Fall Covey Count Survey Standard Operating Procedures

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General Information

Unlike spring point count surveys, birds are not counted individually during fall counts, but instead as a covey. Additionally, no non-bobwhite target species will be surveyed during the fall covey counts. A covey is indicated by a single or grouped series of "koi-lee" vocalizations (example recording here) coming from a single location, or in rarer instances, by a visual observation of a cluster of quail. Be reasonably conservative when estimating the number of coveys; if calling coveys are perceived to be within 30-m (~98-ft) of each other, consider them a single covey, and record the first estimated location.

Survey Windows (Time of Year & Time of Day)

Surveys will take place from Oct. 13 to Dec. 3 during morning surveys. The survey windows are measured relative to sunrise. The 1-hour survey starts 45 minutes before sunrise and ends 15 minutes after sunrise. **Note:** fall covey count surveys have a much narrower survey window than the 3-hour window used for spring point-count surveys. However, covey counts last for the duration (i.e., the entire hour) of the survey window (unlike the 5-minute point counts). Surveyors are welcome to bring a collapsible camp chair to sit in for the survey. Check your weather app or click on the following link to search sunrise times for the closest city/town to your point: https://www.timeanddate.com/sun/.

Point Selection & Coordinating with ARU Deployment

Most states will be using Song Meter Minis for monitoring. Only a few states (NY, PA, NJ, DE, MD, and WV) will use AudioMoth ARUs instead. Please review the relevant ARU Deployment SOP using the following links: Song Meter Mini and AudioMoth.

Points monitored during the spring surveys will continue to be monitored for fall covey counts, provided the landowner has not withdrawn permission for monitoring access. No new points will be added during the fall season. Surveyors that have changed location or state coordinators in states where recent vacancies have not yet been filled should coordinate with Brittany Welch to help find someone to fill in if possible.

ARUs are deployed at *all* selected locations, and in-person counts are conducted at a minimum of 25% of all locations. Please use the same randomly prioritized list from the breading-season point counts to decide which points should receive in-person counts. [Note: Please meet the 25% minimum, but don't worry about exceeding the minimum as greatly if you conducted point counts at more than 25% of points in the spring. Unlike point counts, only one covey count can be conducted per day.] Surveyors *must* use the randomly prioritized lists to decide which points receive in-person counts. It is **not** acceptable to select locations based on ease of access (e.g.,

points with shorter drive times) or based on suspected bobwhite presence (e.g., points with a higher suspected population).

Both ARU and human surveys are to be done 2 times at each appropriate (see paragraph above) point with a minimum of 7 days between surveys. ARUs are to be deployed for 5 days. To cover each site more than once, you will need to rotate the ARUs among sites. If you can't repeat ARU surveys at some sites, then extend the duration of the ARU survey on that site to 10 days (but always maintain at least 7 days between any in-person counts).

In-person covey counts should be conducted in tandem with an actively-recording ARU to allow for comparison and integration of the two data streams. To avoid disturbance before a survey, it is not recommended to conduct a point count immediately following ARU deployment. However, point counts may be conducted just prior to retrieval, provided that the survey is being conducted for the entire survey window and during appropriate weather conditions. ARUs may be left recording for a day or two extra if conditions are not suitable at the originally anticipated date of survey/retrieval. It is up to the surveyors to plan ahead to ensure ARU rotations and the repeated point count visits coincide.

Working Around Fall Hunting Seasons

Fall outcome assessments often require flexibility both in scheduling around hunting seasons and in coordinating with landowners for site access. Be sure to:

- Know the dates of your state's fall hunting seasons.
- Talk with landowners to learn whether they hunt, and if so, their typical practices (e.g., which seasons they participate in—bow, muzzleloader, youth, shotgun/rifle; weekend-only vs. weekday hunting; areas to avoid vs. unhunted areas).
- Always wear blaze orange during hunting seasons, even on properties that are not actively hunted.

Many landowners who hunt may initially prefer no access to their property during the fall. However, respectful discussion and offering alternatives can sometimes make them more open to limited access. Options to propose include:

- Surveying the property early in the covey count window, prior to the start of shotgun/rifle season (depending on the state).
- Skipping the 5-day rest period between ARU deployments and instead opting for a 10-day deployment, reducing site visits to just twice.
- Limiting visits to days of the week when they don't hunt.
- Requesting midday access, when hunters are less active. In that case, restrict work to ARU deployments rather than covey counts.

Important: Outcomes assessments are completely voluntary. While negotiating access is encouraged, do not push too hard or risk damaging landowner relationships. It is expected that some properties will not yield fall data.

Weather Restrictions

Covey counts should only be conducted during favorable weather conditions. Do *not* survey during periods with heavy fog (<200m visibility), rain, or high wind (>12mph). If observer hearing is impeded by wind or high background noise, or if bird activity is suspected to be significantly reduced by weather or human activities (e.g., chainsaws/tree felling in close proximity), please return on a day with better conditions.

Survey Methods & Guidelines

Surveyors will stand at the pre-selected survey point coordinates where the ARU is recording.

For each covey count, you will be provided two sheets to print out before the survey. These include:

1. A table sheet for recording environmental factors and all focal species observations (download blank datasheets here). [Note: please confirm your datasheet is titled "Covey Count Datasheet" prior to your survey. Do not accidentally use the covey count datasheet, which has slightly different fields.]
2. A grided map of the 500x500-m area centered around the survey point. This map is split into 50x50-m grid cells. This is used as a reference to complete the "Cell ID" column on the table sheet.

Conducting a Covey Count:

1. Because surveys are to start at set times, surveyors should plan to leave early enough to allow themselves sufficient time to drive to the area, navigate to the point in the dark, and get set up. Surveyors should arrive at the survey location 10-15 minutes *prior* to the start of the survey window. This provides the birds time to acclimate to a human's presence and ensures you have sufficient time to get set up.

   During this time, surveyors should ensure the environmental conditions are completed on the datasheet.

   a. Point ID, Observer Name, Survey Date, ARU ID, ARU Recording Start Date: Much of this information can be filled in prior to arriving at the point, but please take this time to ensure every field is complete and correct.
   b. Temperature: Please record the actual temperature at the time of the survey by, for example, checking the car thermometer as you exit to walk to the point, using a weather meter, or checking the real-time temperature on your local weather app.

c. Cloud Cover: This should be recorded to the nearest 5%. Do not include decimals or percentages other than multiples of five. For consistency, **provide an estimate for the entire visible sky**, *not* just what is directly above.
d. Beaufort Code: Wind speed should be recorded using the Beaufort wind scale:

Beaufort #	Wind speed indicator(s)	Wind speed (mph)
0	Smoke rises vertically	0
1	Wind direction shown by smoke drift	1-3
2	Wind felt on face; leaves rustle	4-7
3	Leaves, small twigs in constant motion; light flag extended	8-12
4	Raises dust and loose paper; small branches are moved	13-18

If you have a weather meter, feel free to use it. Otherwise, check the real-time wind speed on your local weather app. Be sure to record the Beaufort value rather than the actual wind speed. As mentioned before, if it is too windy (>12mph), do not conduct the point count on that day (i.e., you should never be recording a Beaufort value of 4 or higher).

2. Begin the survey. At the start of the survey window (exactly 45-min. prior to sunrise), surveyors should start the count. During this time, coveys are recorded for exactly 1 hour. Don't forget to record the survey start time. Any coveys detected outside the time of the count and any distant coveys that occur outside of the 500x500-m area surrounding the point should *not* be included in the data table (but may be included in the survey notes).

   Covey observation table:

   a. Covey ID: Each detected covey should be recorded on its own line in the table. The pre-filled "Covey ID" column will be used to mark covey locations on the gridded map.
   b. Time of First Detection: Record the time of first detection for each covey seen or heard during the survey. Do not record subsequent observations of the same covey on a new line, but keep track mentally to avoid double-counting. Coveys that are calling and perceived to be within 30 m (~98 ft) of each other should be treated as a single covey.
   c. Distance: Record a distance estimation to the nearest whole meter for each detected covey.
   d. Seen/Heard: Record whether the covey was seen or heard at the time of *first detection*. If the covey was both seen *and* heard at the time of first detection, record "seen".
   e. Cell ID: Referring to the gridded map, record the cell ID (e.g., A1) the covey was estimated to be in at the time of first detection.

f. Number of Calls: For the first covey detected during a survey, please record the number of calls it gives for the full survey period. This information is especially useful for ARU data analysis. If feasible, surveyors may also track calls from additional coveys, but only if it does not compromise the accuracy of other data. For example, if many coveys are calling at once, focus on maintaining a reliable call count for the first covey while ensuring accurate totals of coveys and their locations.

g. Covey Notes & Survey Notes: These fields are optional, but please record detailed notes if you encounter unexpected problems that are not addressed in this SOP and/or that may affect data quality.

    1. Please keep these notes relevant to the survey. If you need to jot down things for personal reference (e.g., landowner info, access info/directions), please do not include these notes in the spreadsheet entries. Please do not include notes regarding non-focal species *unless* there is reason to believe there is a direct impact on the bird's behavior (e.g., Cooper's Hawk hunting over survey area).

Note: for surveys where no coveys are detected, please record all the site and environmental information, and write something in the notes along the lines of "no coveys detected." Please include this note when entering your data into the data entry spreadsheet.

At the conclusion of the survey, identify and record the level of background noise during the survey period. This step is easy to forget, so get in the habit of double checking.

Background Noise Codes:
0 – silent; no noise interference
1 – distant noise, but not interfering with count quality (e.g., a distant tractor or oil rig)
2 – difficult to hear clearly at times (e.g., intermittent traffic)
3 – constant noise; low quality count

Repeat Visits (Resampling)

Survey all count locations 2 times throughout the field season (Oct 13 - Dec 3). To account for seasonal variation in calling rates and to increase the chances of surveying during the peak season, allow a minimum of 7 days to pass before resampling points. Follow the same survey protocol (detailed above) during each resampling visit.

Data Entry & Data Management

The data entry deadline is December 17, 2025. This is a hard deadline. By then, surveyors should have completed all 3 items listed on the checklist of the Data Management Guidelines. All surveyors should review the guidelines, regardless of how many previous monitoring seasons they have participated in.