Eastern Rivers and Mountains Network
NPS INVENTORY & MONITORING PROGRAM

Standard Operating Procedure 2: Field Crew Training and Safety

Version 1.0

2013 Field Season
2014 Field Season
2015 Field Season

ON THE COVER
Enthusiastic field crew during training at New River Gorge NR.

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Revision History

The streamside bird monitoring protocol consists of a narrative (Marshall et al. 2016) and Standard Operating Procedures (SOPs) that outline specific aspects of the monitoring protocol. The latest versions of the SOPs and additional supporting information can be accessed online at the National Park Service's Eastern Rivers and Mountains Network website (http://science.nature.nps.gov/im/units/ermn).

The narrative and each SOP have respective revision history logs to document changes in the protocol. The following revision history log is for the narrative.

Version numbers will be incremented by a whole number (e.g., Version 1.0 to 2.0) when a change is made that significantly affects requirements or procedures. Version numbers will be incremented by decimals (e.g., Version 1.3 to Version 1.4) when there are minor modifications that do not affect requirements or procedures included in the protocol. Rows are added to the log as needed for each change or set of changes tied to an updated version number.

Revision History Log

Prev. Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #

Introduction

This SOP explains the ERMN Streamside Bird Monitoring Protocol procedures and goals for training field crews.

Training is designed to ensure that, upon completion, all crew members are able to identify (by sight and especially by sound) all of the bird species that are regularly encountered in the respective park units during point counts and > 98% of bird species that have reasonable potential to be encountered. It is also important that observers are able to accurately and consistently estimate distances to unseen, singing birds.

Emphasis will be placed on following standard operating procedures for data collection to ensure accuracy and consistency among observers. Training will also ensure that field crew members know how to safely navigate to sampling sites (Figure 1) and point count stations, understand safety and emergency procedures including the use of NPS vehicles and radios, and enter data into the provided MS Access database application.

Training will typically take 3-5 days to complete depending on crew member skill levels, weather conditions, bird behavior, etc. Training will be completed at the Protocol Lead's discretion. All field crew members must attend the entire training program each year. Field crew members from previous seasons (Figure 2) normally do not need as much training however experienced crew members can assist as additional teachers with less experienced trainees.

The following sections outline the tasks to be completed during the 3-5 day training period. It is assumed that the protocol lead will be leading all aspects of the training program. Field crew members will sign that they have received and understand the essential training to safely execute the protocol (Appendix A).

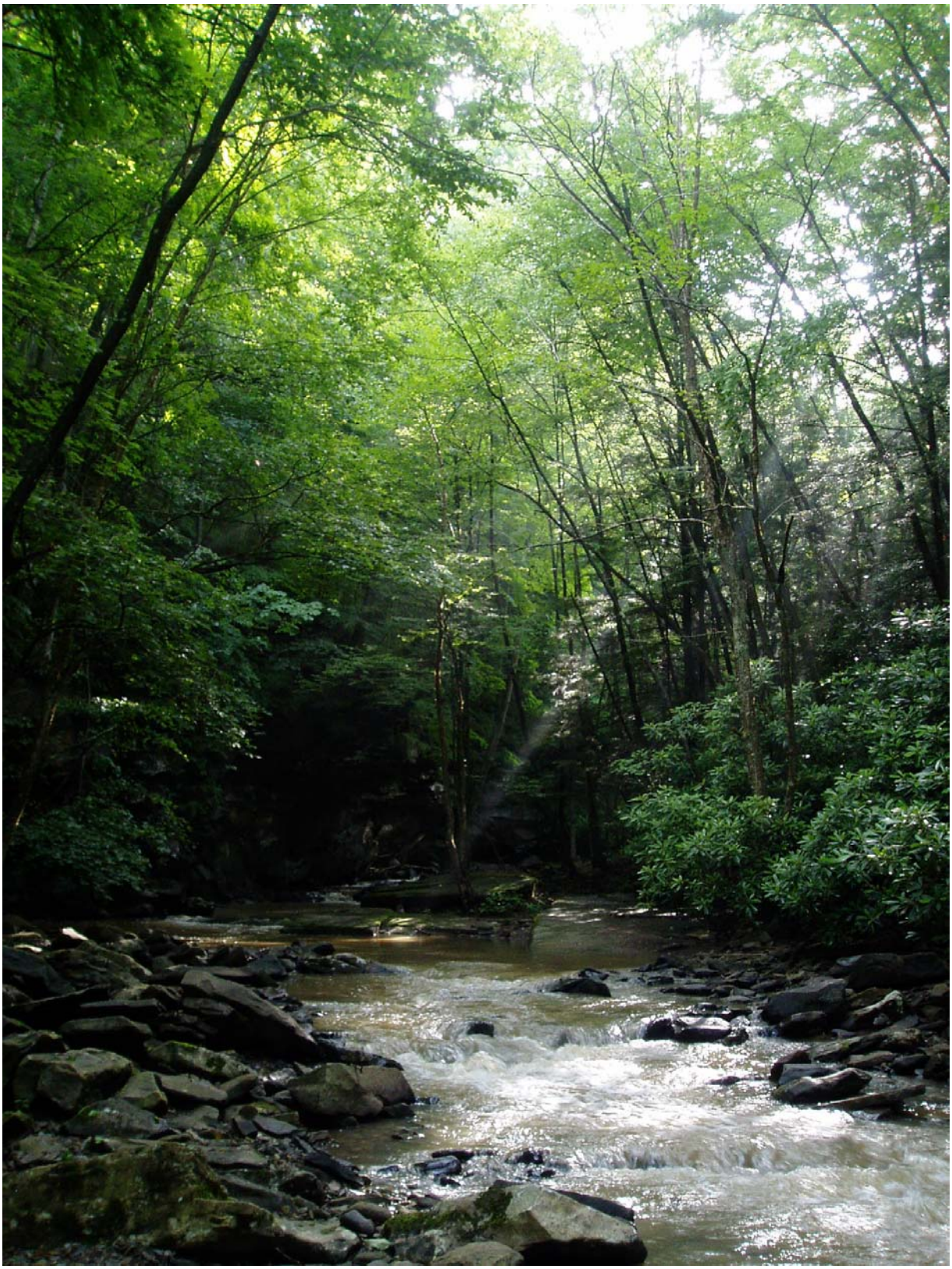


Figure 1. Meadow Creek at New River Gorge NR is a typical sampling site for the ERMN Streamside Bird Monitoring Protocol. Photo by Brady Mattsson.

Figure 2. Enthusiastic field crew during training at New River Gorge NR.

Introduction and overview of the program

It is important for each crew member to have a general understanding of the background and objectives of the monitoring program in addition to the specifics of the streamside bird monitoring protocol. The protocol lead should provide an overview of topics such as the NPS preservation mission, Natural Resource Challenge, Inventory and Monitoring Program, the "network" organization, other protocols being implemented by the ERMN, and use of the data collected.

Field supplies

All NPS-provided field supplies will be distributed to field crew members during training (Figure 3). Specific instructions on how to use each item are covered throughout training. Required equipment and field supplies will be purchased and organized by the protocol lead prior to the field season (see SOP 1 – Before the Field Season).

Figure 3. Some of the field supplies distributed to each field crew member implementing the ERMN Streamside Bird Monitoring Protocol.

Work schedule

The protocol lead will provide and discuss a general work schedule during training. The exact field schedule will vary primarily due to weather (e.g., rain outs). Field crews will convene at New River Gorge NR in mid-May to conduct training and complete scheduled surveys before moving to Delaware Water Gap NRA. Crew members typically work 5 days out of 7 each week but this ratio may change depending on weather conditions. Crew members should have a realistic understanding of the amount of work needed to be completed during the field season and be willing (within reason) to accommodate different work schedules in order meet these goals. The field schedule will be developed by the protocol lead prior to the field season (see SOP 1 – Before the Field Season).

Bird identification and distance estimation

The protocol lead and all crew members should spend a considerable amount of time in the field during the training session ensuring that everyone is equally proficient at identifying all relevant bird species and estimating the distance to individual birds. This portion of training should begin in an informal "general birding" atmosphere with everyone pointing out individual species, providing learning tips, and answering questions. Each day, it should become increasingly more challenging including conducting practice point counts early in the morning when many species and individuals are singing simultaneously. By the end of the training session each crew member should be able to identify all bird species expected to be encountered by sight and especially by sound without the aid of binoculars, reference materials, or other crew members.

Crew members should also be able to accurately estimate distances to detected birds while taking into account topography, vegetation, and ambient noise.

Training should emphasize learning vocalizations because the vast majority of detections will be aural rather than visual. The protocol lead should be cognizant of species that are challenging for field crews to distinguish and seek opportunities to focus on these pairings. The ideal situation is when two or more confusing species are vocalizing simultaneously. Confusing groupings include:

- Red-eyed Vireo and Blue-headed Vireo
- Louisiana Waterthrush, Swainson's Warbler, and Hooded Warbler
- Northern Parula, Cerulean Warbler, and Black-throated Blue Warbler
- Kentucky Warbler and Carolina Wren
- Rose-breasted Grosbeak, Baltimore Oriole, Scarlet Tanager, American Robin, and Red-eyed Vireo
- Hairy Woodpecker and Downy Woodpecker
- Louisiana Waterthrush and Yellow-throated Warbler

When calibrating distances to singing birds the protocol lead should emphasize that crew members may underestimate distances to several species that sing loudly (e.g., Ovenbird, Swainson's Warbler, Louisiana Waterthrush). Other reasons for underestimation include amphitheater-like topography in valleys. Overestimation, on the other hand, can be caused by quietly singing birds (e.g., Worm-eating Warbler), stream noise, hill blockage, and/or dense understory vegetation. Training procedures must be repeated until crewmembers are consistently in agreement on which distance band to place the bird (see Conducting Point Counts below). The most effective way to calibrate distances is to have crew members focus on an individual singing bird, estimate distance, and then use a SONIN or some other device to precisely measure the actual distance. Crew members then compare and calibrated their estimates. There are many variations of this training tool which should be done in different terrains, vegetation densities, and stream noise levels.

Field crew members should also start using the four-letter acronyms or codes to identify bird species (e.g., REVI = Red-eyed Vireo). Codes for all species are available in the Field Notebooks.

Training should also emphasize proper coding of bird vocalizations. For example, all "songs" are coded with an "S" on the field data sheets versus a "C" for non-song calls, chips, and other cues. Codes and specific details for several species and vocalizations are provided in the Field Notebooks.

Conducting point counts

This section covers the terminology and standard operating procedures to be followed when conducting point counts and completing the associated data sheets. The basic procedure is to navigate to the site and first point count station and record the ambient sound level and vegetation measurements. Then conduct the 10 minute point count and navigate to the next station. Repeat this process until the first pass (3 point count stations) is complete, wait 10 min and begin second pass. Crew members do not record vegetation measurements on the second pass (it is assumed that these values do not change between passes of the same visit).

During training the protocol lead and all field crew members should conduct several practice point counts as a group so that everyone can compare datasheets and discuss any discrepancies and questions.

Terminology

Site.-Sites correspond to particular 100m units (i.e., reaches) along a stream which have been selected for sampling. There are 2-38 sites per park. Most crew members will be working at Delaware Water Gap NRA (32 total sites; 16 sampled per year) and New River Gorge NR (36 total sites; 18 sampled per year). The site name contains the stream name and a number. The number refers to the distance (in 100m units) from the stream mouth. For example the site named "Fall Branch 07" is 7 units or 700m upstream of the confluence of Fall Branch and the New River (Figure 4).

Point count station.-Point count (PC) stations are where the actual point counts are conducted at each site (Figure 4). There are three point count stations per site. One point count station is located in the center of the 100m sampling reach. The other two are spaced 200 - 250m upstream and downstream, respectively. Each point count station is placed up to 20m perpendicularly upslope from the stream channel (either side) to avoid excessive stream noise, if necessary. The PC stations are numbered 1 through 3 starting with the downstream most station. The suffix "L" or "R" for left and right, respectively, is added to the PC station identifier to signify which side of the stream (while facing upstream) the PC station is located. For example "3L" means that PC 3 is on the left side of the stream (Figure 4).

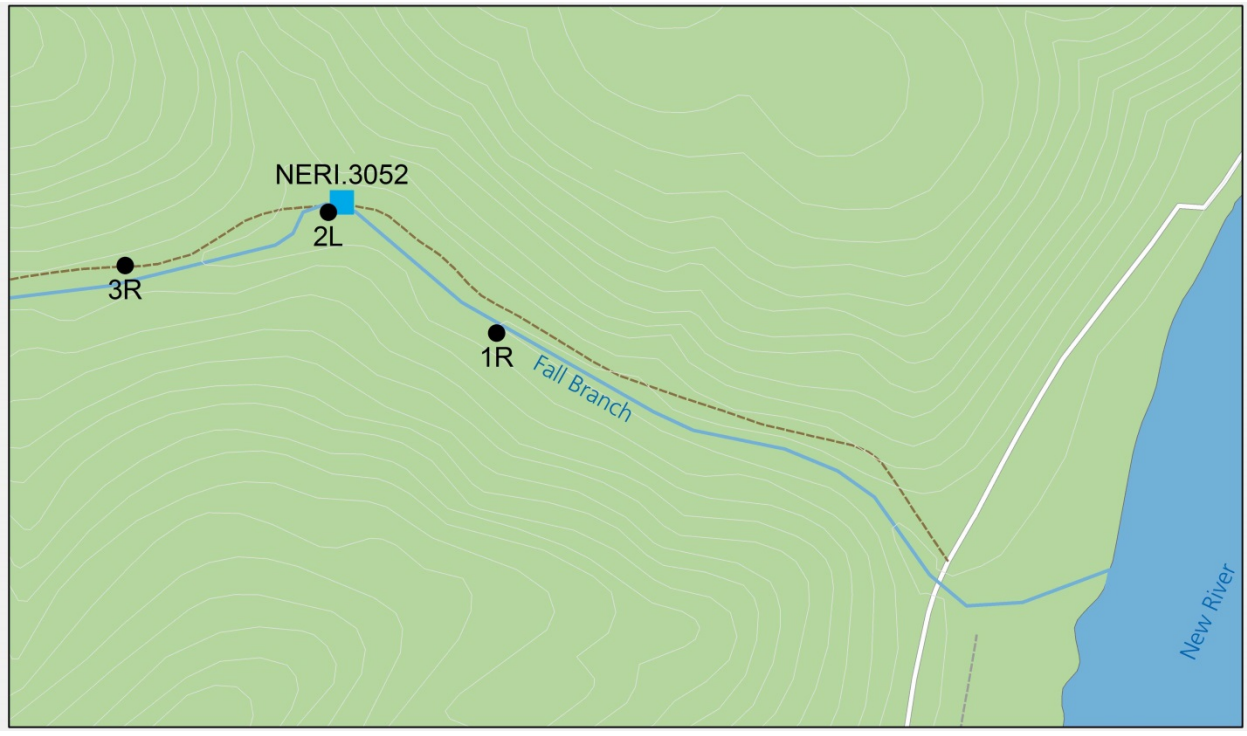


Figure 4. Example of a streamside bird sampling site with three point count stations (black circles) spaced 200 m apart. Point count station 2L is located immediately adjacent to the randomly selected 100 m stream reach where sampling for the benthic macroinvertebrate protocol also occurs (blue square). The site depicted is Fall Branch 07 (NERI.3052) at New River Gorge NR.

Visit.-A field crew member visits each site two times between May and July to collect data. Each visit occurs on a single day beginning at sunrise and ending 4.5hr after sunrise. All sites should be visited once before beginning the second visit allowing a minimum of 7 – 10d between visits to a site.

Pass.-During each visit, a field crew member traverses the stream reach twice (i.e., upstream and downstream) stopping at each point count station to conduct the 10min point count and associated data collection. Each of these passes is considered an independent sample. Crew members should wait 10 minutes after completing the first pass before beginning the second pass.

Quadrat.-Four "pie slices" radiating from the point count station oriented and named according to stream topography (Figure 5) used to measure ambient noise level and vegetation.

- Upstream-creek (**UC**): one quadrat edge along contour of hill going upstream and the other toward creek.
- Upstream-hill (**UH**): one quadrat edge along contour of hill going upstream and the other away from creek.
- Downstream-hill (**DH**): one quadrat edge along contour hill going downstream and the other away from creek.
- Downstream-creek (**DC**): one quadrat edge along contour of hill going downstream and the other toward creek.

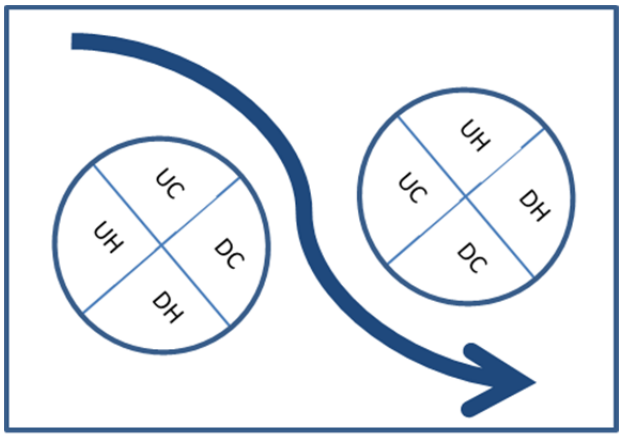


Figure 5. The orientation of the four quadrats used to measure stream noise and vegetation differ depending on which side of the stream (depicted by curved arrow) the point count station is located. Both scenarios are shown (UC = upstream creek, UH = upstream hill, DH = downstream hill, DC = downstream creek).

Drive to parking area

Each morning of the field season crew members will need to drive to the pre-determined parking (or drop off) spot for each sampling site. Some driving is typically done before or at dawn and therefore advanced planning and safety is paramount. The field vehicle has a GPS unit with preloaded coordinates of each parking area and should be used to avoid looking at maps or handheld GPS units while driving (pull over and stop the vehicle if the driver needs to study

maps or handheld GPS units). Because the GPS is not 100% accurate and does not work at all for some sites, driving directions to each sampling site are also available in electronic and hardcopy formats. These directions along with road maps, park maps, and customized Google Map applications should be studied by the field crews *before departing each morning*. The protocol lead should familiarize crew members with these resources and refer to them during the training session.

Navigate to point count stations

After arriving at the predetermined parking (or drop off) spot, field crew members will hike to the first point count station navigating with the aid of a handheld GPS unit (proper use is described below) and hardcopy maps/directions. The maps/directions for each site should be taken into the field each day since they provide access notes, parking/hiking directions, point count station numbers, which side of the stream the PC station is located, and the general layout of the site. Each point count station is marked with multi-colored cable ties affixed to a tree and an aluminum tree tag engraved with the point count station number (Figure 6). Tags are affixed approximately 2m above ground typically facing away from the stream. Crew members should develop a search image for these multi-colored cable ties because GPS accuracy varies. Upon each visit to a site, crew members should inspect the cable ties and tag to ensure they are present and allow for tree growth (loose cable ties and nails not completely flush with tree trunk). Replace as needed.

Figure 6. Example of multi-colored cable ties and engraved aluminum tree tag used to mark point count stations.

Use of handheld GPS units

Each crew member is assigned a GPS unit (Garmin 60CSX or newer) that is preloaded with coordinates to all point count stations and the parking spot for each site. Each point count station is named by the Site_ID (e.g., NERI.3016), unique station identification number (1, 2, or 3 for point counts; P for parking area) and which side of the stream which side of the stream the point count station is located (L = left, R = right when facing upstream). The "note" field includes the Site_Name (e.g., River Branch 4). To navigate to a parking spot or a point count station using the GPS do the following:

- Turn on the GPS unit ahead of time to allow it to acquire satellites for reception.
- Press FIND, select WAYPOINTS, depress ENTER.
- Scroll through list of point count stations and parking areas selecting appropriately. Depress ENTER.
- Depending on the situation one can select either MAP or GO TO to assist with navigation.
- FIND NEAREST is a convenient way to easily find, select, and navigate to the next point count station.

Populate top portion of point count data sheet

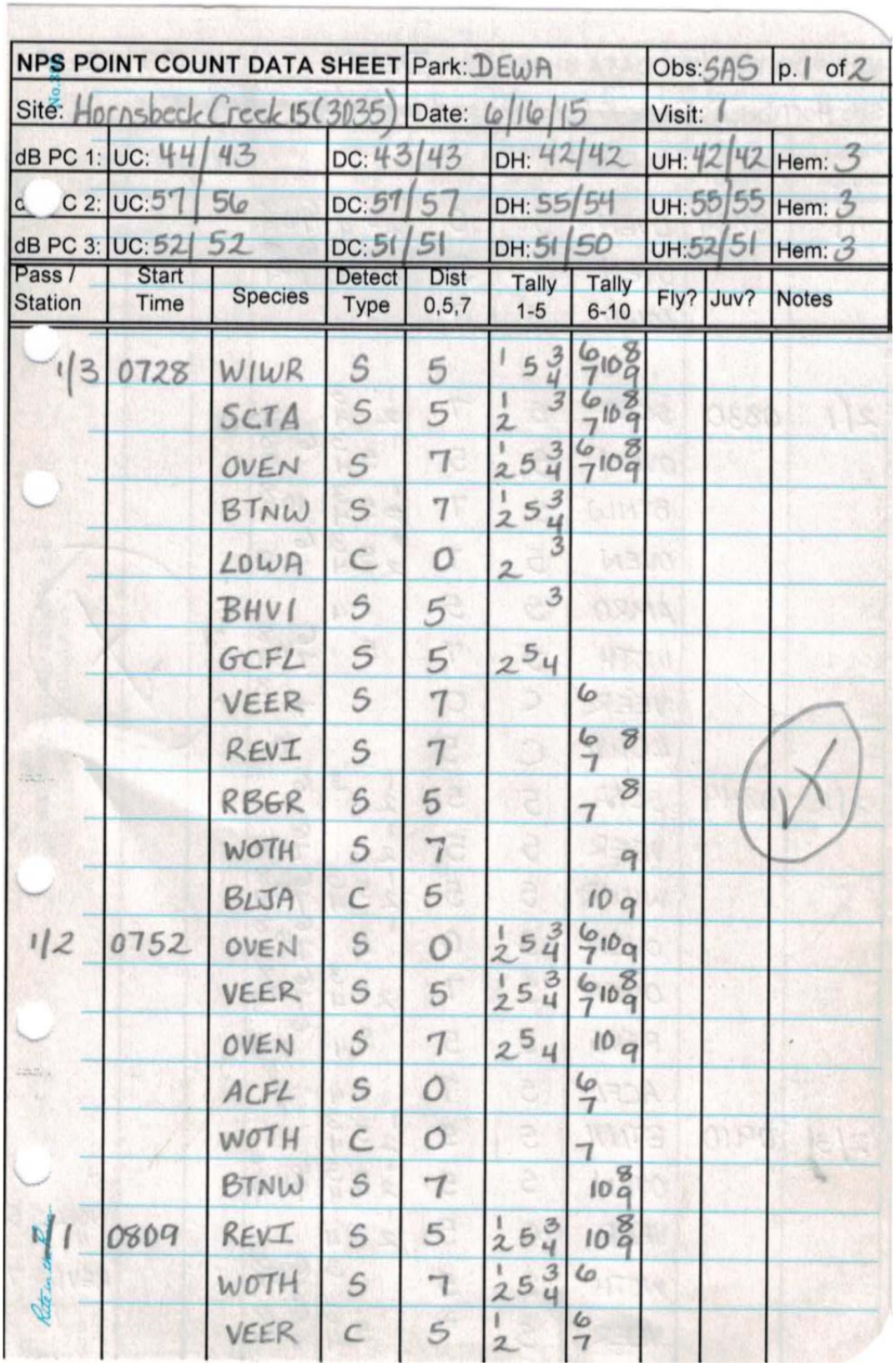
After navigating to a point count station, the crew member will begin populating the point count data sheet. A new data sheet (Figure 7) is required for each visit. Data from both passes of the visit are recorded on the same data sheet. Record the park acronym (Park), observer initials (Obs), current and total number of datasheets used for that visit (p. of), site name (Site), date including year, and visit number (Visit). Populating this portion of the datasheet simultaneously allows a roughly 1min rest period for the observer to get oriented and catch their breath after hiking.

Record ambient sound level

While standing at the point count station record on the datasheet (dB Station) one sound level reading for each quadrat (UC, DC, DH, and UH). Sound level is estimated in decibels (dBA) using a handheld sound level meter as follows:

- Turn sound level meter on
- Hold 1 m above ground (waist high)
- Point microphone toward center of quadrat
- Pay attention to reading for 5-10 seconds
- Record value (in whole units) on the datasheet

The intent is to estimate ambient sound level (typically stream noise) which may obscure the ability to hear vocalizing birds during the point count. Temporary loud bird songs, your movement, etc. can induce an upward "bump" in the reading which is why crew members should watch the values for 5-10s and record a value that is <u>unaffected</u> by temporary interferences. It can be difficult to determine whether traffic noise should be considered ambient (and included in the recorded value) or temporary (and not included). Field crew members should use their best judgment keeping in mind that the ability to hear birds vocalizing during the point count is what matters. If traffic noise is steady and consistent enough that it is interfering with the ability to hear birds, then it should be considered ambient noise and included. Occasional vehicle traffic should be avoided. Recording ambient noise level in all four quadrats should be completed in ≤1 min.



NPS POINT COUNT DATA SHEET	Park: DEWA	Obs: SAS	p. 1 of 2
Site: Hornsbeck Creek 15 (3035)	Date: 6/16/15	Visit: 1	

dB PC 1:	UC: 44/43	DC: 43/43	DH: 42/42	UH: 42/42 Hem: 3
dB PC 2:	UC: 57/56	DC: 57/57	DH: 55/54	UH: 55/55 Hem: 3
dB PC 3:	UC: 52/52	DC: 51/51	DH: 51/50	UH: 52/51 Hem: 3

Pass / Station	Start Time	Species	Detect Type	Dist 0,5,7	Tally 1-5	Tally 6-10	Fly?	Juv?	Notes
1/3	0728	WIWR	S	5	1 5 3 4	6 7 10 8 9			
		SCTA	S	5	1 2 3	6 7 10 8 9			
		OVEN	S	7	1 2 5 3 4	6 7 10 8 9			
		BTNW	S	7	1 2 5 3 4				
		LOWA	C	0	2 3				
		BHVI	S	5	3				
		GCFL	S	5	2 5 4				
		VEER	S	7		6			
		REVI	S	7		6 7 8			
		RBGR	S	5		7 8			
		WOTH	S	7		9			
		BLJA	C	5		10 9			
1/2	0752	OVEN	S	0	1 2 5 3 4	6 7 10 9			
		VEER	S	5	1 2 5 3 4	6 7 10 8 9			
		OVEN	S	7	2 5 4	10 9			
		ACFL	S	0		6 7			
		WOTH	C	0		7			
		BTNW	S	7		10 8 9			
1	0809	REVI	S	5	1 2 5 3 4	10 8 9			
		WOTH	S	7	1 2 5 3 4	6			
		VEER	C	5	1 2	6 7			

Figure 7. Example of a streamside bird monitoring protocol completed data sheet.

Record hemlock condition score

Eastern hemlocks (*Tsuga canadensis*) trees will be in conditions ranging from alive and healthy to completely defoliated, dead, and in various stages of decay due, largely, to the presence of the non-native hemlock woolly adelgid (*Adelges tsuga*). Record on the datasheet (Hem) a single value that captures the predominant condition for all hemlocks within 50m of the point count station as follows:

0 = No hemlocks observed within 50 m of point count station.

1 = Good: Hemlocks retaining most needles and live branches at least 2/3 – 3/4 of the way down the trunk and appearing dark green (even some healthy hemlocks loose the lowest branches depending upon shadiness).

2 = Fair: Hemlock needles paler in color with some loss of needles and the appearance of bare fine twigs on the lowest branches.

3 = Weak: hemlocks defoliated 1/2 – 3/4 of the way up the trunk with only large, dead branches sticking out of the lower trunk, only the crown retains needles.

4 = Poor: hemlocks completely defoliated and in various stages of decay

Recording hemlock condition score should be completed in ≤2min.

Record vegetation cover

(Note: vegetation cover estimates are only done periodically and will not be done in 2016).

Begin the point count

When ready to begin the 10min point count, record the point count station number and pass (Pass/Station) as well as the time when the point count starts (Start Time) on the datasheet. This only needs to be recorded once per point count (Figure 7).

Record species of each bird detected

Each individual bird detected during the 10min point count is recorded on a separate line on the datasheet (Species) using the appropriate four-letter code. The only exception is if a group of birds is flying over the canopy (see Flyover below). The most important assumption of most analyses is that birds are correctly identified to species and that all individuals are recorded (without double counting individuals). Make every effort to avoid double counting individuals at a single point. This can be very difficult during a 10min point count because birds can and do move. Do NOT record individuals if you suspect you recorded them at a previous point count station. This usually applies to species such as crows, ravens, and Louisiana Waterthrush that routinely cover areas >200m. If you are unsure of the species, you should record "unknown bird" (UNBI) on the datasheet rather than guessing. This type of "missing data" is better than possible erroneous data. There is also a unique code for unknown woodpecker (UNWO) in cases where you hear drumming but are not able to identify the species of woodpecker.

If no birds were detected during the entire 10min point count, write "No Birds".

Record how each individual was detected

Detection types are ranked according to information value. For each individual bird detected record the score (Detect Type) with the highest value (S > C > D > Q). For example, if you see a non-vocalizing (i.e., Q) bird for the first nine minutes of the count, but then it sings during the

tenth minute, you would record S. Begging (B) is for juvenile birds only. Drumming (D) is for woodpeckers for which you hear drumming but cannot identify the species and for ruffed grouse "drumming".

S = Song

C = Calls, Chips, and other non-song Cues.

D = Drumming. For woodpeckers and ruffed grouse only.

Q = Quiet (did not make audible sound during entire 10 minute count. Same as "seen only".)

B = Begging. For juvenile birds only.

For most passerines it is clear what constitutes a "song" (code S) and a "call" (code C). However, for many non-passerines this is less clear. For consistency, the Field Notebooks include tables that summarize how to code various sounds and vocalizations. Recordings of these sounds are also available for use during training and for reference during the field season. The protocol lead maintains these recordings with all other electronic project files.

Record the distance category

The horizontal distance between the observer and bird should be recorded on the data sheet in one of three distance categories (Dist 0, 5, 7): ≤ 50m, 51 – 75m, and >75m. These three categories are abbreviated as 0, 5, and 7, respectively when populating the datasheet. Sometimes a bird flies "through" the count circle (below the canopy so it is not a flyover; see below) and does not appear to stop (Louisiana Waterthrush commonly do this). These birds should be recorded, but the distance band should be >75m.

Keep a tally of minutes detected

Record in 1min intervals each time an individual bird is detected during the point count (Tally 1–5 and Tally 6 – 10; Figure 6.8). This only applies to audible detections (S, C, D, and B). If the observer becomes overwhelmed and is not able to record the tallies accurately, discontinue and note it in the notes of the datasheet. Note that there is a "Minutes accurate?" check box in the database that assumes the tallies are complete and accurate (default is "checked" which equals "yes"). If the observer discontinues the tallies for any reason, be sure to uncheck this box during data entry.

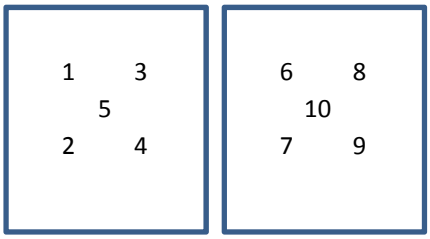


Figure 8. Standard pattern to record the minutes during which a bird was audibly detected.

Record flyovers
If a bird or group of birds is flying above the canopy and do not stop in the count circle they should be recorded as flyovers (Fly?). Populate this field with the number of individuals for which it applies. Species such as crows, ravens, American Goldfinch, Cedar Waxwings are frequently recorded as flyovers. (Birds flying below the forest canopy are counted as visual/auditory detections as appropriate. If they do not appear to stop, land, or perch in the count circle record them in the >75m distance category.)

Record juveniles
If a bird is known to be a juvenile based on appearance and/or behavior such as begging for food record it as such on the datasheet (Juv?) with an "x".

Record notes
Record any relevant ancillary data or information on the datasheet (Notes). Ancillary data may include additional information on features used to identify species or uncertainty over a designation. Notes can also include information about the weather if it caused a delay or traffic noise if it interfered with the count. Any interesting non-bird species observed are also welcome.

Review data sheet
Ensure that all fields have been correctly and legibly populated. It is sometimes necessary to populate some fields by memory after the 10min count period ends.

Logistics, timing, and conditions

Whenever possible, field crew members should be rotated among visits to each site. This will help account for potential observer bias during the analyses.

Weather conditions should be evaluated the night prior and the morning of each day of field work. Primary consideration is to field crew safety and secondarily to the ability to detect birds. Assuming conditions are safe for the crew members (e.g., stream flows low enough for safe crossings) bird counts should only be conducted in weather conditions unlikely to reduce count numbers: good visibility, little or no precipitation, light or no wind. Occasional light drizzle or a very brief shower may not affect bird activity for a prolonged period of time, but counts should not be conducted during snow, dense fog, steady drizzle, or prolonged rain. This will help control for variability in bird detections due to weather conditions. Counts should not be conducted in steady rain, intermittent heavy rain, and/or high winds. These conditions warrant delaying counts until at least the following day. The field crew leader must use his/her discretion to make these decisions. It can be one of the more difficult decisions to make and several "rain days" are built into the schedule.

Counts should be discontinued if weather conditions become unacceptable for counting birds. During occasional light drizzle or intermittent showers, the field crew member can simply "wait it out" and then resume counts. Incomplete count data due to inclement weather or other factors such as injury should be discarded and the entire visit should be redone.

Counts should begin within 15-30 minutes of local sunrise and must be completed within 4.5 hours. This time period coincides with the peak singing period for forest birds. Conducting counts during the time period and limiting the duration of the period to 4.5 hours will help minimize bias induced by time of day on bird detections.

Experienced field crews should not have any difficulty accurately and correctly recording all of the information described above. However, even the most experienced observers may, at times, be overwhelmed with the number of birds (and associated data) at a particular point. In these cases, certain data receive priority. The most important thing to record is the full list of species detected during the count and, if possible, the number of individuals of each species. Following that, in decreasing order of importance, are: detection type, distance, and tallies. As such, as soon as an observer begins to become overwhelmed, the first thing to stop recording are the tallies. It is OK to miss some information and keep going. It is better to "miss" some things than to record erroneous data (do NOT guess). If too many tallies are not recorded, stop recording them altogether so that the other more important data fields can be populated.

That said, it is often easier to begin recording the minutes of detection (i.e., tallies) prior to recording the distance band and detection type. An accurate estimation of location often requires multiple detections, whereas the observer can immediately record the minute(s) in which each bird was detected. It is also important to begin recording tallies immediately since this is not something that can be done by memory after the count ends. Moreover, the detection type recorded may not be the first one detected.

One of the hardest things to do is to get all the species and individuals detected recorded on the datasheet during the first minute. The second hardest thing to do is to keep the tallies accurate. One helpful solution is to begin familiarizing yourself with the birds present prior to starting the point count. However, you should NOT begin a count simply because a particular species was detected.

Misidentification of bird species is the most serious error. Do not guess. Instead use the UNBI (unknown bird) code. Prior experience and training should, however, limit its use.

Data entry and quality control

The protocol lead should provide training on how to enter data into the provided database application. Crew members are required to enter their own data *each day*, proof (i.e., double check) their own data, and have a second crew member check their data. The primary purpose of the first level of quality control ("proofed by observer") is to ensure that the data on the datasheet and entered into the database reflect what the observer actually encountered that morning to the best of their memory. The crew member should verify, for example, that the correct four letter code for each bird species was used and that all required information has been filled out. The second level of quality control ("checked by crew member") is to ensure that no "keystroke" data entry errors occurred. That is, the data entered in the database application reflect exactly what is on the field datasheet. A second, independent, observer is required to do this. The database application is also sent to the protocol lead at weekly intervals during the field season. The protocol lead will perform a third level of quality control checking for any data completeness, inconsistencies, unusual bird species, missing information, etc. A written data review (e.g., quality control) log is kept of this review and how the field crew members addressed any issues. Upon completion the "approved by protocol lead" box is checked in the database application indicating that these data are ready for initial summaries and analyses.

An excerpt from a data review log is provided:

Streamside Bird Monitoring
Data Review 2013

NERI.3026 Little Laurel Creek 6/9/13
MRM: Check "Approved"

NERI.3029 Wolf Creek 3 6/2/13
MRM: Your start time for your first point count needs to be fixed (6:19 not 6:49).
MRM: Check "Approved"

NERI.3032 River Branch 2 6/14/13
MRM: Check "Approved"

NERI.3034 UNT New River 3 5/25/13
MRM: Add some notes as to why Stream Noise was not recorded at all pts. Not a big deal, just document what happened. Forgot or whatever the case.
MRM: Check "Approved"

NERI.3037 Laurel Creek 1 6/9/13
MRM: Check "Approved"

NERI.3038 Arbuckle Creek 1 5/26/13
MRM: Pass 1 PC 1. According to the datasheet, it looks like the LOWA should be marked as a Flyby (not the SOSP). Also, all "flyby" get a distance code of "7". This is recorded on the datasheet, but go ahead and enter it as such in the dbase.
MRM: Check "Approved"

Personal safety

This section describes the information, equipment, and procedures necessary for conducting the field aspects of streamside bird monitoring in a safe manner. All of the following topics will be thoroughly covered by the protocol lead during training.

All personnel associated with the field portion of a protocol are equally responsible for keeping safety topics covered during training at the forefront of daily activities throughout the field season. Everyone should clearly understand routine and emergency communication procedures and how to respond to medical emergencies as well as non-medical emergency incidents. Everyone should also carry the required supplies with them into the field in order to respond effectively and appropriately to an incident.

Job Hazards

Encountering hazardous situations is inherent to all field monitoring activities; consequently, all personnel who participate in a field-based monitoring protocol are always, to some extent, exposed to the risk of accident, injury, or illness.

The ERMN uses what is termed a Job Hazard Analysis (JHA) to clearly articulate and inform field crew members about the hazards associated with this job and what measures can be taken to mitigate those hazards. The JHA for this protocol is available in Appendix B and will be read aloud by the protocol lead and discussed in its entirety during the training period.

First Aid Training

All permanent ERMN employees are required to have advanced first aid training because they all participate in field-based activities. All field crew members are required to have, at a minimum, the equivalent of a Red Cross Basic First Aid course but are encouraged to have more advanced first aid training. Relevant trainings and certifications include: Wilderness First Aid, Outdoor Emergency Care, and/or Wilderness First Responder. All permanent ERMN employees are also required to take NPS Operational Leadership (OL) Training.

The ERMN will make arrangements to assist with and/or provide some form of wilderness first aid training to all field crew members. Possible options include:

http://www.soloschools.com/

http://www.wfa.net/

Field crew member should check available dates and classes in coordination with the protocol lead after they have accepted the seasonal job but before the field season begin.

Personal Protective Equipment

Each crew member is responsible for ensuring he/she is wearing field appropriate clothing and footwear while in the field. The work involves back-country hiking in a range of temperatures, weather conditions, and terrain. The work also involves strenuous hiking as well as sedentary bird counts. As such, sturdy comfortable boots are a must and clothing should facilitate staying dry, maintain a comfortable temperature, and shield skin from insects, thorns, and vegetation. A list of recommended personal equipment is provided in Table 1.

Table 1. Recommended personal equipment and clothing for crew members implementing the streamside bird monitoring protocol.

Number Recommended	Item Description
1	breathable, sturdy, packable, rain jacket/shell/parka and pants
1	quick-dry, Gore-Tex® or equivalent pants
3+	synthetic, wool, neoprene, or polypropylene socks
1	long-underwear tops and bottoms
1+	additional clothing as necessary (e.g., fleece, t-shirts, capilene®, hats, etc.)
1	medium sized backpack
1+	sturdy, comfortable hiking boots/shoes
1+	water bottle and lunch/snack container
1	binoculars, water-resistant (Eagle Optics® 8 x 42 provided, if preferred)
1	wristwatch with digital chronometer/stopwatch (one will be provided, if preferred)
1	blaze-orange hat and/or vest (provided, if preferred)*
1+	additional personal first aid supplies and toiletries

* Spring turkey hunting season is typically open during May in WV. Check hunting season schedules at: http://www.wvdnr.gov/

Additional personal protective equipment includes:

Cell phone, park radio, and Personal Locator Beacon (PLB).-See Routine and Emergency Communication section below.

Water and food.-Field crew members 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.

Helmets.-Edelrid Madillo light-weight climbing helmets are supplied by the ERMN to each crew member. Each crew member is strongly encouraged to wear the helmet whenever hiking in slippery terrain and especially when around water. Other than driving motor vehicles, the highest risk activity you will encounter is working alone near water (i.e., streams). The helmet is meant to protect the head and potential loss of consciousness and subsequent drowning should you slip and fall.

First aid equipment.-Each crew member is provided with the following first aid items which should be carried with them in the field. Field vehicles also have a more substantial first aid kit available. The contents of the kit(s) will be discussed during training. The intent of providing these items is to enable field crew members to be prepared to administer first aid to the best of their knowledge, ability, and training.

First Aid Kit (http://www.adventuremedicalkits.com/medical-kits/ultralight-watertight/ultralight-watertight-5.html)
SAM Splint (http://www.sammedical.com/products/sam-splint/)
Quick Clot (http://www.adventuremedicalkits.com/quikclot/quikclot-advanced-clotting-sponge-25g.html)
Emergency blanket (http://adventuremedicalkits.shptron.com/p/sol-emergency-blanket)

Motor Vehicles

Driving motor vehicles is likely to be the highest risk activity undertaken during the job as a field crew member. Strategies to avoid motor vehicle accidents are outlined in the JHA (Appendix B). Crew members are responsible for inspecting the vehicle before every use to ensure it is in safe working condition. This includes visually checking tire pressure, ensuring visibility through all windows, adjusting mirrors, and making sure equipment is secure. Do not drive an unsafe vehicle. If needed repairs are not easily accomplished, report them to the protocol lead immediately.

Rules that must be followed when operating an NPS motor vehicle include:

- Everyone in a government vehicle is required to wear a seat belt.
- Use of cell phone (both talking and texting) is strictly prohibited while driving.
- Only NPS employees or authorized cooperators and contractors are allowed to operate or ride in a government vehicle.
- Drivers must adhere to all federal and state vehicle regulations, including all posted speed limits.

Vehicle accident reporting.-Necessary forms (SF-91 and SF-94 for NPS-owned vehicles) are provided in the glove compartment of each vehicle. Forms should be completed for all accidents regardless of the amount of damage. When multiple vehicles are involved in the accident a SF-91 should be completed for each vehicle. Theft and vandalism should be reported to NPS Law Enforcement Officials (rather than on SF-91). Keep in mind that because government vehicles are self-insured, damage resulting from government vehicle accidents is generally paid by the NPS rather than an insurance company. However, in cases of severe negligence, the driver found at fault for the accident may be personally liable.

In the event of an accident follow these procedures:

- Stop immediately and turn on emergency flashers.
- Take steps to prevent another accident at the scene.
- Call 911 or ambulance if necessary.
- Notify police and NPS law enforcement.
- In reporting an accident, employee should state the facts to the best of her/her knowledge. Conclusions as to fault or responsibility should not be stated. The employee should report the accident only to authorized representatives of the Government and police officers investigating the accident. The employee shall also file any report required by law.
- Get name and address of witness (preferably two witnesses). Ask witness to complete SF-94 "Statement of Witness" contained in vehicle glove compartment.
- Provide your name, address, place of employment, name of your supervisor, and upon request show your driver's license and vehicle registration information.
- Complete SF-91 "Motor Vehicle Accident Report" at the scene. If conditions prevent this, make notes of the following:
    - Registration information for other vehicle(s) (owner's name, owner's address, tag number, VIN, and vehicle description);
    - Information on other drivers (name, address, operator's permit, and expiration date);

Name and address of each person involved and extent of injury, in any;
Name and address of company insuring other vehicle(s) and insurance policy number, and;
General information such as location, time, measurements, weather, damage, etc.

- Encourage police to provide a Police Report and, if available, submit a copy with SF-91.
- If you have a camera, take pictures of the accident scene and any damage to the vehicles involved. Submit along with SF-91.
- If vehicle is unsafe to operate, arrange for a towing services and pay for these services on vehicle charge/gas card.
- Notify and submit all reports and data to the Protocol Lead as soon as possible.

Routine and Emergency Communication

Having established lines of communication between monitoring field crews, crew leaders/supervisors, protocol leads, and member parks (i.e., natural resource specialists, rangers, and communications/dispatch) is essential for safe operations. It is also essential that each crew have appropriate communications equipment:

Mobile phones.-Each field crew is required to carry a fully charged mobile phone with them while in the field. This is especially important for 1-person field crews. A phone with text messaging capabilities will be provided by the ERMN to crew members if needed. Mobile phones are the primary means of emergency communication in ALPO, JOFL, FONE, and FRHI. Park radios are not required in these parks.

Park radios.-Each field crew in DEWA, UPDE, NERI, GARI, or BLUE is required to carry an ERMN-owned and programmed Motorola XTS 2500 radio. This is especially important for 1-person field crews. Radio use is primarily reserved for emergency situations (medical or logistical). However, radios can be used for more routine communication while in the field. It is important that you understand which radio channel and zone to be using in each situation. The proper use of park radios is required to be covered during training and is fully described below.

Personal Locator Beacon.-Each field crew member is required to carry a Personal Locator Beacon (PLB). PLB use is strictly reserved for life-threatening situations where help is unable to be contacted through mobile phones or ERMN Motorola Radios. The ERMN has purchased and programmed Fast Find 210 Personal Locator Beacons for field use. The proper use of the PLB is required to be covered during training and is fully described below.

Forms of communication (parties involved) required for all monitoring protocols include the following:

1. Park Notification.-The protocol lead will notify the park contacts via email that a monitoring crew will be in the park and to inquire about information on road closings, site closings, detours, hazards, etc. Information provided to the park includes arrival date, departure date, crew (e.g.,

Bird Crew), names of crew members, mobile phone numbers, housing accommodations, vehicle make, model, color, license plate, and general sampling locations.

2. Check-out/Check-in.-A daily check-out/check-in procedure is required for each monitoring crew and each crew member to help ensure timely assistance can be provided in case of an incident or delay. This is particularly important for crew members who work alone. A routine will be established where each crew is provided a contact person (i.e., a "check contact") and is required to "check-out" before heading into the field each day and then "check-in" upon safely returning from the field. Check-out information includes the sampling site(s) to be visited and the estimated return/check-in time. Communication is in the form of a phone call or text message. The check contact person should confirm (i.e., reply) that they received both the check-out and check-in messages.

If a crew member does not "check-in" within two hours of the agreed upon time, the check contact person in conjunction with other crew members should begin to contact/locate the missing crew member(s) using all appropriate means. This includes mobile phones, park radios, revisiting the scheduled sampling site, and notifying 911 and/or Park Dispatch to initiate a search and rescue.

Because the crew for the Streamside Bird Monitoring Protocol typically consists of two members who work independently but on the same day and often car-pooling, each will serve as the check contact for the other. That is, they should both know where the other is sampling each day and precisely coordinate/communicate drop-off and pick-up times (or return times). **Do not deviate** from the daily plan without clearly discussing and confirming it with all crew members and check contacts.

There are some situations where a crew member works entirely independently and/or a second crew member is not available to be the check contact (e.g., field work at ALPO, BLUE, FONE and FRHI or when one crew member is off-duty at DEWA and NERI). The protocol lead or other clearly identified delegate will serve as the "check contact" if no other local crew member is available. <u>These roles need to be clearly identified and</u> <u>no crew member is allowed to conduct field work without fully understanding who their check contact is and "checking out" with that person</u>. The work day for the entire crew, including check contacts, does not end until each crew member has safely returned from the field and checked-in with the appropriate contact.

3. Emergency Communications.-The protocol lead should discuss how to respond to an emergency (medical or logistical) during training. Emergency contact information for 911, each park, ERMN personnel, hospitals, and individual crew members is provided in each streamside bird field notebook, posted in each field house, and in the glove compartment of each field vehicle.

> *<u>Responding to a medical emergency:</u>*
> a. Administer first aid to the best of your knowledge, ability, and training. Contact 911 or park emergency number via phone or park radio. If unable to contact emergency by mobile phone or radio and unable to move, activate Personal Locator Beacon (PLB). If

appropriate, transport to emergency room. Directions to the nearest hospital from each park are in the glove compartment of each field vehicle.
b. As soon as it is practical to do so, contact the crew leader (if applicable), protocol lead, and the park's emergency contact.
c. Complete Worker's Compensation paperwork.

Responding to a non-medical incident (e.g., stuck or broken vehicles):
a. Contact crew leader, other crew members, or park ranger via phone or park radio.
b. As soon as it is practical to do so, contact the crew leader (if applicable) and the protocol lead.

Radio Use

This section provides information and guidelines to be followed when using ERMN-owned and programmed Motorola XTS 2500 Radios in and around ERMN parks. These radios are registered U.S. Government Property. Crew members are personally responsible for radio issued in their name. Do not loan them out. Keep them secure at all times. Do not leave them in a vehicle unattended. Report lost, stolen, or damaged radios immediately to a park contact or the protocol lead.

Each radio has three zones (indicated by A, B, and C "toggle" on the top of the radio) each with multiple channels (indicated by knob on the top of the radio). Zones A and C are programmed with radio communication frequencies. Zone B is programmed with NOAA weather information frequencies (see below).

It is important that you understand what radio channel and zone to be using in each situation.

Channel 1 (Zone A) is the "ERMN direct talk" frequency. This frequency is unique to the ERMN-owned radios and is to be used for direct radio-to-radio communication without interfering with any park-based frequencies. As the name implies, this is radio-to-radio communication and is therefore limited by the distance and terrain between radios.

The remaining channels (Zones A and C) are programmed with park-specific communication frequencies. It is essential to understand that communications on these channels are broadcast via a "repeater" and therefore the communication will be heard by everyone in the park (and surrounding region) with a radio tuned to that channel/frequency. This can be important/critical in emergency situations or inappropriate if the intent is to simply arrange a pick-up time with your fellow crew members.

The "red button" on top of the radio is for Law Enforcement Rangers only and has been disabled.

In case of an emergency (medical or logistical) where radio use is required:

- Stay calm and assess situation. Be prepared with a clear, concise message before initiating radio communication.
- Turn the radio ON and verify that it is tuned to the appropriate Zone and Channel. Each field notebook contains the appropriate Zone and Channel for each park.

- Identify yourself as an "NPS Researcher". Press the talk button, wait one second, then say "Dispatch from NPS Researcher". Release the talk button and wait for the dispatcher to respond.
- Keep repeating your message periodically until Dispatch or other emergency responder makes contact with you. Let the nature of the situation dictate how frequently you repeat your communication. Repeat your message every few minutes if it is a serious medical emergency, for example.
- Be sure that your communication is being received and broadcast by the repeater. The small red light on the top of the radio should turn red and continue to blink for several seconds after you stop your communication. If not, move to a new location (preferably uphill) and try again. Sometimes a move of only 20m will allow your radio to reach the repeater.
- Once contact has been made, follow instructions of the emergency responder. They will likely ask for your location. UTM coordinates off a GPS unit are ideal, but any other descriptive information could suffice. Use obvious roads, streams, towns, regions.

Zone/Toggle A		
Channel 1	ERMN (radio-to-radio)	
Channel 4	DEWA Communications/Dispatch	
Channel 12	UPDE Communications/Dispatch	
Zone/Toggle C		
Channels 1	NERI, GARI, BLUE (NPS and Raleigh County, WV 911)	
Zone/Toggle B	**NOAA Weather Frequencies (play around with channels to find best one)**	
Channel 1	NOAA 162.40000 MHz	ALPO, JOFL
Channel 2	NOAA 162.42500 MHz	
Channel 3	NOAA 162.45000 MHz	
Channel 4	NOAA 162.47500 MHz	UPDE (north)
Channel 5	NOAA 162.50000 MHz	FONE, FRHI, DEWA
Channel 6	NOAA 162.52500 MHz	
Channel 7	NOAA 162.55000 MHz	DEWA, NERI, BLUE, GARI, UPDE (south)

Personal Locator Beacon (PLB) Use

This section provides information and guidelines to be followed when using ERMN-owned and registered Fast Find 210 personal locator beacons (PLB). A demonstration of their use will be viewed during training: http://www.youtube.com/watch?v=Dm3s5cRPTLw.

The Fast Find 210 operates by sending out 406 and 121.5 MHz frequencies and using the global positioning system (GPS). The 406 MHz frequency is sent out and picked up by satellites and used to alert emergency crews. This signal will be able to be picked up regardless of GPS signal, but if the GPS can get a signal this will be used to assist in the accuracy of the location. Once search and rescue crews are on site, they can use the 121.5 MHz frequency as a homing signal to find the person(s) in need. More information about how the Fast Find 210 works can be found on the Fast Find website at: http://www.fastfindplb.com/us/. Information about how the PLB

signals are used and responded to can be found at this website: http://www.sarsat.noaa.gov/sys-diag.html.

- Each ERMN PLB is registered with the name and mobile number of the person who carries it in the field.

- The Fast Find 210 is activated by flipping the red tab up and pulling on it to remove the top of the device, un-coil the antenna, and press the "ON" button. Point the antenna at the sky and do not cover the "GPS zone" marked by circles near the "ON" button.

- If the device is activated accidentally, the person to whom the device is registered will receive a phone call to confirm that the device was activated intentionally. If the registered person does not confirm that it is indeed an emergency, an emergency situation will be assumed. If the device is accidentally activated, the person/crew must call 800-851-3051 immediately. If the person/crew is out of cell phone reception, they will go as quickly as possible to an area with cell phone reception or if that is not possible to do in a timely manner, use the ERMN park radio to alert dispatch to call in the false alarm.

- The Protocol Lead and other emergency response personnel will be automatically notified that a user-specific PLB has been activated. They will coordinate with others to assist the search and rescue teams in any way possible.

Literature Cited

Marshall, M., C. Tzilkowski, and K. Callahan. 2016. Streamside bird monitoring protocol for the Eastern Rivers and Mountains Network: Protocol Narrative Version 3.0. Natural Resource Report NPS/ERMN/NRR—2016/XXX. National Park Service, Fort Collins, Colorado.

Appendix A. Training certification

Each non-NPS crew member is required to sign that they have received SOP 2 – Field Crew Training and Safety and understand the essential training to safely execute the protocol.

Eastern Rivers and Mountains Network – Streamside Bird Monitoring Protocol

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Please sign your name below to certify that you have read, received training, and fully understand the information outlined in SOP 2 Field Crew Training and Safety for the ERMN Streamside Bird Monitoring Protocol.

Name Signature:_____ Date:_____

Name Signature:_____ Date_____

Appendix B. ERMN Streamside Bird Monitoring Protocol Job Hazard Analysis

JOB SAFETY ANALYSIS: Streamside Bird Monitoring Protocol **JOB TITLE:** Field Crew Member **DEPARTMENT:** Eastern Rivers and Mountains Network	**ANALYSIS BY:** Matt Marshall, Protocol Lead & ERMN Program Manager **REVIEWED BY:** John Karish, NER I&M Program Manager	☒ **NEW** ☐ **REVISED** ☐ **REVIEWED**

Required and/or Recommended Personal Protective Equipment:

Required: Mobile phone, park radio, personal locator beacon, helmet, first aid kit, driver's license.

Recommended as appropriate: rain gear, condition-appropriate footwear and clothing, "blaze orange" during hunting seasons, sufficient food and water.

Tasks	Potential Hazards	Recommended Action or Procedure
Planning and Communication	Not being prepared and following plan/itinerary. Communication breakdowns.	• Plan ahead. Know where you and each crew member will be going, particular hazards associated with travel routes, and sites to be visited that day. Check expected weather and stream conditions for day and sites to be visited. • Understand itinerary of planned trip and follow carefully. Coordinate drop-off and pick-up times (or return times) and locations precisely. If return will be delayed, contact co-worker and/or crew leader. • Always carry a charged phone, charged park radio, and personal locator beacon (PLB). • Follow check-out/check-in procedures.
Stream crossings	Injuries from falling and/or fatality due to drowning.	• Thoroughly investigate area to find safest crossings. • Do NOT CROSS stream unless you feel completely confident in your ability to do so safely. • Rule of thumb: do NOT cross if stream depth is above your knee. • Wear appropriate foot gear for stream crossings. • Wear helmet. • It is safer to walk through/in water, rather than rock hop across a stream trying to keep your boots dry. • Unbuckle your backpack and be prepared to jettison gear should you lose your balance or fall in.

General foot travel/hiking	Falling or tripping due to poor footing, uneven terrain, roots, logs, rocks, wet leaves, etc.	• Use caution at all times. Walk carefully, watching footing. • Wear appropriate boots for conditions. Stay aware of your feet. Address blisters and hot spots promptly. • Avoid carrying excessive weight loads or unbalanced loads. • Wear helmet in slippery terrain. • When walking on a steep slope, lean upslope. Ensure that stems and vines are alive and can support your weight before relying on them. • Use extreme caution traversing wet rocks, streams, steep slopes or blowdown areas.
Working outdoors during storms	Being struck by falling trees or branches Being struck by lightning	• Listen to the weather forecast each morning (park radio and/or internet). • Plan or adjust field work to avoid being out in thunderstorms. • Postpone work if safety will be compromised by storm conditions. If you see or hear a thunderstorm coming, retreat from high ground and exposed areas. Go inside a sturdy building or vehicle, if possible. • Make yourself the smallest target possible and minimize contact with the ground. • Crouch down on your pack on the balls of your feet and keep your feet close together. Place your hands on your knees and lower your head. • Members of the crew should stay separated by at least ten feet.
Poisonous plants, especially poison ivy	Irritation/rash from contact with poisonous plants	• Learn to identify poison ivy in its many growth forms. • Wear long sleeves and pants. • Be aware of poison ivy and avoid coming in direct contact with it. • Thoroughly wash hands, equipment, and clothes with Tecnu or similar specialized soap after working in areas with poison ivy.
Working in bear territory	Bear encounter	• Be especially alert near dawn or dusk. • Be especially aware of mother bears with cubs. Never approach cubs or come between a mother bear and her cubs. • Maintain eye contact, face the animal, continually make noise -- do not freeze or remain silent. • Appear larger by standing tall, waving arms or jacket over your head.

		• Slowly back away – don't approach a bear. • Never run from a bear. • Throw things and shout loudly if bear approaches. • If attacked, fight back aggressively.
Bee, wasp, or yellow-jacket stings	Multiple stings from disturbing or stepping into nest areas	• Be alert to hives in brush, ground holes, or hollow logs. Watch for insects traveling in and out of one location. • If you or anyone you are working with is known to have allergic reactions to be stings, tell the rest of the crew and your supervisor. Make sure you carry emergency medication with you at all times. • Wear long sleeve shirts and trousers, tuck in shirt. Bright colors and metal objects may attract bees or wasps. • If you are stung, a cold compress may bring relief. • If stinger is left behind, scrape it off of skin. Do not use tweezer 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.
Bites from mosquitoes, no-see-ums, and chiggers	Itchy reactions to multiple bites	• Wear long sleeves and pants. • Avoid sitting on the ground or on logs, especially in dry sunny grassy areas. • Use insect repellants. Do not apply Permethrin, Permanone, or greater than 30% DEET directly to skin; only to clothing. • Carry after-bite medication to reduce skin irritation.
Venomous snakes	Being bitten by a venomous snake	• Wear snake gaiters when in known snake territories. • Be alert for snakes in thick vegetation and rocky habitats. • Look **before** putting hands or feet in places out of immediate view. • Treat all bites as if envenomation has occurred. • Immobilize the bitten area and keep it lower than the heart. • Apply a bandage, wrapped two to four inches above the bite, to help slow the venom. This should **not** cut off the flow of blood from a vein or artery - the band should be loose enough to slip a finger under it.

		• Remove rings, watches, shoes, etc. before swelling begins in earnest. • Seek medical attention immediately and/or call for help. Try to remain calm. • Rattlesnake bites are more likely than copperhead bites to be life-threatening.
Ticks	Contracting diseases transmitted from ticks	• Use tick avoidance precautions, including tucking pants into socks and shirt into pants. • Wear light colored clothing and check for ticks on clothing periodically throughout the day. • Conduct a thorough tick check every evening after completing field work. • Know how to identify tick life forms, and the signs & symptoms of tick-borne diseases. • Consider safe use of DEET or permithrin applied to clothing. • Read: Tickborne Diseases of the United States_2013_CDC.pdf • Keep a tick log (Appendix C)
Walking through thick vegetation	Cut, scratched, or bruised by vegetation; eye or ear injuries	• Shield your eyes and face with your hands, glasses, or hat when moving through tall thick brush. Keep your head and eyes pointed somewhat downward so your head hits obstacles before your eyes. • Wear long clothes to protect bare skin. • Look before you grab vegetation to avoid grasping thorny stems. • Carry a first aid kit.
Working in heat, humidity, or cold	Heat exhaustion, sunburn, dehydration, hypothermia	• Evaluate the weather forecast each morning and plan field work accordingly. • Carry and drink plenty of water. • Take extra breaks. Adjust the work routine to minimize exposure to extreme heat and humidity. • Take adequate garments for all possible weather conditions. Choose clothing that will keep you warm even if it gets wet.
Hazard trees	Being struck by falling trees or branches.	• Look up. Be alert for storm damaged trees with large broken limbs, and unstable standing dead trees. • Do not spend extended time in an area with hazard trees.

General operation of a motor vehicle	Injuries from vehicle accident; Damage to vehicle	• Perform pre-operational check of vehicle (oil, tire pressure, tire condition, fluids, wipers, brakes, lights, gas, etc.). Report all needed repairs to the crew leader or Protocol Lead promptly. • Do not use the vehicle if it is unsafe. • Wear seat belts with shoulder harnesses whenever vehicle is in motion. • Do not use phones or text while driving. • Only NPS employees or authorized cooperators and contractors are allowed to operate or ride in a government vehicle. • Ensure full visibility from all windows and mirrors. Clean windshield regularly. • Always ride inside the vehicle. • Properly store and secure all tools, equipment, and cargo so that they will not shift during sudden starts or stops. • Plan your travel before you start. Know your route. Pull over and stop vehicle to consult maps. • Practice defensive driving; be alert to potential hazards. • Obey all traffic laws and speed limits. • Adjust speed to changing weather or traffic conditions • Allow adequate following/stopping distance. • Avoid distractions such as eating while driving. • Be alert for pedestrians or bicyclists using roadways. • Be watchful for wildlife crossing roads, especially at early morning, dusk, and after dark. • Do NOT drive if fatigued. Stay alert!
Driving on gravel, dirt, or un-maintained roads	Injuries from vehicle accident; Damage to vehicle	• Maintain a slow and safe speed for changing road conditions, such as loose gravel, large potholes, washed out road, fallen trees or rocks, etc. • Be alert on narrow roads for oncoming vehicles. Be prepared to slow down, pull over, or stop with little notice. • Many roads require 4-wheel drive and/or high-clearance vehicles for safe passage. Use the appropriate vehicle for the terrain. • Do not exceed the capacity of your vehicle or driving ability. When in doubt, turn around or back out. • Use spotters to assist in navigating obstacles and assessing water depth at stream crossings. • Carry a charged park radio at all times.

Appendix C. ERMN Streamside Bird Field Crew Member Annual Tick Log

Each field crew member should initiate a tick log and maintain it throughout the field season if they find more than one attached tick. The primary purpose of the tick log is to keep track of all instances (attached ticks) without having to initiate a worker's compensation claim for each one (at the discretion of the individual, a worker's compensation claim should be initiated after the first attached tick is discovered).

Example Tick Log for the Eastern Rivers and Mountains Network **NAME:**

Date	Type and number of tick(s)	Body part(s) with attached tick(s)	Work Activity	Work location where tick acquired	Prevention[a]

[a]Preventative Measure Examples: None, Permethrin (Pants, Top, Both), DEET (Pants, Top, Both), Non-DEET Bug Spray, pants tucked in socks, etc.