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HJ ANDREWS EXPERIMENTAL FOREST
LONG-TERM AVIAN POINT COUNT SURVEY PROTOCOL 2019

Objectives

- To monitor the change in populations of species in breeding bird communities and nest predators (squirrels, chipmunks and pikas), and document the phenology of birds, vegetation, and snowmelt throughout the HJ Andrews Experimental Forest while accounting for effort, across multiple years.
- This data is designed to be paired with microclimate measurements using hobo pendant loggers at each point count station.
- Points were stratified along elevation, vegetation and distance from the road gradients, considering logistics and safety of the crew.

Guidelines

Time of Year:

- Surveys will be conducted in the early breeding season, at the peak period of mating when males are most vocal and can be readily detected.
- We will conduct our surveys between 1 May and15 July (approximately).
- In recent years, surveys started in late May when majority of the area is accessible (free of snow), and breeding activity of birds are starting to increase.

Time of Day:

- Surveys will begin at **05:15-05:30 (depending on the time of sunrise)** and the **final point count must start by 10:30**.
- Please note that the first point to be surveyed **must begin promptly at 05:30 (and as early as 05:15 later in the season),** therefore, allowing adequate time for travel to that point.
- Point counts can start as early as 5:15, if there is **sufficient light (civil sunlight)** for visual identification or for bird activity later in the season. This depends on route and points, and thus be conservative and arrive earlier to start.

Replication and Order of Point Counts:

- Each point will be surveyed three to six times from 1 May-15 July.
- The starting point, order of points, and observer will differ for each of the replicates to minimize the bias of survey time and observer.
- When each year's replication is planned to be in smaller numbers than 6, it should be designed around the peak breeding activity of birds, with at least 5-7 days of intervals between full replication.

Point Count Etiquette:

- All point counts must be done standing, no sitting is allowed to avoid biased detection.
- Focus all of your attention on the point count and minimize any potential distractions.
- Your ears must be fully exposed (hats off, literally) while you are point counting in order to maximize your ability to hear birds.
- Do not eat or drink during point counting as it interferes with your hearing and is a distraction.

- Make sure to listen in all directions during the point count; that is don't face in one direction for the entire point count period.

Weather Conditions:

- Surveys must be conducted under satisfactory weather conditions: **good visibility, little or no precipitation**, **light winds**. Occasional light drizzle or a very brief shower may not affect bird activity, but high winds, heavy fog, steady drizzle, or prolonged rain should be avoided.

Phenology:

- **Vine Maple** (*Acer circinatum*, code = ACCI): In order to monitor changes in leaf-out for one of the most common deciduous shrubs found at the Andrews, Vine Maple, we will record the average phenology stage of a marked Vine Maple plant within 25m around each survey point during each point count visit. There are separate codes for vegetative and reproductive phenology (see codes below).
- **Pacific Rhododendron** (*Rhododendron macrophyllum*, code=RHMA): We will also record the flowering status of Pacific Rhododendron at each plot during each point count visit. 1 = flowering, 0 = not flowering, X = no RHMA present at plot.

Stream:

- Stream noise information will tell us about our ability to detect birds by sound during a survey. It will also provide information about the changes in intensity of stream flow throughout the season.
- Stream noise is not based on how large the stream is or how close it is to you (although these factors often determine noise interference by streams), it is the amount the stream noise interferes with your ability to hear birds.

Snow:

- We will monitor changes in snowmelt across the elevational and habitat gradients by noting the percent of snow cover around each survey point for each replicate. This will give us an estimate of site-level snowmelt rates.

Other Environmental Conditions:

- At some points noise may be a factor due to humans, aircraft, cars, etc. If the noise passes within a short amount of time (~30 sec.) continue with the count. If the noise is persistent (i.e. road construction, harvesting ongoing in adjacent location), we will conduct the count at a later time.

Observation Period at Each Station:

- We will be conducting 10-minute point counts at each station.
- Point counts will commence ~1 minute after arrival at a point.

Period:

- The 10-minute count is divided into 3 equal intervals of 3 minutes and 20 seconds. Periods are: 1=0–3:20, 2=3:21–6:40, 3=6:41–10:00).
- Each period should be treated as **a separate count** (i.e., count individuals in the later periods even if they were detected in period 1).
- Same individuals detected multiple times will be distinguished in the ‘New Record’ column; see below section for details.

Species:

- We will record all bird species and a selection of small mammals (squirrels, chipmunks and pikas) seen or heard.
- See species code sheet for 4-letter alphabetical codes for each species. Make sure you are using the correct code following the protocol.
- Species codes must be written in capital letters.

Detection Method:

- There are several ways in which an individual can be detected and not all detection types are created equal. Most of your detection will be auditory.
- The highest quality detections are singing males. This is because male birds sing (and in the case of woodpeckers, they drum) in order to defend their territory and to attract mates, therefor we can assume that singing males are occupying a breeding territory and not just passing through. Female birds generally do not sing, except for certain occasions.
- The order of importance of detection types is as follows:
- **S**ong or **D**rum > **V**isual > **C**all or **W**ings or **T**apping
- You can fill in more than one detection type, but always put the more important detection type first (it will get entered into the database under the 'Det. Meth. 1').
- Flyovers (detection method code **O**): It is important to distinguish between birds that are flying over the site from those that are (more) stationary (these are birds we are talking about and birds do have wings). If a bird(s) flies over a site put O for the primary detection method, and the manner in which you detected the flyovers (V or C or both) as the secondary detection method.
- When you detect more than 3 individuals that fly over at the same time as a flock, you can reduce the observations to one line on the point count form and indicate the number of individuals detected in the 'Flock Count' column. When there are many individuals make your best estimate possible of how many you think there are. You must record notes on any these observations in the 'Comments' section in the bottom.
- This 'flock' detection should be entered as a single line, as it is when digitized to the database, not split to separate lines (data is digitized in this way since 2017; and split lines until 2016, most cases).

Counting Radius:

- We will record individuals at three distances;
  1: within 50m, 2: between 50 – 100m, and 3: greater than 100m
- At the start of the survey at each point, landmarks at a distance of 50 m should be selected and noted.
- IMPORTANT NOTE REGARDING NEW RECORDS: If an individual bird moves closer to you during the point count period, the detection at the closest distance class is the one that receives a '1' in the 'New Record' column. This is even if the individual was detected in a prior period, but at a farther away (higher distance category). See more info on this below in the 'New Record' section.

New Record:

- The “New Record” column on the data form indicates whether an individual detected is new for the complete 10-minute count. For example, if an individual is detected in the second period and was also detected in the first period, it receives a “0” in the ‘New Record’ column for the period 2 detection. If it appears for the first time in the second period, it receives a “1”.
- If an individual moves closer during the count (either from >100m to 50-100m or from 50-100m to <50m), this individual should be marked with a “1” in the ‘New Record’ column in the period in which it occurs at the closest distance.
- If an individual starts counter-singing during a period in which it was not first detected (‘New Record’ = ‘0’), The ‘Counter-sing’ column should be filled in as ‘1’ in the first detection of that individual in a prior period, even if it was not counter singing at that earlier time.
- Consider carefully if it is a new record, not a double count of same individual (which we still record as a separate count, but as ‘0’ in the new record column). Counter singing and detection (both vocalizing and visual) from different directions/distances at the same time or in a very short time interval are good cases of genuine ‘new records’.

Counter-singing:

- If two male birds are detected simultaneously within 100m at a count both individuals should receive a “1” in the counter-sing column. This is important information for calculating relative abundance.
- The two or more males should **exchange songs back and forth 2** or more times to be considered counter singing.
- IMPORTANT NOTE REGARDING NEW RECORDS: If an individual starts to counter-sing in a period in which it is not a new record, you must also mark the ‘Counter-sing’ column with a ‘1’ in the prior period in which it was a new record.

Flock Count:

- This column is for recording # of individual birds detected as a flock (flying over, or foraging in a group). If the detection (entered as a separate line) does not involve a flock of birds, enter ‘0’ instead.
- This is most commonly applied to flocking finches and aerial foragers, i.e. EVGR, RECR, PISI, VASW, and swallows, but not exclusively; i.e. it is possible to detect a group of warblers still migrating in early May, or a group of waterfowl or raptors.
- Family groups with recently fledged young birds (i.e. a group of six Stellar’s Jays with four juveniles, begging) should be included as a separate records.
- You MUST describe the observation in detail in the ‘Comments’ section if you record a flock of birds; species, sex and age if possible, behavior, direction of flight, etc.

Mammals:

- Mammals should be entered as birds in the Species column. Mammal codes: Townsend’s Chipmunk (CHIP), Douglas Squirrel (DOSQ) and Pika (PIKA).

- These are the vocal and diurnal species of mammals that can be detected during point counts aurally and visually, or are known nest predators of small songbirds (chipmunks and squirrels).

Other notes:

- When filling out datasheets in the field every effort should be made to write clearly so that datasheets are easily interpretable.
- You may use personal sound recorder, or phone to record songs for training purpose, and for identifying one or two unidentified species in a count, but it should not be used as a main source of detection.

When You Return From the Field:

- Check off the points you surveyed that day (on the check-off sheet on the wall). For each point that you surveyed, record the date and your initials. For each point you check off, **have the actual datasheet in hand to be positive that each point has been surveyed, do not do it by memory**. On the map, fill in the circles for the points you surveyed that day.
- Place your datasheets in the UNENTERED box if you do not plan to enter them at that moment.
- When you are ready, enter your data in one of the 2 data entry laptops using the program Access. Mark your datasheet with a check in the top right corner once it is entered (use pen or marker of a different color). Any changes you make to your datasheet once you have returned from the field should be done in pen, preferably with a color that stands out. Once you have finished entering your data, place your datasheets in the ENTERED box in numerical order.
- Sit down with all the crew members, and share the observations of the day with others; this is very important process for learning and improving the quality of counts.

At the End of a Point Count Round:

- Make sure all of the data is entered for that round.
- Double check that the datasheets for that round are in numerical order.
- Check that each survey point has been surveyed by comparing the datasheets with the check-off sheet. Mark the points on the check-off sheet that have a completed datasheet.
- Store the datasheets for each round in a labeled data box.

Error Checking:

- Compare the datasheet to what is in the database, checking off each line of data as you go. Make sure they are the same.
- Watch for data collection errors and check with the observer to resolve issues.
- Label the datasheet as having been error checked with another check in the top right corner with your initials. It is best not to error check your own datasheets.

- Review other's data as possible, and double check for the entry that is made in MS ACCESS form page is transferred to the data table tab to confirm when making adjustments.

Alt songs:

- In past few years, song types (primary song, secondary song, or type 1 and type 2 songs) were distinguished in the field by technicians. But this is not practiced at least form 2017. Due to difficulty in training crew members, complexity and variation of songs in many species, and difficulty in defining song types.
- Past data indicates when it was detected by a song but it was not the major song type (type 1 song) of the species, the box was checked with 1.

Song Meters:

- Song meters were used and ran at PC sites for passive recording in early years, and also used as carry-on recorders in past years.
- In 2015, detection and identification of birds for some proportion of the counts (visits) were augmented with song meter recordings.

Data Recording and Reporting

Data Field	Description
Route #	Record the route number (1-18)
Plot #	Record the plot number (1,2…,400)
Replicate #	Record the survey replicate number (1-6)
Date	Record the date
Time	Record the time that the point count begins
Observer	Record your initials
Sky	Record the sky code as presented on the code sheet
Wind	Record the wind code as presented on the code sheet
Phenology (ACCI)	Record the average phenology code for the marked Vine Maple (ACCI) within 25m of the survey point, V = vegetative code, R = reproductive code)
RHMA	Record a 1 for flowering RHMA, 0 for RHMA present, but not flowering, and X for no RHMA present at plot.
Stream	Record the stream code as presented on the code sheet. This is a measure of how much the stream noise interferes with your ability to hear birds.
Snow	Record the snow code as presented on the code sheet.
SMrec	Record yes (Y) if you recorded the point count with a songmeter. If the point count was not recorded by a songmeter, record no (N)
Number	Corresponds to the number of the individual recorded on the survey
Period	The 10-minute count is divided into 3 equal intervals (3 minutes 20 seconds). Record the period: 1=0–3:20, 2=3:21–6:40, 3=6:41–10:00
Minute	Record the minute that the given individual was first detected. 1=0-0:59, 2=1:00-1:59, 3=2:00-2:59…etc.
Species	Record the four-letter species code as presented on the code sheet. Record mammals species (Chipmunk, Squirrel) as if they were bird species (include minute, detection method, distance, new individual, and “counter sings”)
Sex	Record male (M), female (F), or unknown (U)
Detection Method	Record the method by which the individual was detected: song (S), visual (V), call (C), Drumming (D), Tapping (T) or fly over (O)
Distance	Record the distance category from the point to the individual: < 50m (1), 50 - 100m (2), or >100m (3)
New Record	If an individual is observed for the first time in the 10-minute count (regardless of period) record a ‘1’. If it has been observed previously put ‘0’.
Counter-sing	If birds are observed to be singing from different locations nearly simultaneously note a ‘1’.
Flock ct.	For bird detections that include flocking species (RECR, EVGR, PISI, VASW, and other swallows and finches if detected) that consists more than 2 birds, write the numeric (3..10,..30) count here. When it is just heard, record the number of conservative estimate based on the call notes you hear. This is a behavioral category that is often related to certain taxa.