerto Rico 7.5 minute	1:20,000	1,667 feet	200 meters	71
7.5-minute	1:24,000	2,000 feet	240 meters	40 to 70
7.5- by 15-minute	1:25,000	2,083 feet	250 meters (about)	98 to 140
Alaska	1:63,360	1 mile	634 meters (about)	207 to 281
Intermediate	1:50,000	0.8 mile	500 meters (about)	County
Intermediate	1:100,000	1.6 mile	1 kilometer (about)	1,568 to 2,240
United States	1:250,000	4 miles	2. 5 kilometers (about)	4,580 to 8,669

From Here to There: Determining Direction

To determine the direction, or bearing, from one point to another, you need a compass as well as a map. Most compasses are marked with the four cardinal points—north, east, south, and west—but some are marked additionally with the number of degrees in a circle (360: north is 0 or 360, east is 90, south is 180, and west is 270).

One thing to remember is that a compass does not really point to true north, except by coincidence in some areas. The compass needle is attracted by magnetic force, which varies in different parts of the world and is constantly changing. When you read north on a compass, you're really reading the direction of the magnetic north pole. A diagram in the map margin will show the difference (declination) at the center of the map between compass north (magnetic north indicated by the MN symbol) and true north (polar north indicated by the "star" symbol). This diagram also provides the declination between true north and the orientation of the Universal Transverse Mercator (UTM) grid north (indicated by the GN symbol). The declination diagram is only representational, and true values of the angles of declination should be taken from the numbers provided rather than from the directional lines. Because the magnetic declination is computed at the time the map is made, and because the position of magnetic north is constantly changing, the declination factor provided on any given map may not be current. To obtain current and historical magnetic declination information for any place in the United States, contact:

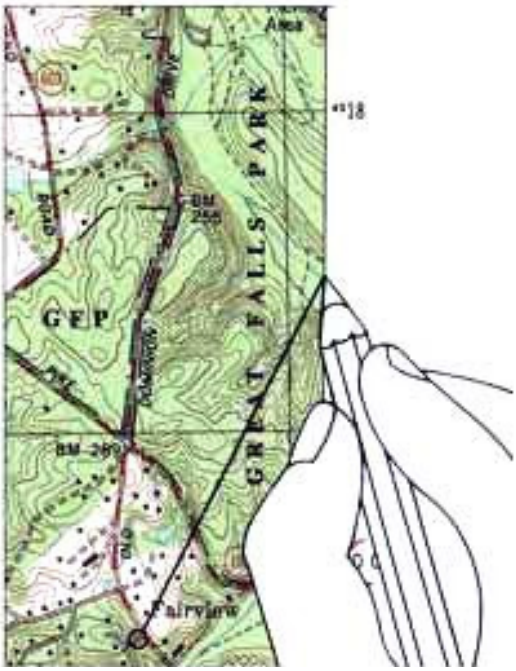
National Geomagnetic Information Center
Phone: 303-273-8486
E-mail: jcaldwell@usgs.gov
Web site: geomag.usgs.gov.

or

National Geophysical Data Center
Phone: 303-497-6826
E-mail: info@ngdc.noaa.gov
Web site: www.ngdc.noaa.gov/ or www.ngdc.noaa.gov/seg/potfld/geomag.shtml.

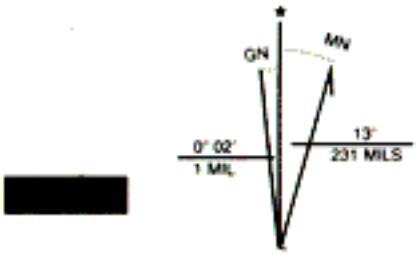
Taking a compass bearing from a map:

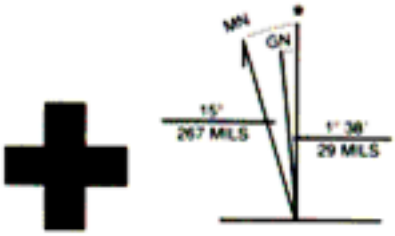
1. Draw a straight line on the map passing through your location and your destination and extending across any one of the map borders.
2. Center the compass where your drawn line intersects the map border, align the compass axis N-S or E-W with the border line, and read on the compass circle the true bearing of your drawn line. Be careful to get the bearing in the correct sense because a straight line will have two values 180° apart. Remember north is 0, east is 90, and so on.
3. To use this bearing, you must compensate for magnetic declination. If the MN arrow on the map magnetic declination diagram is to the right of the true north line, subtract the MN value. If the arrow is to the left of the line, add the value. Then, standing on your location on the ground, set the compass so that "zero degrees or North" aligns with the magnetic north needle, read the magnetic bearing that you have determined by this procedure, and head off in the direction of this bearing to reach your destination.



(1) Drawing a straight line over the map edge

(2) Reading the compass on the map





(3) Using the magnetic declination diagrams

NOTE: Unless otherwise noted, all compass bearings that are used as part of NETN forest bird monitoring point counts reference to magnetic north. As such, compensating for magnetic declination is not required.

A Word of Caution

Compass readings are also affected by the presence of iron and steel objects. Be sure to look out for—and stay away from—pocket knives, belt buckles, railroad tracks, trucks, electrical lines, and so forth when using a compass in the field.

More Information

For information on these and other USGS products and services, call 1-888-ASK-USGS, or visit the general interest publications Web site on mapping, geography, and related topics at erg.usgs.gov/isb/pubs/pubslists/. For additional information, visit the ask.usgs.gov web site or the USGS home page at www.usgs.gov.

Appendix E. Flow chart of volunteer data management responsibilities.

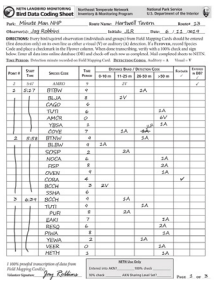
Conduct Point Counts

Field Mapping Cards
Complete in the field
One per point

IN THE FIELD

AT HOME

Verify codes on FMC, transcribe bird and squirrel data to BDCS.



Bird Data Coding Sheets

Conduct 100% check of data transcribed from FMC to BDCS.

Mail completed and proofed **Bird Data Coding Sheets** and **Field Mapping Cards** to NETN.

FINISHED!
THANK YOU!!

Appendix G. Volunteer forms and checklists.

NETN Breeding Landbird Monitoring
Volunteer Field Season Checklist

The checklist below is an important part of our quality control procedures. Please initial and date each task as it is completed, and return this sheet along with original data sheets to NETN by August 15th. ***THANK YOU*** *for being a part of this project!*

Name_____ **Park/Route**_____

	Initials	Date	TASK	Target Date
1			Read/review Volunteer Resource Manual	April to mid-May
2			Complete and sign NPS Volunteer Agreement and the Safety Acknowledgment forms (new volunteers only). **NETN must have these documents in-hand before you can go into the field.**	April into mid-May
3			Practice distance estimation as outlined in Volunteer Resource Manual	Mid-to-late May
4			Brush-up on bird songs in the field or with recordings	April to-late May
5			OPTIONAL: *strongly recommended* pre-survey scouting walk of your route. Update damaged or missing flagging and make note of missing/damaged signs	Mid-to-late May
6			Conduct first field survey (last week of May is acceptable at Morristown NHP and Weir Farm NHS)	1-15 June
7			Conduct second field survey (optional at most parks)	15-30 June
8			Transcribe data from Field Mapping Cards onto Bird Data Coding Sheets	Within 1 day of conducting field survey
9			Total up volunteer hours you contributed this season and enter below, then return this sheet, along with original Field Mapping Cards and Data Data Coding Sheets to NETN (address below).	As soon as possible but no later than 15 August.

TOTAL VOLUNTEER HOURS:
Tell us about your volunteer bird monitoring experience. Comments:

Mail along with original datasheets to: NETN Bird Program, 54 Elm St, Woodstock, VT 05091

Breeding Landbird Monitoring

Northeast Temperate Network

NATIONAL PARK SERVICE

This vehicle is parked here as part of an ongoing National Park Service volunteer bird monitoring program. Please contact park resource management with any questions.

Vehicle parked at:_____:_____on:____/_____/20_____

Will return to vehicle at approximately:_____:_____

NETN Breeding Landbird Monitoring
Volunteer Trip Plan

This form must be completed and e-mailed to the park Resource Manager or Designated Individual (RM/DI) ***in advance*** *of your monitoring trip. If you are monitoring a study site at Acadia and will be borrowing the NETN SPOT GPS Messenger and Personal Locator Beacon, NETN staff will need a copy of this trip plan and contact information for your RM/DI check-in person.*

Park and Route being monitored:_____

Volunteer Name:_____

Cell phone number: _____ - _____ - _____

Home phone number: _____ - _____ - _____

Name of monitoring partner (if applicable):_____

Cell phone number: _____ - _____ - _____

Home phone number: _____ - _____ - _____

Date of trip:_____/_____/**20**_____

Start time:_____

Estimated End time:_____

Check-in time (by phone or text):_____

WARNING: if you do not check-in* by 30 minutes *past this time, an attempt will be made to reach you by phone; if you do not respond, emergency services will be notified.

DO NOT FORGET TO CHECK IN!

Vehicle Information:

Vehicle make, model, and license plate:_____

Planned parking location(s):_____

_____

Other information you want to convey:_____

_____

Appendix H. NETN Landbird Monitoring Routes

National Park Name	Route Code	Route Type	Rte #
Marsh-Billings-Rockefeller NHP Woodstock, Vt	MABI -- East	Forest	10
	MABI -- Northwest	Forest	11
	MABI -- South	Forest	12
Minute Man NHP Concord, MA	MIMA -- Hartwell Tavern	Forest	13
	MIMA -- Miriam's Corner	Forest	14
	MIMA -- The Bluff	Forest	15
	MIMA -- Battle Road	Grassland	39
Morristown NHP Morristown, NJ	MORR - Mt. Kemble	Forest	16
	MORR - Primrose Brook	Forest	17
	MORR- Soldier's Huts	Forest	18
Eleanor Roosevelt NHS Hyde Park, NY	ELRO -ValKill	Forest	19
	ELRO - HOFR	Forest	20
	ELRO - VAMA	Forest	21
Saint Gaudens NHS - Cornish, NH	SAGA	Forest	22
Saratoga NHP Stillwater, NY	SARA -- Wilkinson Trail	Forest	24
	SARA -- Burgoynes Headquarters	Forest	26
	SARA -- Freeman Farm	Forest	27
	SARA -- Neilson Farms	Forest	28
	SARA Northwest	Grassland	38
Weir Farm NHS - Ridgefield, CT	WEFA	Forest	29
Acadia National Park Bar Harbor, ME	ACAD -- Schoodic	Forest	30
	ACAD -- Giant Slide Trail	Forest	31
	ACAD -- Witch Hole Pond	Forest	32
	ACAD -- Seal Cove Center	Forest	33
	ACAD -- Seal Cove East	Forest	34
	ACAD -- Seal Cove West	Forest	35
	ACAD -- Youngs Mt.	Forest	36
Saugus Iron Works NHS - Saugus, MA	SAIR	Forest	37

NATIONAL
PARK
SERVICE
Northeast Temperate Network

Breeding Landbird Monitoring
Northeast Temperate Network